

PhoenixTemp24825.tmp.txt
SEQUENCE LISTING

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<120> Plants with increased yield

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PhoenixTemp24825.tmp.txt

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PhoenixTemp24825.tmp.txt

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PhoenixTemp24825.tmp.txt

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PhoenixTemp24825.tmp.txt

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PhoenixTemp24825.tmp.txt

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PhoenixTemp24825.tmp.txt

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<211> 19
<212> DNA
<213> Artificial
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<220>
<223> adapter sequence added to gene specific primers for cloning
      purposes
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<400> 27
ggaattccag ctgaccacc 19
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<210> 28
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<212> DNA
<213> Artificial
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<220>
<223> adapter sequence added to gene specific primers for cloning
      purposes
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<400> 28
gatccccggg aattgcatg 20
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<210> 29
<211> 10
<212> DNA
<213> Artificial
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<220>
<223> adapter sequence added to gene specific primers for cloning
      purposes
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<400> 29
ttgctcttcc 10

<210> 30
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<220>
<223> adapter sequence added to gene specific primers for cloning purposes

<400> 30
ttgctcttcg 10

<210> 31
<211> 34
<212> DNA
<213> Artificial

<220>
<223> amplification of the targeting sequence of the gene FNR from Spinacia oleracea to generate targeting vectors

<400> 31
atagaattcg cataaactta tcttcatagt tgcc 34

<210> 32
<211> 27
<212> DNA
<213> Artificial

<220>
<223> amplification of the targeting sequence of the gene FNR from Spinacia oleracea to generate targeting vectors

<400> 32
atagaattca gaggcgatct gggccct 27

<210> 33
<211> 36
<212> DNA
<213> Artificial

<220>
<223> amplification of the targeting sequence of the gene FNR from Spinacia oleracea to generate targeting vectors

<400> 33
atagtttaaa cgcataaact tatcttcata gttgcc 36

<210> 34
<211> 34
<212> DNA
<213> Artificial

<220>
<223> amplification of the targeting sequence of the gene FNR from

PhoenixTemp24825.tmp.txt
Spinacia oleracea to generate targeting vectors

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<400> 34
ataccatgga agagcaagag gcgatctggg ccct 34

<210> 35
<211> 419
<212> DNA
<213> Spinacia oleracea

<400> 35
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ctctcctcct ttcatttctt attcttccaa tcatcgtact ccgccatgac caccgctgtc 180
accgccgctg tttctttccc ctctacaaa accacctctc tctccgcccg aagctcctcc 240
gtcatttccc ctgacaaaat cagctacaaa aaggtgattc ccaatttcac tgtgtttttt 300
attaataatt tgttattttg atgatgagat gattaatttg ggtgctgcag gttcctttgt 360
actacaggaa tgtatctgca actgggaaaa tgggacccat cagggcccg atcgctct 419

<210> 36
<211> 29
<212> DNA
<213> Artificial

<220>
<223> amplification of the targeting sequence of the gene IVD from
Arabidopsis thaliana to generate targeting vectors

<400> 36
atagaattca tgcagagggt tttctccgc 29

<210> 37
<211> 29
<212> DNA
<213> Artificial

<220>
<223> amplification of the targeting sequence of the gene IVD from
Arabidopsis thaliana to generate targeting vectors

<400> 37
atagaattcc gaagaacgag aagagaaag 29

<210> 38
<211> 31
<212> DNA
<213> Artificial

<220>
<223> amplification of the targeting sequence of the gene IVD from
Arabidopsis thaliana to generate targeting vectors

<400> 38
atagtttaaa catgcagagg tttttctccg c 31

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<210> 39
<211> 36
<212> DNA
<213> Artificial

<220>
<223> amplification of the targeting sequence of the gene IVD from
      Arabidopsis thaliana to generate targeting vectors

<400> 39
ataccatgga agagcaaagg agagacgaag aacgag 36

<210> 40
<211> 81
<212> DNA
<213> Arabidopsis thaliana

<400> 40
atgcagaggt ttttctccgc cagatcgatt ctcggttacg ccgtcaagac gcggaggagg 60
tctttctctt ctcggttcttc g 81

<210> 41
<211> 102
<212> DNA
<213> Artificial

<220>
<223> Signal sequence with adaptor

<220>
<221> CDS
<222> (1)..(102)

<400> 41
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Met Gln Arg Phe Phe Ser Ala Arg Ser Ile Leu Gly Tyr Ala Val Lys
1 5 10 15

acg cgg agg agg tct ttc tct tct cgt tct tcg gaa ttc cag ctg acc 96
Thr Arg Arg Arg Ser Phe Ser Ser Arg Ser Ser Glu Phe Gln Leu Thr
20 25 30

acc atg 102
Thr Met

<210> 42
<211> 34
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 42
Met Gln Arg Phe Phe Ser Ala Arg Ser Ile Leu Gly Tyr Ala Val Lys

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1 5 10 15

Thr Arg Arg Arg Ser Phe Ser Ser Arg Ser Ser Glu Phe Gln Leu Thr

20 25 30

Thr Met

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<210> 43
<211> 89
<212> DNA
<213> Arabidopsis thaliana
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<400> 43
atgcagaggt ttttctccgc cagatcgatt ctcggttacg ccgtcaagac gcggaggagg      60
tctttctctt ctcgttcttc gtctctcct                                     89
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<210>	44
<211>	102
<212>	DNA
<213>	Artificial

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<220>
<223> signal sequence with adaptor
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<220>
<221> CDS
<222> (1)..(102)
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[illegible]

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<210> 45
<211> 34
<212> PRT
<213> Artificial
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<220>
<223> Synthetic Construct

<400> 45

Met Gln Arg Phe Phe Ser Ala Arg Ser Ile Leu Gly Tyr Ala Val Lys
1 5 10 15

Thr Arg Arg Arg Ser Phe Ser Ser Arg Ser Ser Ser Leu Leu Cys Ser

20

25

30

Ser Met

<210> 46

<211> 62

<212> PRT

<213> Acetabularia mediterranea

<400> 46

Met Ala Ser Ile Met Met Asn Lys Ser Val Val Leu Ser Lys Glu Cys
 1 5 10 15

Ala Lys Pro Leu Ala Thr Pro Lys Val Thr Leu Asn Lys Arg Gly Phe
 20 25 30

Ala Thr Thr Ile Ala Thr Lys Asn Arg Glu Met Met Val Trp Gln Pro
 35 40 45

Phe Asn Asn Lys Met Phe Glu Thr Phe Ser Phe Leu Pro Pro
 50 55 60

<210> 47

<211> 90

<212> PRT

<213> Arabidopsis thaliana

<400> 47

Met Ala Ala Ser Leu Gln Ser Thr Ala Thr Phe Leu Gln Ser Ala Lys
 1 5 10 15

Ile Ala Thr Ala Pro Ser Arg Gly Ser Ser His Leu Arg Ser Thr Gln
 20 25 30

Ala Val Gly Lys Ser Phe Gly Leu Glu Thr Ser Ser Ala Arg Leu Thr
 35 40 45

Cys Ser Phe Gln Ser Asp Phe Lys Asp Phe Thr Gly Lys Cys Ser Asp
 50 55 60

Ala Val Lys Ile Ala Gly Phe Ala Leu Ala Thr Ser Ala Leu Val Val
 65 70 75 80

Ser Gly Ala Ser Ala Glu Gly Ala Pro Lys
 85 90

<210> 48

<211> 96

<212> PRT

<213> Arabidopsis thaliana

<400> 48

Met Ala Gln Val Ser Arg Ile Cys Asn Gly Val Gln Asn Pro Ser Leu
 1 5 10 15

Ile Cys Asn Leu Ser Lys Ser Ser Gln Arg Lys Ser Pro Leu Ser Val
 20 25 30

Ser Leu Lys Thr Gln Gln His Pro Arg Ala Tyr Pro Ile Ser Ser Ser
 35 40 45

Trp Gly Leu Lys Lys Ser Gly Met Thr Leu Ile Gly Ser Glu Leu Arg
 50 55 60

Pro Leu Lys Val Met Ser Ser Val Ser Thr Ala Glu Lys Ala Ser Glu
 65 70 75 80

Ile Val Leu Gln Pro Ile Arg Glu Ile Ser Gly Leu Ile Lys Leu Pro
 85 90 95

<210> 49

<211> 100

<212> PRT

<213> Arabidopsis thaliana

<400> 49

Met Ala Ala Ala Thr Thr Thr Thr Thr Thr Ser Ser Ser Ile Ser Phe
 1 5 10 15

Ser Thr Lys Pro Ser Pro Ser Ser Ser Lys Ser Pro Leu Pro Ile Ser
 20 25 30

Arg Phe Ser Leu Pro Phe Ser Leu Asn Pro Asn Lys Ser Ser Ser Ser
 35 40 45

Ser Arg Arg Arg Gly Ile Lys Ser Ser Ser Pro Ser Ser Ile Ser Ala
 50 55 60

Val Leu Asn Thr Thr Thr Asn Val Thr Thr Thr Pro Ser Pro Thr Lys
 65 70 75 80

Pro Thr Lys Pro Glu Thr Phe Ile Ser Arg Phe Ala Pro Asp Gln Pro
 85 90 95

Arg Lys Gly Ala
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<210> 50

<211> 46

<212> PRT

<213> Arabidopsis thaliana

<400> 50

Met Ile Thr Ser Ser Leu Thr Cys Ser Leu Gln Ala Leu Lys Leu Ser
 1 5 10 15

Ser Pro Phe Ala His Gly Ser Thr Pro Leu Ser Ser Leu Ser Lys Pro
 20 25 30

Asn Ser Phe Pro Asn His Arg Met Pro Ala Leu Val Pro Val
 35 40 45

<210> 51

<211> 93

<212> PRT

<213> Arabidopsis thaliana

<400> 51

Met Ala Ser Leu Leu Gly Thr Ser Ser Ser Ala Ile Trp Ala Ser Pro
 1 5 10 15

Ser Leu Ser Ser Pro Ser Ser Lys Pro Ser Ser Ser Pro Ile Cys Phe
 20 25 30

Arg Pro Gly Lys Leu Phe Gly Ser Lys Leu Asn Ala Gly Ile Gln Ile
 35 40 45

Arg Pro Lys Lys Asn Arg Ser Arg Tyr His Val Ser Val Met Asn Val
 50 55 60

Ala Thr Glu Ile Asn Ser Thr Glu Gln Val Val Gly Lys Phe Asp Ser
 65 70 75 80

Lys Lys Ser Ala Arg Pro Val Tyr Pro Phe Ala Ala Ile
 85 90

<210> 52

<211> 52

<212> PRT

<213> Arabidopsis thaliana

<400> 52

Met Ala Ser Thr Ala Leu Ser Ser Ala Ile Val Gly Thr Ser Phe Ile
 1 5 10 15

Arg Arg Ser Pro Ala Pro Ile Ser Leu Arg Ser Leu Pro Ser Ala Asn
 20 25 30

Thr Gln Ser Leu Phe Gly Leu Lys Ser Gly Thr Ala Arg Gly Gly Arg
 35 40 45

Val Val Ala Met
 50

<210> 53
 <211> 39
 <212> PRT
 <213> Arabidopsis thaliana

<400> 53

Met Ala Ala Ser Thr Met Ala Leu Ser Ser Pro Ala Phe Ala Gly Lys
 1 5 10 15

Ala Val Asn Leu Ser Pro Ala Ala Ser Glu Val Leu Gly Ser Gly Arg
 20 25 30

Val Thr Asn Arg Lys Thr Val
 35

<210> 54
 <211> 92
 <212> PRT
 <213> Arabidopsis thaliana

<400> 54

Met Ala Ala Ile Thr Ser Ala Thr Val Thr Ile Pro Ser Phe Thr Gly
 1 5 10 15

Leu Lys Leu Ala Val Ser Ser Lys Pro Lys Thr Leu Ser Thr Ile Ser
 20 25 30

Arg Ser Ser Ser Ala Thr Arg Ala Pro Pro Lys Leu Ala Leu Lys Ser
 35 40 45

Ser Leu Lys Asp Phe Gly Val Ile Ala Val Ala Thr Ala Ala Ser Ile
 50 55 60

Val Leu Ala Gly Asn Ala Met Ala Met Glu Val Leu Leu Gly Ser Asp
 65 70 75 80

Asp Gly Ser Leu Ala Phe Val Pro Ser Glu Phe Thr
 85 90

<210> 55
 <211> 85
 <212> PRT
 <213> Arabidopsis thaliana

<400> 55

PhoenixTemp24825.tmp.txt

Met Ala Ala Ala Val Ser Thr Val Gly Ala Ile Asn Arg Ala Pro Leu
1 5 10 15

Ser Leu Asn Gly Ser Gly Ser Gly Ala Val Ser Ala Pro Ala Ser Thr
20 25 30

Phe Leu Gly Lys Lys Val Val Thr Val Ser Arg Phe Ala Gln Ser Asn
35 40 45

Lys Lys Ser Asn Gly Ser Phe Lys Val Leu Ala Val Lys Glu Asp Lys
50 55 60

Gln Thr Asp Gly Asp Arg Trp Arg Gly Leu Ala Tyr Asp Thr Ser Asp
65 70 75 80

Asp Gln Ile Asp Ile
85

<210> 56
<211> 54
<212> PRT
<213> Arabidopsis thaliana

<400> 56

Met Lys Ser Ser Met Leu Ser Ser Thr Ala Trp Thr Ser Pro Ala Gln
1 5 10 15

Ala Thr Met Val Ala Pro Phe Thr Gly Leu Lys Ser Ser Ala Ser Phe
20 25 30

Pro Val Thr Arg Lys Ala Asn Asn Asp Ile Thr Ser Ile Thr Ser Asn
35 40 45

Gly Gly Arg Val Ser Cys
50

<210> 57
<211> 91
<212> PRT
<213> Arabidopsis thaliana

<400> 57

Met Ala Ala Ser Gly Thr Ser Ala Thr Phe Arg Ala Ser Val Ser Ser
1 5 10 15

Ala Pro Ser Ser Ser Ser Gln Leu Thr His Leu Lys Ser Pro Phe Lys
20 25 30

Ala Val Lys Tyr Thr Pro Leu Pro Ser Ser Arg Ser Lys Ser Ser Ser

35

40

45

Phe Ser Val Ser Cys Thr Ile Ala Lys Asp Pro Pro Val Leu Met Ala
 50 55 60

Ala Gly Ser Asp Pro Ala Leu Trp Gln Arg Pro Asp Ser Phe Gly Arg
 65 70 75 80

Phe Gly Lys Phe Gly Gly Lys Tyr Val Pro Glu
 85 90

<210> 58

<211> 80

<212> PRT

<213> Brassica campestris

<400> 58

Met Ser Thr Thr Phe Cys Ser Ser Val Cys Met Gln Ala Thr Ser Leu
 1 5 10 15

Ala Ala Thr Thr Arg Ile Ser Phe Gln Lys Pro Ala Leu Val Ser Thr
 20 25 30

Thr Asn Leu Ser Phe Asn Leu Arg Arg Ser Ile Pro Thr Arg Phe Ser
 35 40 45

Ile Ser Cys Ala Ala Lys Pro Glu Thr Val Glu Lys Val Ser Lys Ile
 50 55 60

Val Lys Lys Gln Leu Ser Leu Lys Asp Asp Gln Lys Val Val Ala Glu
 65 70 75 80

<210> 59

<211> 51

<212> PRT

<213> Brassica napus

<400> 59

Met Ala Thr Thr Phe Ser Ala Ser Val Ser Met Gln Ala Thr Ser Leu
 1 5 10 15

Ala Thr Thr Thr Arg Ile Ser Phe Gln Lys Pro Val Leu Val Ser Asn
 20 25 30

His Gly Arg Thr Asn Leu Ser Phe Asn Leu Ser Arg Thr Arg Leu Ser
 35 40 45

Ile Ser Cys
 50

<210> 60
 <211> 44
 <212> PRT
 <213> Chlamydomonas reinhardtii

<400> 60

Met Gln Ala Leu Ser Ser Arg Val Asn Ile Ala Ala Lys Pro Gln Arg
 1 5 10 15

Ala Gln Arg Leu Val Val Arg Ala Glu Glu Val Lys Ala Ala Pro Lys
 20 25 30

Lys Glu Val Gly Pro Lys Arg Gly Ser Leu Val Lys
 35 40

<210> 61
 <211> 51
 <212> PRT
 <213> Cucurbita moschata

<400> 61

Met Ala Glu Leu Ile Gln Asp Lys Glu Ser Ala Gln Ser Ala Ala Thr
 1 5 10 15

Ala Ala Ala Ala Ser Ser Gly Tyr Glu Arg Arg Asn Glu Pro Ala His
 20 25 30

Ser Arg Lys Phe Leu Glu Val Arg Ser Glu Glu Glu Leu Leu Ser Cys
 35 40 45

Ile Lys Lys
 50

<210> 62
 <211> 62
 <212> PRT
 <213> Spinacea oleracea

<400> 62

Met Ser Thr Ile Asn Gly Cys Leu Thr Ser Ile Ser Pro Ser Arg Thr
 1 5 10 15

Gln Leu Lys Asn Thr Ser Thr Leu Arg Pro Thr Phe Ile Ala Asn Ser
 20 25 30

Arg Val Asn Pro Ser Ser Ser Val Pro Pro Ser Leu Ile Arg Asn Gln
 35 40 45

Pro Val Phe Ala Ala Pro Ala Pro Ile Ile Thr Pro Thr Leu
 50 55 60

<210> 63
 <211> 75
 <212> PRT
 <213> Spinacea oleracea

<400> 63

Met Thr Thr Ala Val Thr Ala Ala Val Ser Phe Pro Ser Thr Lys Thr
 1 5 10 15

Thr Ser Leu Ser Ala Arg Cys Ser Ser Val Ile Ser Pro Asp Lys Ile
 20 25 30

Ser Tyr Lys Lys Val Pro Leu Tyr Tyr Arg Asn Val Ser Ala Thr Gly
 35 40 45

Lys Met Gly Pro Ile Arg Ala Gln Ile Ala Ser Asp Val Glu Ala Pro
 50 55 60

Pro Pro Ala Pro Ala Lys Val Glu Lys Met Ser
 65 70 75

<210> 64
 <211> 55
 <212> PRT
 <213> Spinacea oleracea

<400> 64

Met Thr Thr Ala Val Thr Ala Ala Val Ser Phe Pro Ser Thr Lys Thr
 1 5 10 15

Thr Ser Leu Ser Ala Arg Ser Ser Ser Val Ile Ser Pro Asp Lys Ile
 20 25 30

Ser Tyr Lys Lys Val Pro Leu Tyr Tyr Arg Asn Val Ser Ala Thr Gly
 35 40 45

Lys Met Gly Pro Ile Arg Ala
 50 55

<210> 65
 <211> 951
 <212> DNA
 <213> Escherichia coli

<220>
 <221> CDS
 <222> (1)..(951)

<400> 65
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PhoenixTemp24825.tmp.txt

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Val	Ser	Gly	Thr	Ser	Leu	Ile	Ser	Ser	Leu	Tyr	Gly	Asp	Ser	Leu	Ser	
			20					25					30			
cat	cgt	ggg	ggg	gaa	atc	tgg	ttg	ggg	agt	ctg	gct	gct	ttg	ctg	gaa	144
His	Arg	Gly	Gly	Glu	Ile	Trp	Leu	Gly	Ser	Leu	Ala	Ala	Leu	Leu	Glu	
		35					40					45				
ggg	ctg	gga	ttt	ggg	gag	cgt	ttc	gtg	cgc	acc	gct	ttg	ttt	cgt	ctt	192
Gly	Leu	Gly	Phe	Gly	Glu	Arg	Phe	Val	Arg	Thr	Ala	Leu	Phe	Arg	Leu	
	50					55				60						
aat	aaa	gaa	ggc	tgg	ctg	gat	gtt	tcc	cgc	atc	ggg	cga	cgc	agt	ttc	240
Asn	Lys	Glu	Gly	Trp	Leu	Asp	Val	Ser	Arg	Ile	Gly	Arg	Arg	Ser	Phe	
	65				70					75					80	
tat	agc	ctc	agt	gat	aaa	ggc	ttg	cgc	ctg	acg	cga	cgg	gca	gaa	agt	288
Tyr	Ser	Leu	Ser	Asp	Lys	Gly	Leu	Arg	Leu	Thr	Arg	Arg	Ala	Glu	Ser	
			85					90					95			
aaa	att	tat	cgc	gca	gag	caa	cct	gca	tgg	gat	ggg	aaa	tgg	ctc	ctg	336
Lys	Ile	Tyr	Arg	Ala	Glu	Gln	Pro	Ala	Trp	Asp	Gly	Lys	Trp	Leu	Leu	
			100				105						110			
ttg	ctc	tcg	gaa	ggg	tta	gat	aaa	tca	acg	ctg	gct	gat	gtc	aaa	aag	384
Leu	Leu	Ser	Glu	Gly	Leu	Asp	Lys	Ser	Thr	Leu	Ala	Asp	Val	Lys	Lys	
		115					120					125				
cag	ttg	atc	tgg	caa	ggg	ttt	ggc	gca	ctg	gca	ccc	agc	ctg	atg	gca	432
Gln	Leu	Ile	Trp	Gln	Gly	Phe	Gly	Ala	Leu	Ala	Pro	Ser	Leu	Met	Ala	
	130				135					140						
tcg	ccg	tcg	caa	aaa	ctg	gcc	gat	gta	cag	aca	ctt	ttg	cat	gaa	gcg	480
Ser	Pro	Ser	Gln	Lys	Leu	Ala	Asp	Val	Gln	Thr	Leu	Leu	His	Glu	Ala	
	145			150					155					160		
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Gly	Val	Ala	Asp	Asn	Val	Ile	Cys	Phe	Glu	Ala	Gln	Ile	Pro	Leu	Ala	
				165				170						175		
ctt	tct	cgc	gca	gca	ctg	cgt	gcc	aga	gta	gaa	gag	tgc	tgg	cat	tta	576
Leu	Ser	Arg	Ala	Ala	Leu	Arg	Ala	Arg	Val	Glu	Glu	Cys	Trp	His	Leu	
			180				185					190				
act	gaa	caa	aat	gcc	atg	tac	gaa	acc	ttt	att	cag	tca	ttc	cgc	ccg	624
Thr	Glu	Gln	Asn	Ala	Met	Tyr	Glu	Thr	Phe	Ile	Gln	Ser	Phe	Arg	Pro	
		195					200					205				
ctg	gtg	ccg	ctt	tta	aaa	gag	gcg	gca	gac	gag	tta	acc	ccg	gag	cgg	672
Leu	Val	Pro	Leu	Leu	Lys	Glu	Ala	Ala	Asp	Glu	Leu	Thr	Pro	Glu	Arg	
	210				215					220						
gca	ttt	cat	att	cag	ctt	tta	ctg	atc	cat	ttt	tat	cgc	cgt	gtc	gtc	720
Ala	Phe	His	Ile	Gln	Leu	Leu	Leu	Ile	His	Phe	Tyr	Arg	Arg	Val	Val	
	225				230				235					240		
ctt	aaa	gac	cca	ttg	ttg	ccg	gag	gag	ttg	ctt	ccg	gca	cac	tgg	gca	768
Leu	Lys	Asp	Pro	Leu	Leu	Pro	Glu	Glu	Leu	Leu	Pro	Ala	His	Trp	Ala	
				245				250						255		
ggg	cat	acg	gcg	cgt	cag	ctg	tgt	atc	aac	att	tat	cag	cgc	gta	gcg	816
Gly	His	Thr	Ala	Arg	Gln	Leu	Cys	Ile	Asn	Ile	Tyr	Gln	Arg	Val	Ala	
			260				265					270				
cct	gct	gct	tta	gcg	ttc	gtt	agt	gaa	aaa	ggg	gaa	acc	tcg	gtc	ggg	864
Pro	Ala	Ala	Leu	Ala	Phe	Val	Ser	Glu	Lys	Gly	Glu	Thr	Ser	Val	Gly	
		275					280					285				
gaa	ctg	cct	gcg	ccg	gga	agc	ctg	tat	ttt	caa	cgt	ttt	ggc	ggc	ttg	912
Glu	Leu	Pro	Ala	Pro	Gly	Ser	Leu	Tyr	Phe	Gln	Arg	Phe	Gly	Gly	Leu	
	290				295					300						
aat	att	gaa	cag	gag	gcg	tta	tgc	caa	ttt	atc	aga	taa				951
Asn	Ile	Glu	Gln	Glu	Ala	Leu	Cys	Gln	Phe	Ile	Arg					
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<210> 66

<211> 316

<212> PRT

<213> Escherichia coli

<400> 66

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      20      25      30
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      35      40      45
Gly Leu Gly Phe Gly Glu Arg Phe Val Arg Thr Ala Leu Phe Arg Leu
      50      55      60
Asn Lys Glu Gly Trp Leu Asp Val Ser Arg Ile Gly Arg Arg Ser Phe
65      70      75      80
Tyr Ser Leu Ser Asp Lys Gly Leu Arg Leu Thr Arg Arg Ala Glu Ser
      85      90      95
Lys Ile Tyr Arg Ala Glu Gln Pro Ala Trp Asp Gly Lys Trp Leu Leu
      100     105     110
Leu Leu Ser Glu Gly Leu Asp Lys Ser Thr Leu Ala Asp Val Lys Lys
      115     120     125
Gln Leu Ile Trp Gln Gly Phe Gly Ala Leu Ala Pro Ser Leu Met Ala
      130     135     140
Ser Pro Ser Gln Lys Leu Ala Asp Val Gln Thr Leu Leu His Glu Ala
145      150     155     160
Gly Val Ala Asp Asn Val Ile Cys Phe Glu Ala Gln Ile Pro Leu Ala
      165     170     175
Leu Ser Arg Ala Ala Leu Arg Ala Arg Val Glu Glu Cys Trp His Leu
      180     185     190
Thr Glu Gln Asn Ala Met Tyr Glu Thr Phe Ile Gln Ser Phe Arg Pro
      195     200     205
Leu Val Pro Leu Leu Lys Glu Ala Ala Asp Glu Leu Thr Pro Glu Arg
      210     215     220
Ala Phe His Ile Gln Leu Leu Leu Ile His Phe Tyr Arg Arg Val Val
225      230     235     240
Leu Lys Asp Pro Leu Leu Pro Glu Glu Leu Leu Pro Ala His Trp Ala
      245     250     255
Gly His Thr Ala Arg Gln Leu Cys Ile Asn Ile Tyr Gln Arg Val Ala
      260     265     270
Pro Ala Ala Leu Ala Phe Val Ser Glu Lys Gly Glu Thr Ser Val Gly
      275     280     285
Glu Leu Pro Ala Pro Gly Ser Leu Tyr Phe Gln Arg Phe Gly Gly Leu
      290     295     300
Asn Ile Glu Gln Glu Ala Leu Cys Gln Phe Ile Arg
305      310     315

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<210> 67

<211> 897

<212> DNA

<213> Bacillus halodurans C-125

<220>

<221> CDS

<222> (1)..(897)

<223> transl_table=11

<400> 67

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gat tat att cgt cac tat gga aat gtg ata tgg att ggt agc tta att      96
Asp Tyr Ile Arg His Tyr Gly Asn Val Ile Trp Ile Gly Ser Leu Ile
      20      25      30
cgt ttt ttg cag gag ttc ggc cat aac gag caa tcc gtt cgt gca gcg      144
Arg Phe Leu Gln Glu Phe Gly His Asn Glu Gln Ser Val Arg Ala Ala
      35      40      45
gtt tca cga atg agc aag caa ggt tgg att cag tcg gaa aaa aaa ggg      192

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PhoenixTemp24825.tmp.txt

Val	Ser	Arg	Met	Ser	Lys	Gln	Gly	Trp	Ile	Gln	Ser	Glu	Lys	Lys	Gly		
50						55					60						
aac	aaa	agc	tac	tat	tcc	ctc	acc	gat	cag	ggc	cga	aaa	cga	atg	gct	240	
Asn	Lys	Ser	Tyr	Tyr	Ser	Leu	Thr	Asp	Gln	Gly	Arg	Lys	Arg	Met	Ala		
65					70					75					80		
gaa	gcc	gca	caa	cgg	att	tac	aaa	cta	gaa	gcc	ccc	tct	tggt	gac	gaa	288	
Glu	Ala	Ala	Gln	Arg	Ile	Tyr	Lys	Leu	Glu	Ala	Pro	Ser	Trp	Asp	Glu		
				85				90						95			
aag	tggt	cgt	ttg	ttg	att	tac	tca	atc	ccg	gag	gaa	aaa	cga	agc	tta	336	
Lys	Trp	Arg	Leu	Leu	Ile	Tyr	Ser	Ile	Pro	Glu	Glu	Lys	Arg	Ser	Leu		
			100				105						110				
cgg	gat	gaa	ctg	cgg	aaa	gag	ctc	gtt	tggt	agt	gggt	ttt	gga	ctt	tta	384	
Arg	Asp	Glu	Leu	Arg	Lys	Glu	Leu	Val	Trp	Ser	Gly	Phe	Gly	Leu	Leu		
		115				120						125					
gcg	aat	agt	tgc	tggt	att	acc	ccg	aac	cca	ttg	gaa	gaa	caa	gtt	gaa	432	
Ala	Asn	Ser	Cys	Trp	Ile	Thr	Pro	Asn	Pro	Leu	Glu	Glu	Gln	Val	Glu		
					135					140							
aca	ctg	atc	gaa	aaa	tat	gag	att	tcc	ccc	tac	gtc	cat	ttt	ttc	tgc	480	
Thr	Leu	Ile	Glu	Lys	Tyr	Glu	Ile	Ser	Pro	Tyr	Val	His	Phe	Phe	Cys		
145					150					155					160		
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Ala	Asp	Tyr	Arg	Gly	Met	Gly	Glu	Pro	Lys	Thr	Leu	Ile	Glu	Lys	Cys		
				165				170						175			
tggt	gat	cta	gat	gaa	att	aat	gaa	aag	tat	tta	gct	ttt	atc	caa	aag	576	
Trp	Asp	Leu	Asp	Glu	Ile	Asn	Glu	Lys	Tyr	Leu	Ala	Phe	Ile	Gln	Lys		
			180					185					190				
tac	agc	cag	aaa	tat	gtg	att	gat	aag	aac	aaa	att	gaa	aaa	gga	gaa	624	
Tyr	Ser	Gln	Lys	Tyr	Val	Ile	Asp	Lys	Asn	Lys	Ile	Glu	Lys	Gly	Glu		
			195				200					205					
atg	agt	gat	ggg	gcc	tgc	ttt	gtt	gag	cgg	aca	ttg	ctc	gtc	cac	gaa	672	
Met	Ser	Asp	Gly	Ala	Cys	Phe	Val	Glu	Arg	Thr	Leu	Leu	Val	His	Glu		
					215					220							
tat	cgt	aaa	ttc	ctt	ttt	att	gat	ccg	gggt	ctt	ccg	caa	gag	ctc	tta	720	
Tyr	Arg	Lys	Phe	Leu	Phe	Ile	Asp	Pro	Gly	Leu	Pro	Gln	Glu	Leu	Leu		
225					230					235					240		
cct	gaa	aaa	tggt	tta	gggt	gat	tca	gct	gcc	cat	ctg	ttt	gcc	gat	tat	768	
Pro	Glu	Lys	Trp	Leu	Gly	Asp	Ser	Ala	Ala	His	Leu	Phe	Ala	Asp	Tyr		
				245				250						255			
tat	cgc	acc	ctt	gcc	gaa	ccg	gcg	aga	cgc	ttt	ttt	gaa	tct	gtc	ttt	816	
Tyr	Arg	Thr	Leu	Ala	Glu	Pro	Ala	Arg	Arg	Phe	Phe	Glu	Ser	Val	Phe		
				260				265					270				
gca	gag	ggc	aac	tct	cta	gta	aaa	aag	gat	aag	gaa	tac	aat	ttc	ctt	864	
Ala	Glu	Gly	Asn	Ser	Leu	Val	Lys	Lys	Asp	Lys	Glu	Tyr	Asn	Phe	Leu		
		275					280					285					
gac	cat	ccg	ttt	atg	tcc	gaa	agc	caa	tca	tag						897	
Asp	His	Pro	Phe	Met	Ser	Glu	Ser	Gln	Ser								
						295											
290																	

<210> 68

<211> 298

<212> PRT

<213> Bacillus halodurans C-125

<400> 68

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

Glu	Ala	Ala	Gln	Arg	Ile	Tyr	Lys	Leu	Glu	Ala	Pro	Ser	Trp	Asp	Glu
				85					90					95	
Lys	Trp	Arg	Leu	Leu	Ile	Tyr	Ser	Ile	Pro	Glu	Glu	Lys	Arg	Ser	Leu
			100					105					110		
Arg	Asp	Glu	Leu	Arg	Lys	Glu	Leu	Val	Trp	Ser	Gly	Phe	Gly	Leu	Leu
		115					120					125			
Ala	Asn	Ser	Cys	Trp	Ile	Thr	Pro	Asn	Pro	Leu	Glu	Glu	Gln	Val	Glu
	130					135					140				
Thr	Leu	Ile	Glu	Lys	Tyr	Glu	Ile	Ser	Pro	Tyr	Val	His	Phe	Phe	Cys
145				150						155					160
Ala	Asp	Tyr	Arg	Gly	Met	Gly	Glu	Pro	Lys	Thr	Leu	Ile	Glu	Lys	Cys
				165					170					175	
Trp	Asp	Leu	Asp	Glu	Ile	Asn	Glu	Lys	Tyr	Leu	Ala	Phe	Ile	Gln	Lys
			180					185					190		
Tyr	Ser	Gln	Lys	Tyr	Val	Ile	Asp	Lys	Asn	Lys	Ile	Glu	Lys	Gly	Glu
		195					200					205			
Met	Ser	Asp	Gly	Ala	Cys	Phe	Val	Glu	Arg	Thr	Leu	Leu	Val	His	Glu
	210					215					220				
Tyr	Arg	Lys	Phe	Leu	Phe	Ile	Asp	Pro	Gly	Leu	Pro	Gln	Glu	Leu	Leu
225				230						235					240
Pro	Glu	Lys	Trp	Leu	Gly	Asp	Ser	Ala	Ala	His	Leu	Phe	Ala	Asp	Tyr
				245					250					255	
Tyr	Arg	Thr	Leu	Ala	Glu	Pro	Ala	Arg	Arg	Phe	Phe	Glu	Ser	Val	Phe
			260					265					270		
Ala	Glu	Gly	Asn	Ser	Leu	Val	Lys	Lys	Asp	Lys	Glu	Tyr	Asn	Phe	Leu
		275					280					285			
Asp	His	Pro	Phe	Met	Ser	Glu	Ser	Gln	Ser						
	290					295									

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<210> 69
<211> 801
<212> DNA
<213> Sulfolobus solfataricus P2
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<220>  
<221> CDS  
<222> (1)..(801)  
<223> transl table=11
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Thr Trp Ile Ser Pro Asn Pro Ile Glu Asp Thr Leu Arg Lys Phe Ile
130      135      140
aat gat ctc tac aac tcg acc aat agc gtg aag gta gac att ttt gtg      480
Asn Asp Leu Tyr Asn Ser Thr Asn Ser Val Lys Val Asp Ile Phe Val
145      150      155      160
gca gat tat tta gat caa cct aat cat ttg gta gaa aga tgt tgg aat      528
Ala Asp Tyr Leu Asp Gln Pro Asn His Leu Val Glu Arg Cys Trp Asn
165      170      175
tta gtt gaa gtc gaa caa gct tac aag tct ttt tta gaa gaa tgg tct      576
Leu Val Glu Val Glu Gln Ala Tyr Lys Ser Phe Leu Glu Glu Trp Ser
180      185      190
cca atg ctt aaa aag gtc aac tcc atg aaa agt aat gaa gcg ttt gta      624
Pro Met Leu Lys Lys Val Asn Ser Met Lys Ser Asn Glu Ala Phe Val
195      200      205
act agg ata gaa tta gtc cat gaa tat aga aaa ttt cta aat ata gac      672
Thr Arg Ile Glu Leu Val His Glu Tyr Arg Lys Phe Leu Asn Ile Asp
210      215      220
cct gat tta cca gaa gat tta ttg ccc cag aat tgg ata ggt tat aag      720
Pro Asp Leu Pro Glu Asp Leu Leu Pro Gln Asn Trp Ile Gly Tyr Lys
225      230      235      240
gca tat gac ctc ttc atg aaa ctg aga gag gaa tta aca cca aag gca      768
Ala Tyr Asp Leu Phe Met Lys Leu Arg Glu Glu Leu Thr Pro Lys Ala
245      250      255
aat gag ttc ttt tac aag gtg tat gag cca taa      801
Asn Glu Phe Phe Tyr Lys Val Tyr Glu Pro
260      265

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<210> 70

<211> 266

<212> PRT

<213> Sulfolobus solfataricus P2

<400> 70

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Met Lys Ile Gln Ser Leu Phe Phe Thr Leu Tyr Gly Asp Tyr Ile Lys
1      5      10      15
Asp Ala Gly Gly Thr Ile Ser Ser Lys Ser Leu Ile Ile Ile Leu Lys
20      25      30
Glu Phe Gly Phe Ser Glu Gly Ala Ile Arg Ala Gly Leu His Arg Met
35      40      45
Lys Lys Ala Gly Leu Ile Val Ser Glu Arg Gly Lys Asp Lys Lys Ile
50      55      60
Arg Tyr Lys Leu Ser Glu Lys Gly Leu Leu Arg Leu Leu Glu Gly Thr
65      70      75      80
Arg Arg Val Tyr Glu Lys Thr Arg Arg Arg Trp Asp Gly Lys Trp Arg
85      90      95
Ile Val Val Tyr Asn Ile Pro Glu Asn Asn Arg Glu Val Arg Asp Arg
100      105      110
Leu Arg Arg Glu Leu Lys Trp Leu Gly Phe Gly Met Leu Ala Gln Ser
115      120      125
Thr Trp Ile Ser Pro Asn Pro Ile Glu Asp Thr Leu Arg Lys Phe Ile
130      135      140
Asn Asp Leu Tyr Asn Ser Thr Asn Ser Val Lys Val Asp Ile Phe Val
145      150      155      160
Ala Asp Tyr Leu Asp Gln Pro Asn His Leu Val Glu Arg Cys Trp Asn
165      170      175
Leu Val Glu Val Glu Gln Ala Tyr Lys Ser Phe Leu Glu Glu Trp Ser
180      185      190
Pro Met Leu Lys Lys Val Asn Ser Met Lys Ser Asn Glu Ala Phe Val
195      200      205
Thr Arg Ile Glu Leu Val His Glu Tyr Arg Lys Phe Leu Asn Ile Asp
210      215      220
Pro Asp Leu Pro Glu Asp Leu Leu Pro Gln Asn Trp Ile Gly Tyr Lys
225      230      235      240

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PhoenixTemp24825.tmp.txt

Ala Tyr Asp Leu Phe Met Lys Leu Arg Glu Glu Leu Thr Pro Lys Ala
 245 250 255
 Asn Glu Phe Phe Tyr Lys Val Tyr Glu Pro
 260 265

<210> 71

<211> 801

<212> DNA

<213> Sulfolobus solfataricus P2

<220>

<221> CDS

<222> (1)..(801)

<223> transl_table=11

<400> 71

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1 5 10 15	
gat tct gga gga acg ata agt tct aaa agt cta atc gta atc ttt aag	96
Asp Ser Gly Gly Thr Ile Ser Ser Lys Ser Leu Ile Val Ile Phe Lys	
20 25 30	
gaa ttt gga ttt tcc gaa gga gca ata agg gca gga tta cat aga atg	144
Glu Phe Gly Phe Ser Glu Gly Ala Ile Arg Ala Gly Leu His Arg Met	
35 40 45	
aag aaa gca gga ctt ata gta gga ata aaa gga gaa aat agg aaa gtt	192
Lys Lys Ala Gly Leu Ile Val Gly Ile Lys Gly Glu Asn Arg Lys Val	
50 55 60	
agc tac aaa tta tca gaa aaa ggt atg cta aga tta ttg gaa gga act	240
Ser Tyr Lys Leu Ser Glu Lys Gly Met Leu Arg Leu Leu Glu Gly Thr	
65 70 75 80	
agg agg gtt tat gaa aaa gtt agg aga aga tgg gat aat aag tgg agg	288
Arg Arg Val Tyr Glu Lys Val Arg Arg Arg Trp Asp Asn Lys Trp Arg	
85 90 95	
ata gta gta tat aat atc cca gag aac aat aga gaa cta aga gat aag	336
Ile Val Val Tyr Asn Ile Pro Glu Asn Asn Arg Glu Leu Arg Asp Lys	
100 105 110	
tta agg aga gag ctg aag tgg ctt gga ttt ggt atg tta gcg caa tcg	384
Leu Arg Arg Glu Leu Lys Trp Leu Gly Phe Gly Met Leu Ala Gln Ser	
115 120 125	
acg tgg atc tca cca aac cca att gaa gat acc tta aag aat ttc att	432
Thr Trp Ile Ser Pro Asn Pro Ile Glu Asp Thr Leu Lys Asn Phe Ile	
130 135 140	
aac gat cac tat ggt tca tct aat ggt ata caa gta gac att ttc gtt	480
Asn Asp His Tyr Gly Ser Ser Asn Gly Ile Gln Val Asp Ile Phe Val	
145 150 155 160	
gca aat tat cta gga gaa cct aag gga cta gta gaa aaa tgt tgg aat	528
Ala Asn Tyr Leu Gly Glu Pro Lys Gly Leu Val Glu Lys Cys Trp Asn	
165 170 175	
tta tct gaa gtt gaa caa gct tat aga gcg ttc tta gaa aaa tgg act	576
Leu Ser Glu Val Glu Gln Ala Tyr Arg Ala Phe Leu Glu Lys Trp Thr	
180 185 190	
gga gta cta gaa aag gta agt agt cta aaa agt aat gag gcg ttc gta	624
Gly Val Leu Glu Lys Val Ser Ser Leu Lys Ser Asn Glu Ala Phe Val	
195 200 205	
act agg ata cta ctt gtc cac gaa tat aga aaa ttt tta aac att gat	672
Thr Arg Ile Leu Leu Val His Glu Tyr Arg Lys Phe Leu Asn Ile Asp	
210 215 220	
cca gat tta cct gag gat tta tta cct cca aat tgg ata ggg tat aca	720
Pro Asp Leu Pro Glu Asp Leu Leu Pro Pro Asn Trp Ile Gly Tyr Thr	
225 230 235 240	
gca tat gat cta ttt atg aaa tta agg gag gaa ctt act cct aag gct	768
Ala Tyr Asp Leu Phe Met Lys Leu Arg Glu Glu Leu Thr Pro Lys Ala	
245 250 255	

PhoenixTemp24825.tmp.txt

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      35      40      45
ggc aac ctg atc gag atc tgc gcg ggc gtc ggt atc agc gag acg ctt 192
Gly Asn Leu Ile Glu Ile Cys Ala Gly Val Gly Ile Ser Glu Thr Leu
      50      55      60
gtg aga acc gcc gtg tcc cgt ctc gtc gcc gcc ggc cag ctc gcc gga 240
Val Arg Thr Ala Val Ser Arg Leu Val Ala Ala Gly Gln Leu Ala Gly
      65      70      75      80
gag cgg gag gga cgg cgc agc ttc tat cgg ctg acg gat gcc gca cgc 288
Glu Arg Glu Gly Arg Arg Ser Phe Tyr Arg Leu Thr Asp Ala Ala Arg
      85      90      95
gcg gaa ttc gcc gcg gcg gcg cgg gtg atc ttc gga ccg ccg gag gaa 336
Ala Glu Phe Ala Ala Ala Arg Val Ile Phe Gly Pro Pro Glu Glu
      100      105      110
gcg agc tgg cac ttc gtg cag ctg atg ggt tgc tgc gcc gag gag cgg 384
Ala Ser Trp His Phe Val Gln Leu Met Gly Ser Ser Ala Glu Glu Arg
      115      120      125
atg cag atg ctc gag cgc tcc ggc cat gcg cgg ctg ggc ccc cgg ctc 432
Met Gln Met Leu Glu Arg Ser Gly His Ala Arg Leu Gly Pro Arg Leu
      130      135      140
gcg gtc ggc gtg cgg ccg ttc ccg agc gcg atc atg ccc gcc gtg gtc 480
Ala Val Gly Val Arg Pro Phe Pro Ser Ala Ile Met Pro Ala Val Val
      145      150      155      160
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Phe Arg Ala Glu Pro Ala Gln Gly Ala Ser Glu Leu Lys Ala Phe Ala
      165      170      175
tcg ggc tgt tgg gac ctc gga cct cac gcg cag gca tac cgg cgg ttt 576
Ser Gly Cys Trp Asp Leu Gly Pro His Ala Gln Ala Tyr Arg Arg Phe
      180      185      190
ctc gcc tgc ttc ggc aag ctc gcc gtt ctt ccg gat acc gct agg gcg 624
Leu Ala Cys Phe Gly Lys Leu Ala Val Leu Pro Asp Thr Ala Arg Ala
      195      200      205
att gct ccc gcc gag tgc ctt tct gca cgc ctc ctc atg gta cac cag 672
Ile Ala Pro Ala Glu Cys Leu Ser Ala Arg Leu Leu Met Val His Gln
      210      215      220
ttc cgc ttc gtt acg ctc cgc gag ccg cgc ctg ccg gcc gag att ctg 720
Phe Arg Phe Val Thr Leu Arg Glu Pro Arg Leu Pro Ala Glu Ile Leu
      225      230      235      240
ccc gct gat tgg cca ggc gac gaa gcc cgc cgc ctg ttt gcc cgg ctg 768
Pro Ala Asp Trp Pro Gly Asp Glu Ala Arg Arg Leu Phe Ala Arg Leu
      245      250      255
tac cgc agc ctg tct ccc cag gcg gac ctg cat gtc gcg cgg aac tgc 816
Tyr Arg Ser Leu Ser Pro Gln Ala Asp Leu His Val Ala Arg Asn Cys
      260      265      270
gtc acg ctt acg ggt ccg ctg ccg aag gcg acc ggg gcg acg gag cat 864
Val Thr Leu Thr Gly Pro Leu Pro Lys Ala Thr Gly Ala Thr Glu His
      275      280      285
cgg ctt cga atg ctg tgc ggt gaa gct gcg cct ggg aaa tcc ggc aac 912
Arg Leu Arg Met Leu Cys Gly Glu Ala Ala Pro Gly Lys Ser Gly Asn
      290      295      300
ccc gtt taa 921
Pro Val
305

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<210> 74

<211> 306

<212> PRT

<213> Sinorhizobium meliloti 1021

<400> 74

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      20      25      30
Thr Ile Tyr Gly Asp Val Val Glu Pro Arg Gly Gly Ala Ile Trp Ile

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PhoenixTemp24825.tmp.txt

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 50 55 60
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 65 70 75 80
 Glu Arg Glu Gly Arg Arg Ser Phe Tyr Arg Leu Thr Asp Ala Ala Arg
 85 90 95
 Ala Glu Phe Ala Ala Ala Ala Arg Val Ile Phe Gly Pro Pro Glu Glu
 100 105 110
 Ala Ser Trp His Phe Val Gln Leu Met Gly Ser Ser Ala Glu Glu Arg
 115 120 125
 Met Gln Met Leu Glu Arg Ser Gly His Ala Arg Leu Gly Pro Arg Leu
 130 135 140
 Ala Val Gly Val Arg Pro Phe Pro Ser Ala Ile Met Pro Ala Val Val
 145 150 155 160
 Phe Arg Ala Glu Pro Ala Gln Gly Ala Ser Glu Leu Lys Ala Phe Ala
 165 170 175
 Ser Gly Cys Trp Asp Leu Gly Pro His Ala Gln Ala Tyr Arg Arg Phe
 180 185 190
 Leu Ala Cys Phe Gly Lys Leu Ala Val Leu Pro Asp Thr Ala Arg Ala
 195 200 205
 Ile Ala Pro Ala Glu Cys Leu Ser Ala Arg Leu Leu Met Val His Gln
 210 215 220
 Phe Arg Phe Val Thr Leu Arg Glu Pro Arg Leu Pro Ala Glu Ile Leu
 225 230 235 240
 Pro Ala Asp Trp Pro Gly Asp Glu Ala Arg Arg Leu Phe Ala Arg Leu
 245 250 255
 Tyr Arg Ser Leu Ser Pro Gln Ala Asp Leu His Val Ala Arg Asn Cys
 260 265 270
 Val Thr Leu Thr Gly Pro Leu Pro Lys Ala Thr Gly Ala Thr Glu His
 275 280 285
 Arg Leu Arg Met Leu Cys Gly Glu Ala Ala Pro Gly Lys Ser Gly Asn
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 Pro Val
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<210> 75

<211> 846

<212> DNA

<213> Streptomyces coelicolor A3(2)

<220>

<221> CDS

<222> (1)..(846)

<223> transl_table=11

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atc gtc acg ctc tac ggc gcg tac ggc cgc tgc gcg ccg ggc ccg gtg	96
Ile Val Thr Leu Tyr Gly Ala Tyr Gly Arg Cys Ala Pro Gly Pro Val	
20 25 30	
ccc gtc gcc gaa ctg atc cgg ctg ctg gcc gcg gtc ggg gtg gac gcg	144
Pro Val Ala Glu Leu Ile Arg Leu Leu Ala Ala Val Gly Val Asp Ala	
35 40 45	
ccc tcc gtg cgt tcg tcg gtg tcc cgg ctg aaa cgg cgc ggg ctg ctg	192
Pro Ser Val Arg Ser Ser Val Ser Arg Leu Lys Arg Arg Gly Leu Leu	
50 55 60	
ctg ccc gcc cgt acg gcc gcc ggc gcg gcg ggg tac gaa ctc tcc gcc	240
Leu Pro Ala Arg Thr Ala Ala Gly Ala Ala Gly Tyr Glu Leu Ser Ala	
65 70 75 80	
gag gcc cgc cag ttg ctc gac gac ggg gac cgg cgc gtc tac gcc acc	288
Glu Ala Arg Gln Leu Leu Asp Asp Gly Asp Arg Arg Val Tyr Ala Thr	

PhoenixTemp24825.tmp.txt

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gag	tcg	gag	cgg	cag	aag	cgg	cac	gtc	ctg	cgt	tcg	cgc	ctg	gcc	ggt	384									
Glu	Ser	Glu	Arg	Gln	Lys	Arg	His	Val	Leu	Arg	Ser	Arg	Leu	Ala	Gly										
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ctc	ggc	ttc	ggc	acc	gcg	gcg	ccc	ggt	gtg	tgg	atc	gcc	ccg	gcc	cgg	432									
Leu	Gly	Phe	Gly	Thr	Ala	Ala	Pro	Gly	Val	Trp	Ile	Ala	Pro	Ala	Arg										
130															140										
ctg	tac	gcg	gag	acc	cgg	cac	acc	ctg	ggc	cgc	ctc	ggt	ctg	gac	tcc	480									
Leu	Tyr	Ala	Glu	Thr	Arg	His	Thr	Leu	Gly	Arg	Leu	Gly	Leu	Asp	Ser										
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tac	gtg	gac	ttc	ttc	cgc	ggt	gag	cac	ctg	ggc	ttc	acg	gcc	acc	gcc	528									
Tyr	Val	Asp	Phe	Phe	Arg	Gly	Glu	His	Leu	Gly	Phe	Thr	Ala	Thr	Ala										
165															175										
gag	gcg	gtg	gcc	cgc	tgg	tgg	gac	ctg	gcc	gcg	atc	gcc	aag	gag	cac	576									
Glu	Ala	Val	Ala	Arg	Trp	Trp	Asp	Leu	Ala	Ala	Ile	Ala	Lys	Glu	His										
180															190										
gag	gcc	ttc	ctc	gac	cgc	cac	gag	cgc	gtc	ctg	cac	gac	tgg	gag	cgc	624									
Glu	Ala	Phe	Leu	Asp	Arg	His	Glu	Arg	Val	Leu	His	Asp	Trp	Glu	Arg										
195															205										
cgg	gcg	gac	acg	ccg	ccc	gag	gag	gcc	tac	cgc	gac	tac	ctc	ctc	gcc	672									
Arg	Ala	Asp	Thr	Pro	Pro	Glu	Glu	Ala	Tyr	Arg	Asp	Tyr	Leu	Leu	Ala										
210															220										
ctg	gac	tcc	tgg	cgc	cac	ctg	ccc	tac	acg	gac	ccc	ggg	ctg	ccc	gcc	720									
Leu	Asp	Ser	Trp	Arg	His	Leu	Pro	Tyr	Thr	Asp	Pro	Gly	Leu	Pro	Ala										
225															235										
cgg	ctg	ctg	ccc	gag	ggc	tgg	ccc	ggc	acg	cgc	tcg	gcg	gcc	gtc	ttc	768									
Arg	Leu	Leu	Pro	Glu	Gly	Trp	Pro	Gly	Thr	Arg	Ser	Ala	Ala	Val	Phe										
245															255										
cgg	gcg	ctg	cac	gag	cgg	ctg	cgc	gac	gcg	ggc	gcc	cag	tac	gcg	gcc	816									
Arg	Ala	Leu	His	Glu	Arg	Leu	Arg	Asp	Ala	Gly	Ala	Gln	Tyr	Ala	Ala										
260															270										
atg	gga	ccg	act	ccg	cct	ccc	ggg	cag	tga								846								
Met	Gly	Pro	Thr	Pro	Pro	Pro	Gly	Gln																	
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<211> 281

<212> PRT

<213> Streptomyces coelicolor A3(2)

<400> 76

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

PhoenixTemp24825.tmp.txt

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Tyr Val Asp Phe Phe Arg Gly Glu His Leu Gly Phe Thr Ala Thr Ala
                165                170                175
Glu Ala Val Ala Arg Trp Trp Asp Leu Ala Ala Ile Ala Lys Glu His
                180                185                190
Glu Ala Phe Leu Asp Arg His Glu Arg Val Leu His Asp Trp Glu Arg
                195                200                205
Arg Ala Asp Thr Pro Pro Glu Glu Ala Tyr Arg Asp Tyr Leu Leu Ala
                210                215                220
Leu Asp Ser Trp Arg His Leu Pro Tyr Thr Asp Pro Gly Leu Pro Ala
225                230                235                240
Arg Leu Leu Pro Glu Gly Trp Pro Gly Thr Arg Ser Ala Ala Val Phe
                245                250                255
Arg Ala Leu His Glu Arg Leu Arg Asp Ala Gly Ala Gln Tyr Ala Ala
                260                265                270
Met Gly Pro Thr Pro Pro Pro Gly Gln
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<210> 77

<211> 924

<212> DNA

<213> Pseudomonas putida KT2440

<220>

<221> CDS

<222> (1)..(924)

<223> transl_table=11

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

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PhoenixTemp24825.tmp.txt

tgg	cgt	atc	gac	gaa	ctg	ggg	cag	caa	tac	agc	gag	ttt	atc	caa	ctg	624
Trp	Arg	Ile	Asp	Glu	Leu	Gly	Gln	Gln	Tyr	Ser	Glu	Phe	Ile	Gln	Leu	
	195					200						205				
ttc	agg	ccg	ctg	tgg	caa	ggg	ttg	aaa	gag	cag	ccg	ttg	ctg	gat	gcc	672
Phe	Arg	Pro	Leu	Trp	Gln	Gly	Leu	Lys	Glu	Gln	Pro	Leu	Leu	Asp	Ala	
	210					215					220					
caa	gat	tgc	ttc	ctt	gcg	cgc	acg	ctg	ctg	att	cac	gag	tac	cgc	cgc	720
Gln	Asp	Cys	Phe	Leu	Ala	Arg	Thr	Leu	Leu	Ile	His	Glu	Tyr	Arg	Arg	
225					230					235					240	
ctg	ctg	ctg	cgc	gac	ccg	caa	cta	ccc	gac	gag	ctg	ctg	cca	ggg	gac	768
Leu	Leu	Leu	Arg	Asp	Pro	Gln	Leu	Pro	Asp	Glu	Leu	Leu	Pro	Gly	Asp	
				245					250					255		
tgg	gag	gga	agg	gct	gcg	cga	cag	ttg	tgc	cgt	aac	ctc	tac	cga	ctg	816
Trp	Glu	Gly	Arg	Ala	Ala	Arg	Gln	Leu	Cys	Arg	Asn	Leu	Tyr	Arg	Leu	
			260					265					270			
gtg	ttt	gcc	aaa	gcc	gaa	gaa	tgg	ttg	aat	gca	gcg	ctg	gaa	aca	gca	864
Val	Phe	Ala	Lys	Ala	Glu	Glu	Trp	Leu	Asn	Ala	Ala	Leu	Glu	Thr	Ala	
		275					280					285				
gat	ggc	cca	ttg	ccg	gac	gtg	agc	gag	agt	ttt	tac	aag	cgt	ttt	ggc	912
Asp	Gly	Pro	Leu	Pro	Asp	Val	Ser	Glu	Ser	Phe	Tyr	Lys	Arg	Phe	Gly	
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ggg	ttg	gct	tga													924
Gly	Leu	Ala														
305																

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<211> 307

<212> PRT

<213> Pseudomonas putida KT2440

<400> 78

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

PhoenixTemp24825.tmp.txt

			260					265				270					
Val	Phe	Ala	Lys	Ala	Glu	Glu	Trp	Leu	Asn	Ala	Ala	Leu	Glu	Thr	Ala		
		275					280					285					
Asp	Gly	Pro	Leu	Pro	Asp	Val	Ser	Glu	Ser	Phe	Tyr	Lys	Arg	Phe	Gly		
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Gly	Leu	Ala															
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Ser	Arg	Thr	Gly	Ser	Ile	Val	Ile	Thr	Val	Phe	Gly	Asp	Ala	Ile	Val		
			20				25					30					
ccg	cgc	ggg	ggc	tcg	gtg	tgg	ctc	ggc	acg	ctg	ctg	gaa	ttc	ttc	gag		144
Pro	Arg	Gly	Gly	Ser	Val	Trp	Leu	Gly	Thr	Leu	Leu	Glu	Phe	Phe	Glu		
		35				40					45						
agc	ctg	gac	atc	gac	agc	ggg	gtg	gtg	cgc	acc	gcg	atg	tcg	cgc	ctg		192
Ser	Leu	Asp	Ile	Asp	Ser	Gly	Val	Val	Arg	Thr	Ala	Met	Ser	Arg	Leu		
	50					55					60						
gcg	gct	gac	ggc	tgg	ctg	acg	cgt	gaa	aag	gtc	ggc	cgc	aac	agt	ttc		240
Ala	Ala	Asp	Gly	Trp	Leu	Thr	Arg	Glu	Lys	Val	Gly	Arg	Asn	Ser	Phe		
	65				70				75						80		
tat	cgt	ctc	gcc	gac	aag	ggc	cac	cag	acc	ttc	gag	gcc	gcg	acg	cgc		288
Tyr	Arg	Leu	Ala	Asp	Lys	Gly	His	Gln	Thr	Phe	Glu	Ala	Ala	Thr	Arg		
			85					90						95			
cac	atc	tac	gat	ccg	ccg	ccg	tcg	gac	tgg	acc	ggg	cgt	ttc	gag	ctg		336
His	Ile	Tyr	Asp	Pro	Pro	Pro	Ser	Asp	Trp	Thr	Gly	Arg	Phe	Glu	Leu		
			100					105					110				
ctg	ctg	atc	aat	ggc	gag	gac	cgc	gac	gcc	tcg	cgc	gag	gcg	ctg	cgc		384
Leu	Leu	Ile	Asn	Gly	Glu	Asp	Arg	Asp	Ala	Ser	Arg	Glu	Ala	Leu	Arg		
		115					120					125					
aat	gcc	ggc	ttc	ggc	agt	ccg	ctg	ccc	ggc	gtg	tgg	gtt	gcg	ccg	tcg		432
Asn	Ala	Gly	Phe	Gly	Ser	Pro	Leu	Pro	Gly	Val	Trp	Val	Ala	Pro	Ser		
	130					135					140						
ggc	gtg	ccg	gtg	ccg	gat	gag	gct	gcg	ggc	gct	atc	cgt	ctc	gag	gtc		480
Gly	Val	Pro	Val	Pro	Asp	Glu	Ala	Ala	Gly	Ala	Ile	Arg	Leu	Glu	Val		
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tcc	gcg	gag	gac	gac	agc	ggg	cgc	cgc	ctg	ctc	agc	gca	agc	tgg	ccg		528
Ser	Ala	Glu	Asp	Asp	Ser	Gly	Arg	Arg	Leu	Leu	Ser	Ala	Ser	Trp	Pro		
			165					170						175			
ctc	gat	cgc	acc	gcg	gat	gcc	tat	ctg	aag	ttc	atg	aag	acg	ttc	gag		576
Leu	Asp	Arg	Thr	Ala	Asp	Ala	Tyr	Leu	Lys	Phe	Met	Lys	Thr	Phe	Glu		
			180					185						190			
ccg	ctg	cgc	acc	gcg	atc	ggc	cgc	gga	acg	act	ctc	tcc	gac	gcc	gac		624
Pro	Leu	Arg	Thr	Ala	Ile	Gly	Arg	Gly	Thr	Thr	Leu	Ser	Asp	Ala	Asp		
		195				200						205					
gcc	ttc	acc	gcg	cgg	atc	ctg	ctg	atc	cac	cac	tat	cgc	cgc	gtc	gtg		672
Ala	Phe	Thr	Ala	Arg	Ile	Leu	Leu	Ile	His	His	Tyr	Arg	Arg	Val	Val		
	210					215					220						
ctg	cgc	gat	ccg	ctg	ctg	ccc	gag	agc	ctg	ctg	cct	gcg	gat	tgg	ccg		720
Leu	Arg	Asp	Pro	Leu	Leu	Pro	Glu	Ser	Leu	Leu	Pro	Ala	Asp	Trp	Pro		
					230					235					240		
225																	

PhoenixTemp24825.tmp.txt

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gct ccg tcc gaa caa tgg ctt gat ggc cat gga acc aat gaa aaa ggg      816
Ala Pro Ser Glu Gln Trp Leu Asp Gly His Gly Thr Asn Glu Lys Gly
                260                265                270
cca ttg ccg gcg gcg cga aaa ctc ctg gaa cgg agg ttc ggc gcc      861
Pro Leu Pro Ala Ala Arg Lys Leu Leu Glu Arg Arg Phe Gly Ala
                275                280                285
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<210> 80
 <211> 287
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Pro Arg Gly Gly Ser Val Trp Leu Gly Thr Leu Leu Glu Phe Phe Glu
                35                40                45
Ser Leu Asp Ile Asp Ser Gly Val Val Arg Thr Ala Met Ser Arg Leu
50                55                60
Ala Ala Asp Gly Trp Leu Thr Arg Glu Lys Val Gly Arg Asn Ser Phe
65                70                75                80
Tyr Arg Leu Ala Asp Lys Gly His Gln Thr Phe Glu Ala Ala Thr Arg
                85                90                95
His Ile Tyr Asp Pro Pro Pro Ser Asp Trp Thr Gly Arg Phe Glu Leu
                100               105               110
Leu Leu Ile Asn Gly Glu Asp Arg Asp Ala Ser Arg Glu Ala Leu Arg
115               120               125
Asn Ala Gly Phe Gly Ser Pro Leu Pro Gly Val Trp Val Ala Pro Ser
130               135               140
Gly Val Pro Val Pro Asp Glu Ala Ala Gly Ala Ile Arg Leu Glu Val
145               150               155               160
Ser Ala Glu Asp Asp Ser Gly Arg Arg Leu Leu Ser Ala Ser Trp Pro
                165               170               175
Leu Asp Arg Thr Ala Asp Ala Tyr Leu Lys Phe Met Lys Thr Phe Glu
180               185               190
Pro Leu Arg Thr Ala Ile Gly Arg Gly Thr Thr Leu Ser Asp Ala Asp
195               200               205
Ala Phe Thr Ala Arg Ile Leu Leu Ile His His Tyr Arg Arg Val Val
210               215               220
Leu Arg Asp Pro Leu Leu Pro Glu Ser Leu Leu Pro Ala Asp Trp Pro
225               230               235               240
Gly Arg Ala Ala Arg Glu Leu Cys Gly Glu Ile Tyr Arg Ala Leu Leu
                245                250                255
Ala Pro Ser Glu Gln Trp Leu Asp Gly His Gly Thr Asn Glu Lys Gly
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Pro Leu Pro Ala Ala Arg Lys Leu Leu Glu Arg Arg Phe Gly Ala
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<223> transl_table=11

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Phe Tyr Gly Ala Tyr Gly Arg Phe Phe Pro Gly Pro Val Pro Val Ala	
20 25 30	
gag ctg atc cgg ctg ctc gcc gcc gtc ggc gtc gac gcg ccc tcc gtc	144
Glu Leu Ile Arg Leu Leu Ala Ala Val Gly Val Asp Ala Pro Ser Val	
35 40 45	
aga tcg tcg gtg tcc cgg ctg aag cgg cgc ggc ctg ctg gtg ccg gcc	192
Arg Ser Ser Val Ser Arg Leu Lys Arg Arg Gly Leu Leu Val Pro Ala	
50 55 60	
cgc acg gcg gcc ggc gcg gcc ggg tac gcg ctg tcg ccg gac gcc cgc	240
Arg Thr Ala Ala Gly Ala Ala Gly Tyr Ala Leu Ser Pro Asp Ala Arg	
65 70 75 80	
caa ctg ctc gac gac ggc gac ctg cgc gtg tac gcg acc act ccc cca	288
Gln Leu Leu Asp Asp Gly Asp Leu Arg Val Tyr Ala Thr Thr Pro	
85 90 95	
cgg gac gag ggc tgg gtg ctc gcg gtg ttc tcc gtg ccg gag tcg gaa	336
Arg Asp Glu Gly Trp Val Leu Ala Val Phe Ser Val Pro Glu Ser Glu	
100 105 110	
cgg cag aag cgg cat gta ctg cgc tcg cgc ctg gcc ggg ctc ggc ttc	384
Arg Gln Lys Arg His Val Leu Arg Ser Arg Leu Ala Gly Leu Gly Phe	
115 120 125	
ggg acg gcg gcc ccc ggg gtg tgg atc gcc ccg gcg cgg ctg tac gag	432
Gly Thr Ala Ala Pro Gly Val Trp Ile Ala Pro Ala Arg Leu Tyr Glu	
130 135 140	
gag acc cgg cac acc ctg ggg cgg ctg cgc ctc gac ccg tac gtc gac	480
Glu Thr Arg His Thr Leu Gly Arg Leu Arg Leu Asp Pro Tyr Val Asp	
145 150 155 160	
ttc ttc cgc ggc gag cac ctg ggc ttc gcc gcg acc ttc gag gcc gtc	528
Phe Phe Arg Gly Glu His Leu Gly Phe Ala Ala Thr Phe Glu Ala Val	
165 170 175	
gcg cgc tgg tgg gac ctg gcc gcg atc gcc aag cag cac gag gag ttc	576
Ala Arg Trp Trp Asp Leu Ala Ala Ile Ala Lys Gln His Glu Glu Phe	
180 185 190	
ctc gac cgc cac gcg cgc gtg ctg cac gac tgg gag gca cgc gag gac	624
Leu Asp Arg His Ala Arg Val Leu His Asp Trp Glu Ala Arg Glu Asp	
195 200 205	
acc gag ccc gag gag gcg tac cgc gac tat ctg ctc gcc ctg gac tcc	672
Thr Glu Pro Glu Glu Ala Tyr Arg Asp Tyr Leu Leu Ala Leu Asp Ser	
210 215 220	
tgg cgc cac ctc ccg tac gcc gat ccc ggc ctg ccc gcc gca ctg ctt	720
Trp Arg His Leu Pro Tyr Ala Asp Pro Gly Leu Pro Ala Ala Leu Leu	
225 230 235 240	
ccc gag gac tgg ccg ggc gcc cgc tcg gcc gcc gtc ttc cgg gca ctg	768
Pro Glu Asp Trp Pro Gly Ala Arg Ser Ala Ala Val Phe Arg Ala Leu	
245 250 255	
cac gag cgg ctg cgc gat gcg gga gcg gcc ttc gcg gct ggg acg gag	816
His Glu Arg Leu Arg Asp Ala Gly Ala Phe Ala Ala Gly Thr Glu	
260 265 270	
aca ctc gac ccc gcc ggt gaa acg tga	843
Thr Leu Asp Pro Ala Gly Glu Thr	
275 280	

<210> 82

<211> 280

<212> PRT

<213> Streptomyces avermitilis MA-4680

<400> 82

PhoenixTemp24825.tmp.txt

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Met Ile Asn Val Ser Asp Gln His Ala Pro Arg Ser Leu Ile Val Thr
1      5      10      15
Phe Tyr Gly Ala Tyr Gly Arg Phe Phe Pro Gly Pro Val Pro Val Ala
20      25      30
Glu Leu Ile Arg Leu Leu Ala Ala Val Gly Val Asp Ala Pro Ser Val
35      40      45
Arg Ser Ser Val Ser Arg Leu Lys Arg Arg Gly Leu Leu Val Pro Ala
50      55      60
Arg Thr Ala Ala Gly Ala Ala Gly Tyr Ala Leu Ser Pro Asp Ala Arg
65      70      75      80
Gln Leu Leu Asp Asp Gly Asp Leu Arg Val Tyr Ala Thr Thr Pro Pro
85      90      95
Arg Asp Glu Gly Trp Val Leu Ala Val Phe Ser Val Pro Glu Ser Glu
100      105      110
Arg Gln Lys Arg His Val Leu Arg Ser Arg Leu Ala Gly Leu Gly Phe
115      120      125
Gly Thr Ala Ala Pro Gly Val Trp Ile Ala Pro Ala Arg Leu Tyr Glu
130      135      140
Glu Thr Arg His Thr Leu Gly Arg Leu Arg Leu Asp Pro Tyr Val Asp
145      150      155      160
Phe Phe Arg Gly Glu His Leu Gly Phe Ala Ala Thr Phe Glu Ala Val
165      170      175
Ala Arg Trp Trp Asp Leu Ala Ala Ile Ala Lys Gln His Glu Glu Phe
180      185      190
Leu Asp Arg His Ala Arg Val Leu His Asp Trp Glu Ala Arg Glu Asp
195      200      205
Thr Glu Pro Glu Glu Ala Tyr Arg Asp Tyr Leu Leu Ala Leu Asp Ser
210      215      220
Trp Arg His Leu Pro Tyr Ala Asp Pro Gly Leu Pro Ala Ala Leu Leu
225      230      235      240
Pro Glu Asp Trp Pro Gly Ala Arg Ser Ala Ala Val Phe Arg Ala Leu
245      250      255
His Glu Arg Leu Arg Asp Ala Gly Ala Ala Phe Ala Ala Gly Thr Glu
260      265      270
Thr Leu Asp Pro Ala Gly Glu Thr
275      280

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<210> 83

<211> 930

<212> DNA

<213> Bordetella pertussis Tohama I

<220>

<221> CDS

<222> (1)..(930)

<223> transl_table=11

<400> 83

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atg gca agc act ccg tca ccg ctg gac cgc ttt ctc tcc cgt ctg ctg      48
Met Ala Ser Thr Pro Ser Pro Leu Asp Arg Phe Leu Ser Arg Leu Leu
1      5      10      15
aaa aac gat ccg ccc cgc gcc aaa tcg ctg tgc gtc agc ctg ctg ggc      96
Lys Asn Asp Pro Pro Arg Ala Lys Ser Leu Cys Val Ser Leu Leu Gly
20      25      30
gac gcg ctg gcg ccg cac gcc gcc atc tgg ctg gcc gac ctg atc      144
Asp Ala Leu Ala Pro His Gly Gly Ala Ile Trp Leu Gly Asp Leu Ile
35      40      45
gag ctg ctg gcc cct atc gcc atc aac gaa cgc ctg cta cgc acc agc      192
Glu Leu Leu Ala Pro Ile Gly Ile Asn Glu Arg Leu Leu Arg Thr Ser
50      55      60
gtg ttc agg ctg gtc gcg cag gcc tgg ctg caa tcc gag cgc cat gga      240
Val Phe Arg Leu Val Ala Gln Gly Trp Leu Gln Ser Glu Arg His Gly
65      70      75      80
cgg cgc agc ctg tat ctg ttg tcg gaa cac gcc ctg cgc cac acc gcg      288

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PhoenixTemp24825.tmp.txt

Arg	Arg	Ser	Leu	Tyr	Leu	Leu	Ser	Glu	His	Gly	Leu	Arg	His	Thr	Ala		
				85					90					95			
cac	gcc	tcg	cag	cgc	atc	tat	gac	ggg	ccg	gcg	cgc	gcc	tgg	aac	ggc		336
His	Ala	Ser	Gln	Arg	Ile	Tyr	Asp	Gly	Pro	Ala	Arg	Ala	Trp	Asn	Gly		
			100					105					110				
gaa	tgg	aca	ctg	gtg	gcg	ctg	ccg	cgc	gcc	ggc	aac	aat	ggc	ctg	gcc		384
Glu	Trp	Thr	Leu	Val	Ala	Leu	Pro	Arg	Ala	Gly	Asn	Asn	Gly	Leu	Ala		
			115				120					125					
gag	cgg	ggc	gag	ctg	cgc	cgc	gaa	ctg	ctc	tgg	gaa	ggg	ttc	ggc	atg		432
Glu	Arg	Gly	Glu	Leu	Arg	Arg	Glu	Leu	Leu	Trp	Glu	Gly	Phe	Gly	Met		
			130			135					140						
gtg	gcc	ccg	ggc	ctg	ttc	gcc	cac	ccg	cag	acc	gaa	gcg	cgc	gcc	gcg		480
Val	Ala	Pro	Gly	Leu	Phe	Ala	His	Pro	Gln	Thr	Glu	Ala	Arg	Ala	Ala		
					150					155					160		
cac	gat	atc	ctc	gaa	aag	ctg	ggt	atc	ccc	gac	aag	gcc	ctg	gtg	ctg		528
His	Asp	Ile	Leu	Glu	Lys	Leu	Gly	Ile	Pro	Asp	Lys	Ala	Leu	Val	Leu		
				165				170						175			
tcg	gcg	cgc	gac	cag	gcc	ggc	gcc	ggc	ggc	ctg	ccg	atc	gcc	agc	ctg		576
Ser	Ala	Arg	Asp	Gln	Ala	Gly	Ala	Gly	Gly	Leu	Pro	Ile	Ala	Ser	Leu		
			180				185						190				
gcg	gga	caa	tgc	tgg	aat	ctc	gat	gag	gtg	gcg	gac	caa	tac	cgc	ctg		624
Ala	Gly	Gln	Cys	Trp	Asn	Leu	Asp	Glu	Val	Ala	Asp	Gln	Tyr	Arg	Leu		
			195				200					205					
ttc	tcg	cgc	aat	ttc	ggc	ccg	gtg	gaa	aaa	ctg	ctg	gat	ccg	ccc	ccc		672
Phe	Ser	Arg	Asn	Phe	Gly	Pro	Val	Glu	Lys	Leu	Leu	Asp	Pro	Pro	Pro		
			210			215					220						
acc	ccc	gcg	cag	gcc	ttc	gcg	gtg	cgg	gtg	ctg	ttg	ctg	cac	aac	tgg		720
Thr	Pro	Ala	Gln	Ala	Phe	Ala	Val	Arg	Val	Leu	Leu	Leu	His	Asn	Trp		
					230					235					240		
cag	cgc	atc	gtg	ctg	cac	gat	ccg	cag	ctg	ccc	acc	ccc	atg	gaa	ccg		768
Gln	Arg	Ile	Val	Leu	His	Asp	Pro	Gln	Leu	Pro	Thr	Pro	Met	Glu	Pro		
				245				250						255			
gac	ggc	tgg	ccc	ggc	aac	gcg	gcc	cgc	gca	ctg	tgc	cgg	cgc	atc	tac		816
Asp	Gly	Trp	Pro	Gly	Asn	Ala	Ala	Arg	Ala	Leu	Cys	Arg	Arg	Ile	Tyr		
			260				265					270					
tgg	caa	gtc	ttc	gac	gcc	tcg	gaa	cgc	cac	ctg	gat	gcc	gtg	gcc	ggc		864
Trp	Gln	Val	Phe	Asp	Ala	Ser	Glu	Arg	His	Leu	Asp	Ala	Val	Ala	Gly		
			275				280					285					
cgc	gag	aac	gcg	cgc	tat	cgg	ccg	gcc	cag	gcc	gac	atc	atg	ggc	cgc		912
Arg	Glu	Asn	Ala	Arg	Tyr	Arg	Pro	Ala	Gln	Ala	Asp	Ile	Met	Gly	Arg		
			290			295					300						
ttc	ggc	ggg	cgg	ccg	tag												930
Phe	Gly	Gly	Arg	Pro													
305																	

<210> 84

<211> 309

<212> PRT

<213> Bordetella pertussis Tohama I

<400> 84

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

PhoenixTemp24825.tmp.txt

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100      105      110
Glu Trp Thr Leu Val Ala Leu Pro Arg Ala Gly Asn Asn Gly Leu Ala
115      120      125
Glu Arg Gly Glu Leu Arg Arg Glu Leu Leu Trp Glu Gly Phe Gly Met
130      135      140
Val Ala Pro Gly Leu Phe Ala His Pro Gln Thr Glu Ala Arg Ala Ala
145      150      155      160
His Asp Ile Leu Glu Lys Leu Gly Ile Pro Asp Lys Ala Leu Val Leu
165      170      175
Ser Ala Arg Asp Gln Ala Gly Ala Gly Gly Leu Pro Ile Ala Ser Leu
180      185      190
Ala Gly Gln Cys Trp Asn Leu Asp Glu Val Ala Asp Gln Tyr Arg Leu
195      200      205
Phe Ser Arg Asn Phe Gly Pro Val Glu Lys Leu Leu Asp Pro Pro Pro
210      215      220
Thr Pro Ala Gln Ala Phe Ala Val Arg Val Leu Leu Leu His Asn Trp
225      230      235      240
Gln Arg Ile Val Leu His Asp Pro Gln Leu Pro Thr Pro Met Glu Pro
245      250      255
Asp Gly Trp Pro Gly Asn Ala Ala Arg Ala Leu Cys Arg Arg Ile Tyr
260      265      270
Trp Gln Val Phe Asp Ala Ser Glu Arg His Leu Asp Ala Val Ala Gly
275      280      285
Arg Glu Asn Ala Arg Tyr Arg Pro Ala Gln Ala Asp Ile Met Gly Arg
290      295      300
Phe Gly Gly Arg Pro
305

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<210> 85

<211> 930

<212> DNA

<213> Bordetella parapertussis 12822

<220>

<221> CDS

<222> (1)..(930)

<223> transl_table=11

<400> 85

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

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PhoenixTemp24825.tmp.txt

Glu	Arg	Gly	Glu	Leu	Arg	Arg	Glu	Leu	Leu	Trp	Glu	Gly	Phe	Gly	Met	
130						135					140					
gtg	gcc	ccg	ggc	ctg	ttc	gcc	cac	ccg	cag	acc	gaa	gcg	cgc	gcc	gcg	480
Val	Ala	Pro	Gly	Leu	Phe	Ala	His	Pro	Gln	Thr	Glu	Ala	Arg	Ala	Ala	
145					150					155					160	
cac	gat	atc	ctc	gaa	aag	ctg	ggg	atc	ccc	gac	aag	gcc	ctg	gtg	ctg	528
His	Asp	Ile	Leu	Glu	Lys	Leu	Gly	Ile	Pro	Asp	Lys	Ala	Leu	Val	Leu	
				165					170					175		
tcg	gcg	cgc	gac	ctg	gcc	ggc	gcc	ggc	ggc	ctg	ccg	atc	gcc	agc	ctg	576
Ser	Ala	Arg	Asp	Leu	Ala	Gly	Ala	Gly	Gly	Leu	Pro	Ile	Ala	Ser	Leu	
			180					185					190			
gcg	gga	caa	tgc	tgg	aat	ctc	gat	gag	gtg	gcg	gac	caa	tac	cgc	ctg	624
Ala	Gly	Gln	Cys	Trp	Asn	Leu	Asp	Glu	Val	Ala	Asp	Gln	Tyr	Arg	Leu	
		195					200					205				
ttc	tcg	cgc	aat	ttc	ggc	ccg	gtg	gaa	aaa	ctg	ctg	gat	ccg	ccc	ccc	672
Phe	Ser	Arg	Asn	Phe	Gly	Pro	Val	Glu	Lys	Leu	Leu	Asp	Pro	Pro	Pro	
						215						220				
ccc	ccc	gcg	cag	gcc	ttc	gcg	gtg	cgg	gtg	ctg	ttg	ctg	cac	aac	tgg	720
Pro	Pro	Ala	Gln	Ala	Phe	Ala	Val	Arg	Val	Leu	Leu	Leu	His	Asn	Trp	
225					230					235					240	
cgg	cgc	atc	gtg	ctg	cac	gat	ccg	cag	ctg	ccc	ccc	ccc	atg	gaa	ccg	768
Arg	Arg	Ile	Val	Leu	His	Asp	Pro	Gln	Leu	Pro	Pro	Pro	Met	Glu	Pro	
				245					250					255		
gac	ggc	tgg	ccc	ggc	aac	gcg	gcc	cgc	gca	ctg	tgc	cgg	cgc	atc	tac	816
Asp	Gly	Trp	Pro	Gly	Asn	Ala	Ala	Arg	Ala	Leu	Cys	Arg	Arg	Ile	Tyr	
			260				265						270			
tgg	caa	gtc	ttc	gac	gcc	tcg	gaa	cgc	cac	ctg	gat	gcc	gtg	gcc	ggc	864
Trp	Gln	Val	Phe	Asp	Ala	Ser	Glu	Arg	His	Leu	Asp	Ala	Val	Ala	Gly	
			275				280					285				
cgc	gag	aac	gcg	cgc	tat	cgg	ccg	gcc	cag	gcc	gac	atc	atg	ggc	cgc	912
Arg	Glu	Asn	Ala	Arg	Tyr	Arg	Pro	Ala	Gln	Ala	Asp	Ile	Met	Gly	Arg	
		290				295					300					
ttc	ggc	ggg	cgg	ccg	tag											930
Phe	Gly	Gly	Arg	Pro												
305																

<210> 86

<211> 309

<212> PRT

<213> Bordetella parapertussis 12822

<400> 86

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

PhoenixTemp24825.tmp.txt

Ser Ala Arg Asp Leu Ala Gly Ala Gly Gly Leu Pro Ile Ala Ser Leu
 180 185 190
 Ala Gly Gln Cys Trp Asn Leu Asp Glu Val Ala Asp Gln Tyr Arg Leu
 195 200 205
 Phe Ser Arg Asn Phe Gly Pro Val Glu Lys Leu Leu Asp Pro Pro Pro
 210 215 220
 Pro Pro Ala Gln Ala Phe Ala Val Arg Val Leu Leu Leu His Asn Trp
 225 230 235 240
 Arg Arg Ile Val Leu His Asp Pro Gln Leu Pro Pro Pro Met Glu Pro
 245 250 255
 Asp Gly Trp Pro Gly Asn Ala Ala Arg Ala Leu Cys Arg Arg Ile Tyr
 260 265 270
 Trp Gln Val Phe Asp Ala Ser Glu Arg His Leu Asp Ala Val Ala Gly
 275 280 285
 Arg Glu Asn Ala Arg Tyr Arg Pro Ala Gln Ala Asp Ile Met Gly Arg
 290 295 300
 Phe Gly Gly Arg Pro
 305

<210> 87

<211> 930

<212> DNA

<213> Bordetella bronchiseptica RB50

<220>

<221> CDS

<222> (1)..(930)

<223> transl_table=11

<400> 87

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Met Ala Ser Thr Pro Ser Pro Leu Asp Arg Phe Leu Ser Arg Leu Leu	
1 5 10 15	
aaa aac gat ccg ccc cgc gcc aaa tcg ctg tgc gtc agc ctg ctg ggc	96
Lys Asn Asp Pro Pro Arg Ala Lys Ser Leu Cys Val Ser Leu Leu Gly	
20 25 30	
gac gcg ctg gcg ccg cac gcc gcc ggc atc tgg ctg ggc gac ctg atc	144
Asp Ala Leu Ala Pro His Gly Gly Ala Ile Trp Leu Gly Asp Leu Ile	
35 40 45	
gag ctg ctg gcc cct atc gcc atc aac gaa cgc ctg ctg cgc acc agc	192
Glu Leu Leu Ala Pro Ile Gly Ile Asn Glu Arg Leu Leu Arg Thr Ser	
50 55 60	
gtg ttc agg ctg gtc gcg cag gcc tgg ctg caa tcc gag cgc cat gga	240
Val Phe Arg Leu Val Ala Gln Gly Trp Leu Gln Ser Glu Arg His Gly	
65 70 75 80	
cgg cgc agc ctg tat ctg ttg tcg gaa cac gcc ctg cgc cac acc gcg	288
Arg Arg Ser Leu Tyr Leu Leu Ser Glu His Gly Leu Arg His Thr Ala	
85 90 95	
cac gcc tcg cag cgc atc tat gac ggg ccg gcg cgc gcc tgg aac gcc	336
His Ala Ser Gln Arg Ile Tyr Asp Gly Pro Ala Arg Ala Trp Asn Gly	
100 105 110	
gaa tgg aca ctg gtg gcg ctg ccg cgc gcc gcc aac aat gcc ctg gcc	384
Glu Trp Thr Leu Val Ala Leu Pro Arg Ala Gly Asn Asn Gly Leu Ala	
115 120 125	
gag cgg ggc gag ctg cgc cgc gaa ctg ctc tgg gaa ggg ttc gcc atg	432
Glu Arg Gly Glu Leu Arg Arg Glu Leu Leu Trp Glu Gly Phe Gly Met	
130 135 140	
gtg gcc ccg gcc ctg ttc gcc cac ccg cag acc gaa gcg cgc gcc gcg	480
Val Ala Pro Gly Leu Phe Ala His Pro Gln Thr Glu Ala Arg Ala Ala	
145 150 155 160	
cac gat atc ctc gaa aag ctg ggt atc ccc gac aag gcc ctg gtg ctg	528
His Asp Ile Leu Glu Lys Leu Gly Ile Pro Asp Lys Ala Leu Val Leu	
165 170 175	
tcg gcg cgc gac ctg gcc gcc gcc gcc gcc ctg ccg atc gcc agc ctg	576

PhoenixTemp24825.tmp.txt

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Ser Ala Arg Asp Leu Ala Gly Ala Gly Gly Leu Pro Ile Ala Ser Leu
      180      185      190
gcg gga caa tgc tgg aat ctc gat gag gtg gcg gac caa tac cgc ctg      624
Ala Gly Gln Cys Trp Asn Leu Asp Glu Val Ala Asp Gln Tyr Arg Leu
      195      200      205
ttc tcg cgc aat ttc ggc ccg gtg gaa aaa ctg ctg gat ccg ccc ccc      672
Phe Ser Arg Asn Phe Gly Pro Val Glu Lys Leu Leu Asp Pro Pro Pro
      210      215      220
acc ccc gcg cag gcc ttc gcg gtg cgg gtg ctg ttg ctg cac aac tgg      720
Thr Pro Ala Gln Ala Phe Ala Val Arg Val Leu Leu Leu His Asn Trp
      225      230      235
cgg cgc atc gtg ctg cac gat ccg cag ctg ccc acc ccc atg gaa ccg      768
Arg Arg Ile Val Leu His Asp Pro Gln Leu Pro Thr Pro Met Glu Pro
      245      250      255
gac ggc tgg ccc ggc aac gcg gcc cgc gca ctg tgc cgg cgc atc tac      816
Asp Gly Trp Pro Gly Asn Ala Ala Arg Ala Leu Cys Arg Arg Ile Tyr
      260      265      270
tgg caa gtc ttc gac gcc tcg gaa cgc cac ctg gat gcc gtg gcc ggc      864
Trp Gln Val Phe Asp Ala Ser Glu Arg His Leu Asp Ala Val Ala Gly
      275      280      285
cgc gag aac gcg cgc tat cgg ccg gcc cag gcc gac atc atg ggc cgc      912
Arg Glu Asn Ala Arg Tyr Arg Pro Ala Gln Ala Asp Ile Met Gly Arg
      290      295      300
ttc ggc ggg cgg ccg tag      930
Phe Gly Gly Arg Pro
305

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<210> 88

<211> 309

<212> PRT

<213> Bordetella bronchiseptica RB50

<400> 88

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

```

PhoenixTemp24825.tmp.txt

```

                245                250                255
Asp Gly Trp Pro Gly Asn Ala Ala Arg Ala Leu Cys Arg Arg Ile Tyr
                260                265                270
Trp Gln Val Phe Asp Ala Ser Glu Arg His Leu Asp Ala Val Ala Gly
                275                280                285
Arg Glu Asn Ala Arg Tyr Arg Pro Ala Gln Ala Asp Ile Met Gly Arg
                290                295                300
Phe Gly Gly Arg Pro
305

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<210> 89

<211> 783

<212> DNA

<213> Thermus thermophilus HB27

<220>

<221> CDS

<222> (1)..(783)

<223> transl_table=11

<400> 89

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atg cgg gcc agg tcc acc atc ttc acc ctg ttc gtg gag tac gtc tac      48
Met Arg Ala Arg Ser Thr Ile Phe Thr Leu Phe Val Glu Tyr Val Tyr
   1             5             10             15
ccg gag cgg gcg gcc cgg gtg cgg gac ctc gtg gcc atg atg gcc gcc      96
Pro Glu Arg Ala Ala Arg Val Arg Asp Leu Val Ala Met Met Ala Ala
                20             25             30
ctg ggc ttc tcg gag atg gcg gtg cgg gcg gcg ctt tcc cgg agc gcc      144
Leu Gly Phe Ser Glu Met Ala Val Arg Ala Ala Leu Ser Arg Ser Ala
                35             40             45
aag cgg ggc tgg gtg gtg ccc aag cgg gag ggg cgg gcc gcc tac tac      192
Lys Arg Gly Trp Val Val Pro Lys Arg Glu Gly Arg Ala Ala Tyr Tyr
                50             55             60
gcc ctc tcc gac cgg gtc tac tgg cag gtg cgc cag gtg cgc cgc cgc      240
Ala Leu Ser Asp Arg Val Tyr Trp Gln Val Arg Gln Val Arg Arg Arg
                65             70             75             80
ctc tac ggc tcc ctc ccc ccg tgg gac ggg cgc ttc ctc ctc gtc ctt      288
Leu Tyr Gly Ser Leu Pro Pro Trp Asp Gly Arg Phe Leu Leu Val Leu
                85             90             95
ccc gag ggg ccc aag gac cgg ggg gag agg gag agg ttc cgt cgg gag      336
Pro Glu Gly Pro Lys Asp Arg Gly Glu Arg Glu Arg Phe Arg Arg Glu
                100            105            110
atg gcc ctt ttg ggc tac ggg ggg ctg cag agc ggg gtc tat ctg ggg      384
Met Ala Leu Leu Gly Tyr Gly Gly Leu Gln Ser Gly Val Tyr Leu Gly
                115            120            125
gtc ggg gcg gac ctc gag gcc acc cgg gag ctc ctc ggc ttc tac ggc      432
Val Gly Ala Asp Leu Glu Ala Thr Arg Glu Leu Leu Gly Phe Tyr Gly
                130            135            140
ctt agc gcc acc tgc ttc caa ggg gag ctt ctc ggg gga aag gag gag      480
Leu Ser Ala Thr Cys Phe Gln Gly Glu Leu Leu Gly Gly Lys Glu Glu
                145            150            155            160
gtc ctc agg gcc ttc ccc ctg gag gag gcc aag gcg ggc tac ggg cgg      528
Val Leu Arg Ala Phe Pro Leu Glu Glu Ala Lys Ala Gly Tyr Gly Arg
                165            170            175
ctt tcc gcc ctc ctg ggt caa agc ccc gag gac ccc gtg gag gcc ttc      576
Leu Ser Ala Leu Leu Gly Gln Ser Pro Glu Asp Pro Val Glu Ala Phe
                180            185            190
cgc cac ctc acc cgg ctc gtc cac gag gcg agg aag ctc ctc ttc ctg      624
Arg His Leu Thr Arg Leu Val His Glu Ala Arg Lys Leu Leu Phe Leu
                195            200            205
gac ccc ggc ctc ccc caa gag ctt ttg ggc ccc gac ttt ccg ggg cca      672
Asp Pro Gly Leu Pro Gln Glu Leu Leu Gly Pro Asp Phe Pro Gly Pro
                210            215            220
aag gtg cgc cgc ctc ttc ctt tcg gcc cgg gag gag ctg agg gcc cgg      720

```

PhoenixTemp24825.tmp.txt

```

Lys Val Arg Arg Leu Phe Leu Ser Ala Arg Glu Glu Leu Arg Ala Arg
225                230                235                240
gca gcc ccc ttc ctc aag gac ctt tcc ctt ctc ctt tca gac ctc tca
Ala Ala Pro Phe Leu Lys Asp Leu Ser Leu Leu Ser Asp Leu Ser
                245                250                255
ccc gtt tcc cgg tag
Pro Val Ser Arg
                260

```

768

783

```

<210> 90
<211> 260
<212> PRT
<213> Thermus thermophilus HB27

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<400> 90
Met Arg Ala Arg Ser Thr Ile Phe Thr Leu Phe Val Glu Tyr Val Tyr
1                5                10                15
Pro Glu Arg Ala Ala Arg Val Arg Asp Leu Val Ala Met Met Ala Ala
                20                25                30
Leu Gly Phe Ser Glu Met Ala Val Arg Ala Ala Leu Ser Arg Ser Ala
                35                40                45
Lys Arg Gly Trp Val Val Pro Lys Arg Glu Gly Arg Ala Ala Tyr Tyr
                50                55                60
Ala Leu Ser Asp Arg Val Tyr Trp Gln Val Arg Gln Val Arg Arg Arg
65                70                75                80
Leu Tyr Gly Ser Leu Pro Pro Trp Asp Gly Arg Phe Leu Leu Val Leu
                85                90                95
Pro Glu Gly Pro Lys Asp Arg Gly Glu Arg Glu Arg Phe Arg Arg Glu
                100               105               110
Met Ala Leu Leu Gly Tyr Gly Gly Leu Gln Ser Gly Val Tyr Leu Gly
                115               120               125
Val Gly Ala Asp Leu Glu Ala Thr Arg Glu Leu Leu Gly Phe Tyr Gly
                130               135               140
Leu Ser Ala Thr Cys Phe Gln Gly Glu Leu Leu Gly Gly Lys Glu Glu
145                150                155                160
Val Leu Arg Ala Phe Pro Leu Glu Glu Ala Lys Ala Gly Tyr Gly Arg
                165                170                175
Leu Ser Ala Leu Leu Gly Gln Ser Pro Glu Asp Pro Val Glu Ala Phe
                180                185                190
Arg His Leu Thr Arg Leu Val His Glu Ala Arg Lys Leu Leu Phe Leu
                195                200                205
Asp Pro Gly Leu Pro Gln Glu Leu Leu Gly Pro Asp Phe Pro Gly Pro
                210                215                220
Lys Val Arg Arg Leu Phe Leu Ser Ala Arg Glu Glu Leu Arg Ala Arg
225                230                235                240
Ala Ala Pro Phe Leu Lys Asp Leu Ser Leu Leu Leu Ser Asp Leu Ser
                245                250                255
Pro Val Ser Arg
                260

```

```

<210> 91
<211> 858
<212> DNA
<213> Symbiobacterium thermophilum IAM 14863

```

```

<220>
<221> CDS
<222> (1)..(858)
<223> transl_table=11

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<400> 91
atg aag gcc cgg tcg ctg ctg ttc aac ctg tgg ggc gac tac atc cag
Met Lys Ala Arg Ser Leu Leu Phe Asn Leu Trp Gly Asp Tyr Ile Gln
1                5                10                15

```

48

PhoenixTemp24825.tmp.txt

```

cat gtc gga ggc gag gcc tgg gcg tcg acc ctg gcc gcc tgg gtg cgc      96
His Val Gly Gly 20 Glu Ala Trp Ala Ser Thr Leu Ala Ala Trp Val Arg
ccg ttc ggc gtc agc gag gcg gcc ctg cgg cag gcg ctc tcg cgc atg      144
Pro Phe Gly Val Ser Glu Ala Ala Leu Arg Gln Ala Leu Ser Arg Met
gct cgc cag gga tgg ctg gag gtg cgt aag gtc gga aac cgg acc tgt      192
Ala Arg Gln Gly Trp Leu Glu Val Arg Lys Val Gly Asn Arg Thr Cys
tat gcg ctc tcc gcg gcg gga cgc cgc cgc att gcc gag gcg tcg cgg      240
Tyr Ala Leu Ser Ala Ala Gly Arg Arg Arg Ile Ala Glu Ala Ser Arg
cgc gtg tac gac ggc cgg gac gtg gac tgg gac ggc cgc tgg cgg gta      288
Arg Val Tyr Asp Gly Arg Asp Val Asp Trp Asp Gly Arg Trp Arg Val
ctg gtc tat tcg gtc ccc gag gcc ctg cgg aac cgg cgc aac gac ctg      336
Leu Val Tyr Ser Val Pro Glu Ala Leu Arg Asn Arg Arg Asn Asp Leu
cgc cgg gag ctg atc tgg acg ggc ttc gcc cac ctg tcg ccg ggt acc      384
Arg Arg Glu Leu Ile Trp Thr Gly Phe Ala His Leu Ser Pro Gly Thr
tgg atc tcg ccc aac cca ctc gag gac tcg gtg cgg gag ctg ctc cgg      432
Trp Ile Ser Pro Asn Pro Leu Glu Asp Ser Val Arg Glu Leu Leu Arg
cgc tac ggg ctg gag ccc tac gcc acg ctg ttc gtc gcg ccg tac gcg      480
Arg Tyr Gly Leu Glu Pro Tyr Ala Thr Leu Phe Val Ala Pro Tyr Ala
gag ccc tgg tcg gcg ccc gac ctg gtg cgc cgc tgc tgg gat ctg gag      528
Glu Pro Trp Ser Ala Pro Asp Leu Val Arg Cys Trp Asp Leu Glu
gcg atc cag gcg agc tac gac cgg ttc atc gcg cgc tgg gag ccc cgc      576
Ala Ile Gln Ala Ser Tyr Asp Arg Phe Ile Ala Arg Trp Glu Pro Arg
ctg gag gcg tcg tcg agg ctg cac agc gac gag gag cgc ttc gtc gag      624
Leu Glu Ala Ser Ser Arg Leu His Ser Asp Glu Glu Arg Phe Val Glu
cag atc cgc ctc gtc cac gac tac cgg aag ttc ctg ttc gtc gac ccg      672
Gln Ile Arg Leu Val His Asp Tyr Arg Lys Phe Leu Phe Val Asp Pro
ggg ctg ccg cgc cgg ctc ctg ccc gat acc tgg cgg ggg cac gac gcg      720
Gly Leu Pro Arg Arg Leu Leu Pro Asp Thr Trp Arg Gly His Asp Ala
cgc agg ctg ttc cag gcg tac tat gcc agg ctg cgg ccc ggg gcg ctc      768
Arg Arg Leu Phe Gln Ala Tyr Tyr Ala Arg Leu Arg Pro Gly Ala Leu
cgg ttc ctg gag agg cac ttt gaa ccc aca caa gcc cac gat gga gga      816
Arg Phe Leu Glu Arg His Phe Glu Pro Thr Gln Ala His Asp Gly Gly
gga gag gac cgt ggc gta cga gaa cat cct ggt ctt tcg tga      858
Gly Glu Asp Arg Gly Val Arg Glu His Pro Gly Leu Ser

```

<210> 92

<211> 285

<212> PRT

<213> *Symbiobacterium thermophilum* IAM 14863

<400> 92

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Met Lys Ala Arg Ser Leu Leu Phe Asn Leu Trp Gly Asp Tyr Ile Gln
1      5      10
His Val Gly Gly Glu Ala Trp Ala Ser Thr Leu Ala Ala Trp Val Arg
20     25     30
Pro Phe Gly Val Ser Glu Ala Ala Leu Arg Gln Ala Leu Ser Arg Met
35     40     45

```

PhoenixTemp24825.tmp.txt

Ala Arg Gln Gly Trp Leu Glu Val Arg Lys Val Gly Asn Arg Thr Cys
50 55 60
Tyr Ala Leu Ser Ala Ala Gly Arg Arg Arg Ile Ala Glu Ala Ser Arg
65 70 75 80
Arg Val Tyr Asp Gly Arg Asp Val Asp Trp Asp Gly Arg Trp Arg Val
85 90 95
Leu Val Tyr Ser Val Pro Glu Ala Leu Arg Asn Arg Arg Asn Asp Leu
100 105 110
Arg Arg Glu Leu Ile Trp Thr Gly Phe Ala His Leu Ser Pro Gly Thr
115 120 125
Trp Ile Ser Pro Asn Pro Leu Glu Asp Ser Val Arg Glu Leu Leu Arg
130 135 140
Arg Tyr Gly Leu Glu Pro Tyr Ala Thr Leu Phe Val Ala Pro Tyr Ala
145 150 155 160
Glu Pro Trp Ser Ala Pro Asp Leu Val Arg Arg Cys Trp Asp Leu Glu
165 170 175
Ala Ile Gln Ala Ser Tyr Asp Arg Phe Ile Ala Arg Trp Glu Pro Arg
180 185 190
Leu Glu Ala Ser Ser Arg Leu His Ser Asp Glu Glu Arg Phe Val Glu
195 200 205
Gln Ile Arg Leu Val His Asp Tyr Arg Lys Phe Leu Phe Val Asp Pro
210 215 220
Gly Leu Pro Arg Arg Leu Leu Pro Asp Thr Trp Arg Gly His Asp Ala
225 230 235 240
Arg Arg Leu Phe Gln Ala Tyr Tyr Ala Arg Leu Arg Pro Gly Ala Leu
245 250 255
Arg Phe Leu Glu Arg His Phe Glu Pro Thr Gln Ala His Asp Gly Gly
260 265 270
Gly Glu Asp Arg Gly Val Arg Glu His Pro Gly Leu Ser
275 280 285

<210> 93

<211> 870

<212> DNA

<213> Nocardia farcinica IFM 10152

<220>

<221> CDS

<222> (1)..(870)

<223> transl_table=11

<400> 93

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

PhoenixTemp24825.tmp.txt

Val	Val	Val	Phe	Ser	Val	Pro	Glu	Thr	Glu	Arg	Glu	Lys	Arg	His	Ser		
		115					120					125					
ctg	cga	acc	acg	ttg	acc	cgc	ctg	ggg	ttc	ggc	acc	gcg	gcc	ccc	ggg		432
Leu	Arg	Thr	Thr	Leu	Thr	Arg	Leu	Gly	Phe	Gly	Thr	Ala	Ala	Pro	Gly		
		130					135					140					
gtg	tgg	gtg	gcg	ccc	gga	aac	ctg	gtg	cgc	gag	acc	gag	cag	acc	ttg		480
Val	Trp	Val	Ala	Pro	Gly	Asn	Leu	Val	Arg	Glu	Thr	Glu	Gln	Thr	Leu		
145					150					155					160		
cag	cgc	cgc	gga	ttg	tcc	tcc	tac	gtc	gac	ctt	ttc	cgc	ggc	agg	cac		528
Gln	Arg	Arg	Gly	Leu	Ser	Ser	Tyr	Val	Asp	Leu	Phe	Arg	Gly	Arg	His		
				165					170					175			
ctc	ggc	ttc	ggc	gac	ccg	cgg	gag	aag	gtc	acc	acc	tgg	tgg	gat	ctg		576
Leu	Gly	Phe	Gly	Asp	Pro	Arg	Glu	Lys	Val	Thr	Thr	Trp	Trp	Asp	Leu		
			180					185					190				
gac	gag	ctc	acc	gcg	ctc	tac	acc	gag	ttc	ctc	cag	cag	tac	cgg	ccg		624
Asp	Glu	Leu	Thr	Ala	Leu	Tyr	Thr	Glu	Phe	Leu	Gln	Gln	Tyr	Arg	Pro		
		195					200					205					
gtg	ctg	tat	cgg	gtg	acc	agc	gaa	acc	gtc	acc	gcg	cgt	gag	gct	ttc		672
Val	Leu	Tyr	Arg	Val	Thr	Ser	Glu	Thr	Val	Thr	Ala	Arg	Glu	Ala	Phe		
		210				215					220						
cag	ctc	tac	gtg	ccg	atg	ctc	acg	cag	tgg	cga	cgg	ctg	ccc	tac	cgc		720
Gln	Leu	Tyr	Val	Pro	Met	Leu	Thr	Gln	Trp	Arg	Arg	Leu	Pro	Tyr	Arg		
225					230					235					240		
gac	ccg	ggc	atc	ccg	ctg	tcg	ctg	ctg	ccg	ccc	gcc	tgg	cag	ggc	gaa		768
Asp	Pro	Gly	Ile	Pro	Leu	Ser	Leu	Leu	Pro	Pro	Ala	Trp	Gln	Gly	Glu		
				245					250					255			
gcc	gcg	ggc	acg	ctg	ttc	gac	cag	ctc	aac	gag	gtg	ctc	aac	ccg	ctg		816
Ala	Ala	Gly	Thr	Leu	Phe	Asp	Gln	Leu	Asn	Glu	Val	Leu	Asn	Pro	Leu		
			260					265					270				
gcc	cac	aag	cac	gcg	ctc	gcg	gtg	atc	cac	ggc	aaa	cgc	ccc	cag	gtc		864
Ala	His	Lys	His	Ala	Leu	Ala	Val	Ile	His	Gly	Lys	Arg	Pro	Gln	Val		
		275					280					285					
agc	tga																870
Ser																	

<210> 94

<211> 289

<212> PRT

<213> Nocardia farcinica IFM 10152

<400> 94

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

PhoenixTemp24825.tmp.txt

Leu Gly Phe Gly Asp Pro Arg Glu Lys Val Thr Thr Trp Trp Asp Leu
 180 185 190
 Asp Glu Leu Thr Ala Leu Tyr Thr Glu Phe Leu Gln Gln Tyr Arg Pro
 195 200 205
 Val Leu Tyr Arg Val Thr Ser Glu Thr Val Thr Ala Arg Glu Ala Phe
 210 215 220
 Gln Leu Tyr Val Pro Met Leu Thr Gln Trp Arg Arg Leu Pro Tyr Arg
 225 230 235 240
 Asp Pro Gly Ile Pro Leu Ser Leu Leu Pro Pro Ala Trp Gln Gly Glu
 245 250 255
 Ala Ala Gly Thr Leu Phe Asp Gln Leu Asn Glu Val Leu Asn Pro Leu
 260 265 270
 Ala His Lys His Ala Leu Ala Val Ile His Gly Lys Arg Pro Gln Val
 275 280 285
 Ser

<210> 95

<211> 783

<212> DNA

<213> Thermus thermophilus HB8

<220>

<221> CDS

<222> (1)..(783)

<223> transl_table=11

<400> 95

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

PhoenixTemp24825.tmp.txt

```

cgc cac ctc acc cgg ctc gtc cac gag gcg agg aag ctc ctc ttc ctg      624
Arg His Leu Thr Arg Leu Val His Glu Ala Arg Lys Leu Leu Phe Leu
      195      200      205
gac ccc ggc ctc ccc cag gag ctt ttg ggc ccc gac ttt ccg ggg cca      672
Asp Pro Gly Leu Pro Gln Glu Leu Leu Gly Pro Asp Phe Pro Gly Pro
      210      215      220
aag gtg cgc cgc ctc ttc ctt tcg gcc cgg gag gag ctg agg gcc cgg      720
Lys Val Arg Arg Leu Phe Leu Ser Ala Arg Glu Glu Leu Arg Ala Arg
      225      230      235      240
gcg gcc ccc ttc ctc aag ggc ctt tcc ctt ctc ctt tca gac ctc tca      768
Ala Ala Pro Phe Leu Lys Gly Leu Ser Leu Leu Leu Ser Asp Leu Ser
      245      250      255
ccc gtt tcc cgg tag      783
Pro Val Ser Arg
      260

```

<210> 96

<211> 260

<212> PRT

<213> Thermus thermophilus HB8

<400> 96

```

Met Arg Ala Arg Ser Thr Ile Phe Thr Leu Phe Val Glu Tyr Val Tyr
1      5      10      15
Pro Glu Arg Ala Ala Arg Val Arg Asp Leu Val Ala Met Met Ala Ala
      20      25      30
Leu Gly Phe Ser Glu Met Ala Val Arg Ala Ala Leu Ser Arg Ser Ala
      35      40      45
Lys Arg Gly Trp Val Val Pro Lys Arg Glu Gly Arg Ala Ala Tyr Tyr
      50      55      60
Ala Leu Ser Asp Arg Val Tyr Trp Gln Val Arg Gln Val Arg Arg Arg
      65      70      75      80
Leu Tyr Gly Ser Leu Pro Pro Trp Asp Gly Arg Phe Leu Leu Val Leu
      85      90      95
Pro Glu Gly Pro Lys Glu Arg Gly Glu Arg Glu Arg Phe Arg Arg Glu
      100      105      110
Met Ala Leu Leu Gly Tyr Gly Gly Leu Gln Ser Gly Val Tyr Leu Gly
      115      120      125
Val Gly Ala Asp Leu Glu Ala Thr Arg Glu Leu Leu Gly Phe Tyr Gly
      130      135      140
Leu Ser Ala Thr Cys Phe Gln Gly Glu Leu Leu Gly Gly Lys Glu Glu
      145      150      155      160
Val Leu Arg Ala Phe Pro Leu Glu Glu Ala Lys Ala Gly Tyr Gly Arg
      165      170      175
Leu Ser Ala Leu Leu Gly Gln Ser Pro Glu Asp Pro Val Glu Ala Phe
      180      185      190
Arg His Leu Thr Arg Leu Val His Glu Ala Arg Lys Leu Leu Phe Leu
      195      200      205
Asp Pro Gly Leu Pro Gln Glu Leu Leu Gly Pro Asp Phe Pro Gly Pro
      210      215      220
Lys Val Arg Arg Leu Phe Leu Ser Ala Arg Glu Glu Leu Arg Ala Arg
      225      230      235      240
Ala Ala Pro Phe Leu Lys Gly Leu Ser Leu Leu Leu Ser Asp Leu Ser
      245      250      255
Pro Val Ser Arg
      260

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<210> 97

<211> 876

<212> DNA

<213> Geobacillus kaustophilus HTA426

<220>

<221> CDS

<222> (1)..(876)

<223> transl_table=11

<400> 97

gtg aag ccg aga tcg ctc atg ttt acg tta ttt gga gaa tat att caa	48
Met Lys Pro Arg Ser Leu Met Phe Thr Leu Phe Gly Glu Tyr Ile Gln	
1 5 10 15	
cat tat ggg aac gaa gta tgg atc gga agc tta atc caa atg atg tcc	96
His Tyr Gly Asn Glu Val Trp Ile Gly Ser Leu Ile Gln Met Met Ser	
20 25 30	
cac ttc ggc att tcc gag tcg tcc atc cgc gga gcg gcg ttg cgc atg	144
His Phe Gly Ile Ser Glu Ser Ile Arg Gly Ala Ala Leu Arg Met	
35 40 45	
gtg cag caa ggg ttt ttt gag gtg cgg aaa atc ggc aac aac agc tat	192
Val Gln Gln Gly Phe Phe Glu Val Arg Lys Ile Gly Asn Asn Ser Tyr	
50 55 60	
tac tcg ctg acg ccg aaa ggg aaa cgg acg atg atg gac ggg ttc aac	240
Tyr Ser Leu Thr Pro Lys Gly Lys Arg Thr Met Met Asp Gly Phe Asn	
65 70 75 80	
cgc gtc tat tcg caa cgg aac tac aaa tgg gac ggt caa tgg cgc gtg	288
Arg Val Tyr Ser Gln Arg Asn Tyr Lys Trp Asp Gly Gln Trp Arg Val	
85 90 95	
ttg acg tac tcc gtt ccc gag caa aaa cgg gag ctg cgc aac caa att	336
Leu Thr Tyr Ser Val Pro Glu Gln Lys Arg Glu Leu Arg Asn Gln Ile	
100 105 110	
cgc aaa gaa ttg agc ttg atg ggg ttt ggt ctc att tcc cac ggg acg	384
Arg Lys Glu Leu Ser Leu Met Gly Phe Gly Leu Ile Ser His Gly Thr	
115 120 125	
tgg gcg agc ccg aat ccg atc gag ccg caa gtg atg gaa tgg gtt aaa	432
Trp Ala Ser Pro Asn Pro Ile Glu Pro Gln Val Met Glu Trp Val Lys	
130 135 140	
gac tat cat ttg gag ccg tac gtc att ttg ttt acg gcg agc tcc atc	480
Asp Tyr His Leu Glu Pro Tyr Val Ile Leu Phe Thr Ala Ser Ser Ile	
145 150 155 160	
gtg tcg cac agc aat gag caa atc atc gag cgc ggc tgg gat ttc ccg	528
Val Ser His Ser Asn Glu Gln Ile Ile Glu Arg Gly Trp Asp Phe Pro	
165 170 175	
tac atc gcc aag gag tat gac cgg ttt att gaa acg tac gaa cga aaa	576
Tyr Ile Ala Lys Glu Tyr Asp Arg Phe Ile Glu Thr Tyr Glu Arg Lys	
180 185 190	
tac gaa gag ttc caa cat cgg gct tgg aac aat gaa ctg acc gac cgc	624
Tyr Glu Glu Phe Gln His Arg Ala Trp Asn Asn Glu Leu Thr Asp Arg	
195 200 205	
gaa tgc ttc att gaa cgg acg aag ctc gtg cat gag tat cgg agc ttt	672
Glu Cys Phe Ile Glu Arg Thr Lys Leu Val His Glu Tyr Arg Ser Phe	
210 215 220	
ttc ttt atc gat cca gga ttc ccg aac gac ttg ttg cct gat gat tgg	720
Phe Phe Ile Asp Pro Gly Phe Pro Asn Asp Leu Leu Pro Asp Asp Trp	
225 230 235 240	
agc gga acg aga gcg ccg gag ctg ttt ttc aat gtc cac cag ttg ctc	768
Ser Gly Thr Arg Ala Arg Glu Leu Phe Phe Asn Val His Gln Leu Leu	
245 250 255	
gcc att ccg gcc atc tgt tat ttt gaa aca ttg ttt gag gcc gca ccg	816
Ala Ile Pro Ala Ile Cys Tyr Phe Glu Thr Leu Phe Glu Ala Ala Pro	
260 265 270	
gat cgt gag gtg aca ttt aac cgc gat aag gcg att aat cca ttt atg	864
Asp Arg Glu Val Thr Phe Asn Arg Asp Lys Ala Ile Asn Pro Phe Met	
275 280 285	
gaa atg att tag	876
Glu Met Ile	
290	

<210> 98

<211> 291

<212> PRT

<213> Geobacillus kaustophilus HTA426

<400> 98

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Met Lys Pro Arg Ser Leu Met Phe Thr Leu Phe Gly Glu Tyr Ile Gln
1      5      10      15
His Tyr Gly Asn Glu Val Trp Ile Gly Ser Leu Ile Gln Met Met Ser
      20      25      30
His Phe Gly Ile Ser Glu Ser Ser Ile Arg Gly Ala Ala Leu Arg Met
      35      40      45
Val Gln Gln Gly Phe Phe Glu Val Arg Lys Ile Gly Asn Asn Ser Tyr
      50      55      60
Tyr Ser Leu Thr Pro Lys Gly Lys Arg Thr Met Met Asp Gly Phe Asn
65      70      75      80
Arg Val Tyr Ser Gln Arg Asn Tyr Lys Trp Asp Gly Gln Trp Arg Val
      85      90      95
Leu Thr Tyr Ser Val Pro Glu Gln Lys Arg Glu Leu Arg Asn Gln Ile
      100     105     110
Arg Lys Glu Leu Ser Leu Met Gly Phe Gly Leu Ile Ser His Gly Thr
      115     120     125
Trp Ala Ser Pro Asn Pro Ile Glu Pro Gln Val Met Glu Trp Val Lys
130     135     140
Asp Tyr His Leu Glu Pro Tyr Val Ile Leu Phe Thr Ala Ser Ser Ile
145     150     155     160
Val Ser His Ser Asn Glu Gln Ile Ile Glu Arg Gly Trp Asp Phe Pro
      165     170     175
Tyr Ile Ala Lys Glu Tyr Asp Arg Phe Ile Glu Thr Tyr Glu Arg Lys
      180     185     190
Tyr Glu Glu Phe Gln His Arg Ala Trp Asn Asn Glu Leu Thr Asp Arg
195     200     205
Glu Cys Phe Ile Glu Arg Thr Lys Leu Val His Glu Tyr Arg Ser Phe
210     215     220
Phe Phe Ile Asp Pro Gly Phe Pro Asn Asp Leu Leu Pro Asp Asp Trp
225     230     235     240
Ser Gly Thr Arg Ala Arg Glu Leu Phe Phe Asn Val His Gln Leu Leu
      245     250     255
Ala Ile Pro Ala Ile Cys Tyr Phe Glu Thr Leu Phe Glu Ala Ala Pro
      260     265     270
Asp Arg Glu Val Thr Phe Asn Arg Asp Lys Ala Ile Asn Pro Phe Met
      275     280     285
Glu Met Ile
290

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<210> 99

<211> 858

<212> DNA

<213> Geobacillus kaustophilus HTA426

<220>

<221> CDS

<222> (1)..(858)

<223> transl_table=11

<400> 99

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atg aac aca cgc tca atg atc ttt acg att tac ggc gac tac atc cgc      48
Met Asn Thr Arg Ser Met Ile Phe Thr Ile Tyr Gly Asp Tyr Ile Arg
1      5      10      15
cat tac ggc ggt gaa att tgg atc ggg agc cta atc cgc ctc ctc cgc      96
His Tyr Gly Gly Glu Ile Trp Ile Gly Ser Leu Ile Arg Leu Leu Arg
      20      25      30
gag ttc ggc cat aac gac cag gcg gtg cgg gcg gcg gtg tcg cgc atg      144
Glu Phe Gly His Asn Asp Gln Ala Val Arg Ala Ala Val Ser Arg Met
      35      40      45
agc aaa caa ggc tgg att cgc gcg gaa aaa cgc ggc aat aaa agc tac      192

```

PhoenixTemp24825.tmp.txt

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Ser  Lys  Gln  Gly  Trp  Ile  Arg  Ala  Glu  Lys  Arg  Gly  Asn  Lys  Ser  Tyr
  50      55      60
tat  tcg  ctc  acg  gaa  cgc  ggc  gtc  aag  cgg  atg  gaa  gaa  gcg  gcg  cgg      240
Tyr  Ser  Leu  Thr  Glu  Arg  Gly  Val  Lys  Arg  Met  Glu  Glu  Ala  Ala  Arg
  65      70      75      80
cgc  att  tac  aaa  acg  cgc  ccc  gag  cat  tgg  gac  ggg  aaa  tgg  cgc  att      288
Arg  Ile  Tyr  Lys  Thr  Arg  Pro  Glu  His  Trp  Asp  Gly  Lys  Trp  Arg  Ile
      85      90      95
ctc  atc  tat  acg  att  cct  gag  gat  aag  cgg  cat  ttg  cgc  gat  gaa  ctg      336
Leu  Ile  Tyr  Thr  Ile  Pro  Glu  Asp  Lys  Arg  His  Leu  Arg  Asp  Glu  Leu
      100      105      110
cga  aag  gag  ctt  gtt  tgg  agc  ggg  ttc  ggc  acg  att  tcc  aac  agt  tgc      384
Arg  Lys  Glu  Leu  Val  Trp  Ser  Gly  Phe  Gly  Thr  Ile  Ser  Asn  Ser  Cys
      115      120      125
tgg  att  tca  ccg  aat  aat  ttg  gag  caa  caa  gtg  tac  gac  ttg  atc  gac      432
Trp  Ile  Ser  Pro  Asn  Asn  Leu  Glu  Gln  Gln  Val  Tyr  Asp  Leu  Ile  Asp
      130      135      140
aag  tat  gac  atc  cgc  cca  tat  gtc  gac  ttc  ttt  ctt  gcc  gaa  tac  gat      480
Lys  Tyr  Asp  Ile  Arg  Pro  Tyr  Val  Asp  Phe  Phe  Leu  Ala  Glu  Tyr  Asp
      145      150      155      160
gga  ccg  cat  acg  aat  aag  cag  ctt  gtg  gaa  aag  tgc  tgg  aac  tta  gaa      528
Gly  Pro  His  Thr  Asn  Lys  Gln  Leu  Val  Glu  Lys  Cys  Trp  Asn  Leu  Glu
      165      170      175
gag  atc  aac  caa  aaa  tac  gag  cag  ttt  att  gcg  gtc  tac  agt  caa  aaa      576
Glu  Ile  Asn  Gln  Lys  Tyr  Glu  Gln  Phe  Ile  Ala  Val  Tyr  Ser  Gln  Lys
      180      185      190
tat  gtg  att  gac  aaa  cat  aaa  atc  gag  cgc  ggc  gaa  atg  tcg  gac  gcg      624
Tyr  Val  Ile  Asp  Lys  His  Lys  Ile  Glu  Arg  Gly  Glu  Met  Ser  Asp  Ala
      195      200      205
gaa  tgt  ttt  gtc  gag  cgg  acg  aag  ctc  gtc  cat  gaa  tac  cga  aaa  ttt      672
Glu  Cys  Phe  Val  Glu  Arg  Thr  Lys  Leu  Val  His  Glu  Tyr  Arg  Lys  Phe
      210      215      220
ttg  ttc  atc  gac  ccc  ggc  ttg  ccg  gaa  gag  ctg  ttg  ccg  aat  gag  tgg      720
Leu  Phe  Ile  Asp  Pro  Gly  Leu  Pro  Glu  Glu  Leu  Leu  Pro  Asn  Glu  Trp
      225      230      235      240
atg  gga  agc  cat  gcg  gcc  gcc  ttg  ttc  aac  gac  tat  tat  caa  caa  ctc      768
Met  Gly  Ser  His  Ala  Ala  Ala  Leu  Phe  Asn  Asp  Tyr  Tyr  Gln  Gln  Leu
      245      250      255
gcg  gca  ccg  gcc  agc  cgt  ttc  ttt  gaa  gcg  gtg  ttt  caa  gaa  ggg  gca      816
Ala  Ala  Pro  Ala  Ser  Arg  Phe  Phe  Glu  Ala  Val  Phe  Gln  Glu  Gly  Ala
      260      265      270
gag  ctt  gac  aaa  aaa  gaa  gag  gaa  gag  ata  tcg  gtg  gaa  tga      858
Glu  Leu  Asp  Lys  Lys  Glu  Glu  Glu  Glu  Ile  Ser  Val  Glu
      275      280      285

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<210> 100

<211> 285

<212> PRT

<213> Geobacillus kaustophilus HTA426

<400> 100

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

```

PhoenixTemp24825.tmp.txt

```

      100      105      110
Arg Lys Glu Leu Val Trp Ser Gly Phe Gly Thr Ile Ser Asn Ser Cys
115      125
Trp Ile Ser Pro Asn Asn Leu Gln Gln Val Tyr Asp Leu Ile Asp
130      135      140
Lys Tyr Asp Ile Arg Pro Tyr Val Asp Phe Phe Leu Ala Glu Tyr Asp
145      150      155      160
Gly Pro His Thr Asn Lys Gln Leu Val Glu Lys Cys Trp Asn Leu Glu
165      170      175
Glu Ile Asn Gln Lys Tyr Glu Gln Phe Ile Ala Val Tyr Ser Gln Lys
180      185      190
Tyr Val Ile Asp Lys His Lys Ile Glu Arg Gly Glu Met Ser Asp Ala
195      200      205
Glu Cys Phe Val Glu Arg Thr Lys Leu Val His Glu Tyr Arg Lys Phe
210      215      220
Leu Phe Ile Asp Pro Gly Leu Pro Glu Glu Leu Leu Pro Asn Glu Trp
225      230      235      240
Met Gly Ser His Ala Ala Ala Leu Phe Asn Asp Tyr Tyr Gln Gln Leu
245      250      255
Ala Ala Pro Ala Ser Arg Phe Phe Glu Ala Val Phe Gln Glu Gly Ala
260      265      270
Glu Leu Asp Lys Lys Glu Glu Glu Glu Ile Ser Val Glu
275      280      285

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<210> 101

<211> 957

<212> DNA

<213> Azoarcus sp. EbN1

<220>

<221> CDS

<222> (1)..(957)

<223> transl_table=11

<400> 101

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atg aag agt cgg ttc atc acg cag tgg atc aac gat tac ctg gcg gaa      48
Met Lys Ser Arg Phe Ile Thr Gln Trp Ile Asn Asp Tyr Leu Ala Glu
1      5      10      15
cgc cgc gta cgc gcg aac tcg ctg atc atc acc atc tac gga gat ttc      96
Arg Arg Val Arg Ala Asn Ser Leu Ile Ile Thr Ile Tyr Gly Asp Phe
20      25      30
atc gcc ccg cac ggc gga acc gtg tgg ctc ggc agt ttc ata cgg ctg      144
Ile Ala Pro His Gly Gly Thr Val Trp Leu Gly Ser Phe Ile Arg Leu
35      40      45
gtc gag ccg ctg ggc ctg aac gag aga atg gtc cgc acc agc gtc tat      192
Val Glu Pro Leu Gly Leu Asn Glu Arg Met Val Arg Thr Ser Val Tyr
50      55      60
cgc ctg tcg cag gac aag tgg ctg gtt tcc gag cag atc gga cgc aaa      240
Arg Leu Ser Gln Asp Lys Trp Leu Val Ser Glu Gln Ile Gly Arg Lys
65      70      75      80
agc tat tac agc ctc act gcc tcg gga cga cgg cgc ttc gaa cac gcc      288
Ser Tyr Tyr Ser Leu Thr Ala Ser Gly Arg Arg Phe Glu His Ala
85      90      95
tat cgc cgg atc tac gac gca cgg cag cta ccg tgg aac ggc gaa tgg      336
Tyr Arg Arg Ile Tyr Asp Ala Arg Gln Leu Pro Trp Asn Gly Glu Trp
100      105      110
cag ctc gtg atc ctg cct tcg acg ctg ccc gcc ccg cag cgg gac gca      384
Gln Leu Val Ile Leu Pro Ser Thr Leu Pro Ala Pro Gln Arg Asp Ala
115      120      125
ctg cgc aag gaa ctg tca tgg gcg ggt tac gga acg atc gct ccg tgc      432
Leu Arg Lys Glu Leu Ser Trp Ala Gly Tyr Gly Thr Ile Ala Pro Cys
130      135      140
gtg ctc gca cac ccg tcg gca gac acc gaa acc ttg ctg gaa atc ctg      480
Val Leu Ala His Pro Ser Ala Asp Thr Glu Thr Leu Leu Glu Ile Leu

```

PhoenixTemp24825.tmp.txt

145		150		155		160	
cag gag acc ggc acc cac gac aag gtc gta ccg atg acc gcg cac aat		165		170		175	528
Gln Glu Thr Gly Thr His Asp Lys Val Pro Met Thr Ala His Asn		180		185		190	
ctc ggc gcg ctg tcg aac cgc ccg ctg cag gat ctg gcg cgt gaa tgc		195		200		205	576
Leu Gly Ala Leu Ser Asn Arg Pro Leu Gln Asp Leu Ala Arg Glu Cys		210		215		220	
tgg aat ctg gag gca atc ggc gcg act tac ccg gag ttc gcg gac ccg		225		230		235	624
Trp Asn Leu Glu Ala Ile Gly Ala Thr Tyr Arg Glu Phe Ala Asp Arg		245		250		255	
ctg cgg ccc gtg ctg cgg gcg ctg cgt act gct cgc gac ctg gac ccg		260		265		270	672
Leu Arg Pro Val Leu Arg Ala Leu Arg Thr Ala Arg Asp Leu Asp Pro		275		280		285	
gaa cag tgc ttc ctc gtg cag acc ctg acg atg cac gat ttt cgt cgc		290		295		300	720
Glu Gln Cys Phe Leu Val Gln Thr Leu Thr Met His Asp Phe Arg Arg		305		310		315	
gcc ctg ctg cac gac ccg ctg ctg ccc gat caa ctg atg cct gtc gac							768
Ala Leu Leu His Asp Pro Leu Leu Pro Asp Gln Leu Met Pro Val Asp							
tgg agc ggt gcg gtc gcc cgc gaa gtg tgc cga gac att tat cgc atc							816
Trp Ser Gly Ala Val Ala Arg Glu Val Cys Arg Asp Ile Tyr Arg Ile							
acg tat cgc ctt gcc cag cag cac ctg atg gcg aca tgc aag acg cca							864
Thr Tyr Arg Leu Ala Gln Gln His Leu Met Ala Thr Cys Lys Thr Pro							
aat ggc ccg ctg ccg ccc gcc gcg ccg tat ttc tac gaa cgt ttc ggc							912
Asn Gly Pro Leu Pro Pro Ala Ala Pro Tyr Phe Tyr Glu Arg Phe Gly							
ggc ctc gag gac act aca cac cgt gaa gca gcg gag cag cag tag							957
Gly Leu Glu Asp Thr Thr His Arg Glu Ala Ala Glu Gln Gln							

<210> 102

<211> 318

<212> PRT

<213> Azoarcus sp. EbN1

<400> 102

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

PhoenixTemp24825.tmp.txt

```

Leu Arg Pro Val Leu Arg Ala Leu Arg Thr Ala Arg Asp Leu Asp Pro
210 215 220
Glu Gln Cys Phe Leu Val Gln Thr Leu Thr Met His Asp Phe Arg Arg
225 230 235 240
Ala Leu Leu His Asp Pro Leu Leu Pro Asp Gln Leu Met Pro Val Asp
245 250 255
Trp Ser Gly Ala Val Ala Arg Glu Val Cys Arg Asp Ile Tyr Arg Ile
260 265 270
Thr Tyr Arg Leu Ala Gln Gln His Leu Met Ala Thr Cys Lys Thr Pro
275 280 285
Asn Gly Pro Leu Pro Pro Ala Ala Pro Tyr Phe Tyr Glu Arg Phe Gly
290 295 300
Gly Leu Glu Asp Thr Thr His Arg Glu Ala Ala Glu Gln Gln
305 310 315

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<210> 103

<211> 801

<212> DNA

<213> Silicibacter pomeroyi DSS-3

<220>

<221> CDS

<222> (1)..(801)

<223> transl_table=11

<400> 103

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

```

PhoenixTemp24825.tmp.txt

```

      195      200      205
gca acc ctg cgc acg ctg ctg gtg cat cgc tgg cgc cgg gtg gcc ttg      672
Ala Thr Leu Arg Thr Leu Leu Val His Arg Trp Arg Val Ala Leu
      210      215      220
cgc cat ccc gac ctg ccc gct gcc ttc cag ccc cgg ggc tgg atg gga      720
Arg His Pro Asp Leu Pro Ala Ala Phe Gln Pro Arg Gly Trp Met Gly
      225      230      235      240
ccc gcc tgc cgc gag cag gtc ttt gcc ctg ctc gac gcc ctg ccg ctg      768
Pro Ala Cys Arg Glu Gln Val Phe Ala Leu Leu Asp Ala Leu Pro Leu
      245      250      255
ccg ccc ctg ccc gcg ctg aac gaa gcc gaa tga      801
Pro Pro Leu Pro Ala Leu Asn Glu Ala Glu
      260      265

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<210> 104

<211> 266

<212> PRT

<213> *Silicibacter pomeroyi* DSS-3

<400> 104

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Met Thr Arg His Thr Pro Trp Phe Asp Thr Ala Val Thr Arg Leu Ala
1      5      10      15
Asp Pro Gln Asn Gln Arg Val Trp Ser Ile Ile Val Ser Leu Leu Gly
      20      25      30
Asp Leu Ala Arg Arg Lys Gly Asp Arg Ile Ser Gly Ser Ala Leu Thr
      35      40      45
Arg Ile Thr Gln Pro Met Gly Ile Lys Pro Glu Ala Met Arg Val Ala
      50      55      60
Leu His Arg Leu Arg Lys Asp Gly Trp Ile Glu Ser Ser Arg Glu Gly
65      70      75      80
Arg Ser Ser Val His Tyr Leu Ser Glu Tyr Gly Arg Thr Gln Ser Asp
      85      90      95
Arg Val Thr Pro Arg Ile Tyr Thr Arg Thr Pro Glu Leu Pro Glu Ala
      100      105      110
Trp His Ile Leu Ile Ala Glu Asp Gly Ser Ser Leu Asn Thr Leu Asn
      115      120      125
Asp Leu Leu Leu Thr Asp Thr Tyr Ile Gly Ile Gly Arg Thr Val Ala
      130      135      140
Leu Gly Ser Gly Pro Val Pro Gly Asp Cys Asp Asp Leu Ala Gly Phe
145      150      155      160
Glu Val Ser Ala Arg Ala Ile Pro Gly Trp Leu Gln Thr Arg Leu Phe
      165      170      175
Pro Glu Asp Leu Gly Thr Ala Cys Gln Ser Leu His Gln Asp Cys Ala
      180      185      190
Glu Leu Arg Ala Ala Gly Val Pro Gly Leu Leu Thr Pro Phe Gln Val
      195      200      205
Ala Thr Leu Arg Thr Leu Leu Val His Arg Trp Arg Arg Val Ala Leu
      210      215      220
Arg His Pro Asp Leu Pro Ala Ala Phe Gln Pro Arg Gly Trp Met Gly
225      230      235      240
Pro Ala Cys Arg Glu Gln Val Phe Ala Leu Leu Asp Ala Leu Pro Leu
      245      250      255
Pro Pro Leu Pro Ala Leu Asn Glu Ala Glu
      260      265

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<210> 105

<211> 789

<212> DNA

<213> *Sulfolobus acidocaldarius* DSM 639

<220>

<221> CDS

<222> (1)..(789)

<223> transl_table=11

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<400> 105
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Met Lys Phe Gln Thr Leu Phe Phe Thr Ile Tyr Gly Asp Tyr Ile Ile
  1          5          10          15
aac tac gga aat agc ata act gtg agg agt ttg ata aag ata atg aga      96
Asn Tyr Gly Asn Ser Ile Thr Val Arg Ser Leu Ile Lys Ile Met Arg
          20          25          30
gag ttc ggt ttc aca gag ggg gca ata agg gca ggt cta ttc cgt tta      144
Glu Phe Gly Phe Thr Glu Gly Ala Ile Arg Ala Gly Leu Phe Arg Leu
          35          40          45
agg caa aag gga ctg gtg gac atg att gac agg agg tgt agt tta      192
Arg Gln Lys Gly Leu Val Asp Met Ile Asp Arg Arg Arg Cys Ser Leu
          50          55          60
tcc gaa gct ggg tta tat agg tta cag gaa ggt atg aaa aga gtc tac      240
Ser Glu Ala Gly Leu Tyr Arg Leu Gln Glu Gly Met Lys Arg Val Tyr
          65          70          75          80
gag aag agg aac gga gag tgg gac gga aaa tgg aga ata gta gtt tac      288
Glu Lys Arg Asn Gly Glu Trp Asp Gly Lys Trp Arg Ile Val Val Tyr
          85          90          95
aat ata cct gag tca aat agg agt gtc aga gac gag atg aga aaa acc      336
Asn Ile Pro Glu Ser Asn Arg Ser Val Arg Asp Glu Met Arg Lys Thr
          100          105          110
tta aag tgg ttg ggc ttt gga tac ctg gct caa tcg aca tgg ata tcg      384
Leu Lys Trp Leu Gly Phe Gly Tyr Leu Ala Gln Ser Thr Trp Ile Ser
          115          120          125
cca aac cca gtt gag gag agc cta act aaa ttc att aat gaa tta aaa      432
Pro Asn Pro Val Glu Glu Ser Leu Thr Lys Phe Ile Asn Glu Leu Lys
          130          135          140
gat agt aga acc aat gtt gac ata ttc ttc ttt att tcg gac ttt gtt      480
Asp Ser Arg Thr Asn Val Asp Ile Phe Phe Phe Ile Ser Asp Phe Val
          145          150          155          160
gga aat ccc ctt gag ata gta agg aag tgt tgg gat ctg aaa gag gtc      528
Gly Asn Pro Leu Glu Ile Val Arg Lys Cys Trp Asp Leu Lys Glu Val
          165          170          175
gag gag aaa tat aag gag ttt gtg aac caa tgg ggc aaa gtt atg gag      576
Glu Glu Lys Tyr Lys Glu Phe Val Asn Gln Trp Gly Lys Val Met Glu
          180          185          190
aac ata tct tct ctg aaa cca aat gag gca ttc ata acc aga att aga      624
Asn Ile Ser Ser Leu Lys Pro Asn Glu Ala Phe Ile Thr Arg Ile Arg
          195          200          205
ttg gtt cat gaa tac agg aaa ttt tta cac att gat cca aac tta cct      672
Leu Val His Glu Tyr Arg Lys Phe Leu His Ile Asp Pro Asn Leu Pro
          210          215          220
aaa gat cta cta ccg cca aat tgg gta ggt tac gag gca tat gag cta      720
Lys Asp Leu Leu Pro Pro Asn Trp Val Gly Tyr Glu Ala Tyr Glu Leu
          225          230          235          240
ttt caa aaa ctg agg aat aag ctc tca aca ttg tct gac cag ttc ttt      768
Phe Gln Lys Leu Arg Asn Lys Leu Ser Thr Leu Ser Asp Gln Phe Phe
          245          250          255
aag tcg gta tat gaa cct tga      789
Lys Ser Val Tyr Glu Pro
          260

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<210> 106

<211> 262

<212> PRT

<213> Sulfolobus acidocaldarius DSM 639

<400> 106

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

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PhoenixTemp24825.tmp.txt

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

<210> 107

<211> 924

<212> DNA

<213> Pseudomonas fluorescens Pf-5

<220>

<221> CDS

<222> (1)..(924)

<223> transl_table=11

<400> 107

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1				5					10					15		
cag	act	ccg	atc	cgc	gcc	agt	tcg	ctg	atc	atc	acc	ctg	tac	ggc	gat	96
Gln	Thr	Pro	Ile	Arg	Ala	Ser	Ser	Leu	Ile	Ile	Thr	Leu	Tyr	Gly	Asp	
			20					25					30			
gcc	atc	gag	ccc	cac	ggc	ggc	acg	gtg	tgg	ctg	ggc	agc	ctg	att	cag	144
Ala	Ile	Glu	Pro	His	Gly	Gly	Thr	Val	Trp	Leu	Gly	Ser	Leu	Ile	Gln	
			35				40				45					
ttg	ctg	gag	ccc	atg	ggg	atc	aac	gag	cgc	ttg	atc	cgc	acc	tcg	atc	192
Leu	Leu	Glu	Pro	Met	Gly	Ile	Asn	Glu	Arg	Leu	Ile	Arg	Thr	Ser	Ile	
			50			55					60					
ttc	cgc	ctg	agc	aaa	gag	ggc	tgg	ctg	agc	gct	gaa	aag	gtc	ggc	cgg	240
Phe	Arg	Leu	Ser	Lys	Glu	Gly	Trp	Leu	Ser	Ala	Glu	Lys	Val	Gly	Arg	
65				70					75					80		
cgc	agt	tac	tac	agc	ctg	acc	ctg	acc	gga	cgc	cgg	cgc	ttc	gac	aaa	288
Arg	Ser	Tyr	Tyr	Ser	Leu	Thr	Leu	Thr	Gly	Arg	Arg	Arg	Phe	Asp	Lys	
				85				90					95			
gcc	ttc	aag	cgc	gtg	tac	agc	gcc	gga	gtg	ccg	gcc	tgg	gac	ggc	gcc	336
Ala	Phe	Lys	Arg	Val	Tyr	Ser	Ala	Gly	Val	Pro	Ala	Trp	Asp	Gly	Ala	
			100				105						110			
tgg	tgc	ctg	gtg	atg	ctc	tcg	caa	ctg	tct	gtc	gag	ttg	cgc	aag	cag	384

PhoenixTemp24825.tmp.txt

Trp	Cys	Leu	Val	Met	Leu	Ser	Gln	Leu	Ser	Val	Glu	Leu	Arg	Lys	Gln		
		115					120					125					
gtg	cgc	gaa	gag	ttg	gaa	tgg	cag	ggg	ttc	ggc	gcc	atg	tcg	ccg	gta		432
Val	Arg	Glu	Glu	Leu	Glu	Trp	Gln	Gly	Phe	Gly	Ala	Met	Ser	Pro	Val		
		130					135				140						
ctg	ctg	gcc	tgc	ccg	cgc	agt	gat	cgg	gcc	gat	atc	aac	gcc	acc	ctg		480
Leu	Leu	Ala	Cys	Pro	Arg	Ser	Asp	Arg	Ala	Asp	Ile	Asn	Ala	Thr	Leu		
145					150					155					160		
gcg	gag	ctt	ggc	gcc	cag	gaa	gac	acc	atc	gtc	ttc	gag	acc	acg	ccc		528
Ala	Glu	Leu	Gly	Ala	Gln	Glu	Asp	Thr	Ile	Val	Phe	Glu	Thr	Thr	Pro		
			165					170						175			
cag	gat	gtc	ctg	ggc	tcc	agg	gcc	ctg	cgc	ctg	caa	gtg	cgg	gaa	agc		576
Gln	Asp	Val	Leu	Gly	Ser	Arg	Ala	Leu	Arg	Leu	Gln	Val	Arg	Glu	Ser		
		180					185						190				
tgg	aac	atc	gat	gaa	ctg	gca	gcc	cac	tac	agc	gag	ttc	atc	cag	ctg		624
Trp	Asn	Ile	Asp	Glu	Leu	Ala	Ala	His	Tyr	Ser	Glu	Phe	Ile	Gln	Leu		
		195					200					205					
ttc	cgc	ccg	ctc	tgg	cag	gcc	ctg	cgc	gag	cag	gag	cag	ttg	cag	ccc		672
Phe	Arg	Pro	Leu	Trp	Gln	Ala	Leu	Arg	Glu	Gln	Glu	Gln	Leu	Gln	Pro		
		210				215					220						
cag	gat	tgc	ttc	ctg	gcc	cgg	ctg	ctg	ctg	att	cat	gag	tac	cgc	aag		720
Gln	Asp	Cys	Phe	Leu	Ala	Arg	Leu	Leu	Leu	Ile	His	Glu	Tyr	Arg	Lys		
225					230					235					240		
ctg	ctg	ctg	cgc	gat	ccg	caa	ctg	ccc	gac	gaa	ctg	ctg	ccc	ggg	gat		768
Leu	Leu	Leu	Arg	Asp	Pro	Gln	Leu	Pro	Asp	Glu	Leu	Leu	Pro	Gly	Asp		
				245					250					255			
tgg	gaa	ggc	cgc	gcg	gcg	cgc	cag	ttg	tgt	cgc	aac	atc	tat	cgc	ctg		816
Trp	Glu	Gly	Arg	Ala	Ala	Arg	Gln	Leu	Cys	Arg	Asn	Ile	Tyr	Arg	Leu		
			260				265						270				
atc	cag	gcc	cgg	gcc	gaa	gaa	tgg	ctg	gcc	act	gcc	ctg	gag	aac	gcc		864
Ile	Gln	Ala	Arg	Ala	Glu	Glu	Trp	Leu	Ala	Thr	Ala	Leu	Glu	Asn	Ala		
		275					280					285					
gat	ggc	ccg	ttg	ccg	gat	gtc	ggc	gaa	agc	tac	tac	cgg	cgt	ttt	ggc		912
Asp	Gly	Pro	Leu	Pro	Asp	Val	Gly	Glu	Ser	Tyr	Tyr	Arg	Arg	Phe	Gly		
		290				295					300						
ggg	ctg	gtc	tag														924
Gly	Leu	Val															
305																	

<210> 108

<211> 307

<212> PRT

<213> Pseudomonas fluorescens Pf-5

<400> 108

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

PhoenixTemp24825.tmp.txt

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145          150          155          160
Ala Glu Leu Gly Ala Gln Glu Asp Thr Ile Val Phe Glu Thr Thr Pro
165
Gln Asp Val Leu Gly Ser Arg Ala Leu Arg Leu Gln Val Arg Glu Ser
180          185          190
Trp Asn Ile Asp Glu Leu Ala Ala His Tyr Ser Glu Phe Ile Gln Leu
195          200          205
Phe Arg Pro Leu Trp Gln Ala Leu Arg Glu Gln Glu Gln Leu Gln Pro
210          215          220
Gln Asp Cys Phe Leu Ala Arg Leu Leu Leu Ile His Glu Tyr Arg Lys
225          230          235
Leu Leu Leu Arg Asp Pro Gln Leu Pro Asp Glu Leu Leu Pro Gly Asp
245          250          255
Trp Glu Gly Arg Ala Ala Arg Gln Leu Cys Arg Asn Ile Tyr Arg Leu
260          265          270
Ile Gln Ala Arg Ala Glu Glu Trp Leu Ala Thr Ala Leu Glu Asn Ala
275          280          285
Asp Gly Pro Leu Pro Asp Val Gly Glu Ser Tyr Tyr Arg Arg Phe Gly
290          295          300
Gly Leu Val
305

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<210> 109

<211> 1059

<212> DNA

<213> Dechloromonas aromatica RCB

<220>

<221> CDS

<222> (1)..(1059)

<223> transl_table=11

<400> 109

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1      5      10      15
aag tct tca acg ggt cgc cat cgg tcc gag cca ttt cct caa cgc cct      96
Lys Ser Ser Thr Gly Arg His Arg Ser Glu Pro Phe Pro Gln Arg Pro
20      25      30
tcg cca gcc tat ctc gtg agc acc gcc atc caa tcc cgc ctg aat gaa      144
Ser Pro Ala Tyr Leu Val Ser Thr Ala Ile Gln Ser Arg Leu Asn Glu
35      40      45
ttc cgg caa cag cgc cgt gtc cag gct ggc tcg ctg atc atc acc gtc      192
Phe Arg Gln Gln Arg Arg Val Gln Ala Gly Ser Leu Ile Ile Thr Val
50      55      60
ttt ggc gac gcg atc ctg ccg cgc ggc gga cgc atc tgg cta ggc agc      240
Phe Gly Asp Ala Ile Leu Pro Arg Gly Gly Arg Ile Trp Leu Gly Ser
65      70      75      80
ctg atc cgc ctg ctc gaa cca ctc gaa ctc aac gaa cgg ctg atc cgc      288
Leu Ile Arg Leu Leu Glu Pro Leu Glu Leu Asn Glu Arg Leu Ile Arg
85      90      95
acc tcc gtc ttc cgt ctg gtc aag gag gaa tgg ctg cgc acc gaa acc      336
Thr Ser Val Phe Arg Leu Val Lys Glu Trp Leu Arg Thr Glu Thr
100      105      110
atc ggc cgg cgt gcc gac tac gtg ctg acg cca tcg ggc cgt cgg cgt      384
Ile Gly Arg Arg Ala Asp Tyr Val Leu Thr Pro Ser Gly Arg Arg Arg
115      120      125
ttc gag gaa gct tca cgc cac atc tac gcc tcg gat gcg cca ctc tgg      432
Phe Glu Glu Ala Ser Arg His Ile Tyr Ala Ser Asp Ala Pro Leu Trp
130      135      140
gat cgc cgc tgg cgc ctg atc ctg gtc gtc ggc gat ctg gac ccc aag      480
Asp Arg Arg Trp Arg Leu Ile Leu Val Val Gly Asp Leu Asp Pro Lys
145      150      155      160
ctg cgt gag cag gtc cgg cgc gcc ttg ttc tgg cag ggg ttc ggc gcc      528

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PhoenixTemp24825.tmp.txt

Leu	Arg	Glu	Gln	Val	Arg	Arg	Ala	Leu	Phe	Trp	Gln	Gly	Phe	Gly	Ala		
				165					170					175			
ttg	ggg	gcc	gat	tgc	ttc	gtg	cac	cct	agc	gcc	gag	ttg	tcc	agc	gtg	576	
Leu	Gly	Ala	Asp	Cys	Phe	Val	His	Pro	Ser	Ala	Glu	Leu	Ser	Ser	Val		
				180				185					190				
ctc	gac	acg	ctg	att	acc	gaa	ggc	ctg	tca	tcg	gcc	atc	ggc	gcg	ctg	624	
Leu	Asp	Thr	Leu	Ile	Thr	Glu	Gly	Leu	Ser	Ser	Ala	Ile	Gly	Ala	Leu		
				195			200					205					
atg	ccc	ttg	ttc	gcg	gcc	gat	tcg	cgt	tcg	gcc	cag	tcg	gcc	agc	gac	672	
Met	Pro	Leu	Phe	Ala	Ala	Asp	Ser	Arg	Ser	Ala	Gln	Ser	Ala	Ser	Asp		
	210					215				220							
gcc	gac	ctc	gtg	cac	cgc	gcc	tgg	gat	ctc	ggg	cat	ctg	gcc	gag	gcc	720	
Ala	Asp	Leu	Val	His	Arg	Ala	Trp	Asp	Leu	Gly	His	Leu	Ala	Glu	Ala		
225					230					235					240		
tac	agc	gcc	ttc	gtc	gcc	acc	tat	cag	ccc	att	ctc	gac	gaa	ctc	cgg	768	
Tyr	Ser	Ala	Phe	Val	Ala	Thr	Tyr	Gln	Pro	Ile	Leu	Asp	Glu	Leu	Arg		
				245				250					255				
cgc	gac	cat	ctg	gcc	ggg	gtc	agc	gag	cag	gat	gcc	ttc	ctg	ctg	cgc	816	
Arg	Asp	His	Leu	Ala	Gly	Val	Ser	Glu	Gln	Asp	Ala	Phe	Leu	Leu	Arg		
				260				265					270				
atc	ctg	ctc	atc	cac	gat	tac	cgg	cgc	ctg	ctg	ctg	cgc	gat	ccg	gaa	864	
Ile	Leu	Leu	Ile	His	Asp	Tyr	Arg	Arg	Leu	Leu	Leu	Arg	Asp	Pro	Glu		
				275			280					285					
ttg	ccg	gaa	gtc	ctg	ctg	ccg	gcc	aac	tgg	cca	ggg	cag	cag	tcg	cga	912	
Leu	Pro	Glu	Val	Leu	Leu	Pro	Ala	Asn	Trp	Pro	Gly	Gln	Gln	Ser	Arg		
	290					295					300						
ctg	ttg	tgc	aag	gaa	ctg	tac	aag	cgg	ctg	gaa	ccc	ctc	gcc	agc	cgc	960	
Leu	Leu	Cys	Lys	Glu	Leu	Tyr	Lys	Arg	Leu	Glu	Pro	Leu	Ala	Ser	Arg		
305					310					315					320		
cac	ctc	gac	cag	cag	ttg	tgc	ctg	gcc	gat	gga	cgc	gtg	ccg	gaa	gag	1008	
His	Leu	Asp	Gln	Gln	Leu	Cys	Leu	Ala	Asp	Gly	Arg	Val	Pro	Glu	Glu		
				325				330						335			
gac	ctg	tcg	ctc	ccc	gag	cgc	ttc	ccg	cag	aac	gat	ccg	cta	tcg	gcc	1056	
Asp	Leu	Ser	Leu	Pro	Glu	Arg	Phe	Pro	Gln	Asn	Asp	Pro	Leu	Ser	Ala		
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tga																1059	

<210> 110

<211> 352

<212> PRT

<213> Dechloromonas aromatica RCB

<400> 110

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

PhoenixTemp24825.tmp.txt

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145          150          155          160
Leu Arg Glu Gln Val Arg Arg Ala Leu Phe Trp Gln Gly Phe Gly Ala
165          170          175
Leu Gly Ala Asp Cys Phe Val His Pro Ser Ala Glu Leu Ser Ser Val
180          185          190
Leu Asp Thr Leu Ile Thr Glu Gly Leu Ser Ser Ala Ile Gly Ala Leu
195          200          205
Met Pro Leu Phe Ala Ala Asp Ser Arg Ser Ala Gln Ser Ala Ser Asp
210          215          220
Ala Asp Leu Val His Arg Ala Trp Asp Leu Gly His Leu Ala Glu Ala
225          230          235          240
Tyr Ser Ala Phe Val Ala Thr Tyr Gln Pro Ile Leu Asp Glu Leu Arg
245          250          255
Arg Asp His Leu Ala Gly Val Ser Glu Gln Asp Ala Phe Leu Leu Arg
260          265          270
Ile Leu Leu Ile His Asp Tyr Arg Arg Leu Leu Leu Arg Asp Pro Glu
275          280          285
Leu Pro Glu Val Leu Leu Pro Ala Asn Trp Pro Gly Gln Gln Ser Arg
290          295          300
Leu Leu Cys Lys Glu Leu Tyr Lys Arg Leu Glu Pro Leu Ala Ser Arg
305          310          315          320
His Leu Asp Gln Gln Leu Cys Leu Ala Asp Gly Arg Val Pro Glu Glu
325          330          335
Asp Leu Ser Leu Pro Glu Arg Phe Pro Gln Asn Asp Pro Leu Ser Ala
340          345          350

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<210> 111

<211> 924

<212> DNA

<213> Ralstonia eutropha JMP134

<220>

<221> CDS

<222> (1)..(924)

<223> transl_table=11

<400> 111

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1      5      10      15
ctc gca cgc ggc ctt aag ctc ggc gcc aat tgc atg ctc gtg aca ctg      96
Leu Ala Arg Gly Leu Lys Leu Gly Ala Asn Ser Met Leu Val Thr Leu
20      25      30
ttt ggc gat gtg gtc gcg ccg cgg cct cag gcg ctg tgg ctg ggc agc      144
Phe Gly Asp Val Val Ala Pro Arg Pro Gln Ala Leu Trp Leu Gly Ser
35      40      45
ctg atc cgc ctg gcc gag ccg ttc ggc atc aac gac cgg ctt gta cgc      192
Leu Ile Arg Leu Ala Glu Pro Phe Gly Ile Asn Asp Arg Leu Val Arg
50      55      60
act gcg acg ttc cgg ctg acg tcc gat gac tgg ctc aac gcc acg cgc      240
Thr Ala Thr Phe Arg Leu Thr Ser Asp Asp Trp Leu Asn Ala Thr Arg
65      70      75      80
atc ggg cgg cgc agc tac tac ggc ttg tcc gag gcg ggg ctg cag cgc      288
Ile Gly Arg Arg Ser Tyr Tyr Gly Leu Ser Glu Ala Gly Leu Gln Arg
85      90      95
tgc ctg cat gcc ggc aag cgc atc tac gcc ggc gac gca ccc gac tgg      336
Cys Leu His Ala Gly Lys Arg Ile Tyr Ala Gly Asp Ala Pro Asp Trp
100      105      110
gac ggc cgc tgg acg ttg gcg ctg gtg cgt ggc gac gcg cgc gcc acc      384
Asp Gly Arg Trp Thr Leu Ala Leu Val Arg Gly Asp Ala Arg Ala Thr
115      120      125
atc cgc cag cga ttg aag cgc gag ctg ctg tgg gaa ggc ttc ggc gcg      432
Ile Arg Gln Arg Leu Lys Arg Glu Leu Leu Trp Glu Gly Phe Gly Ala
130      135      140

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atc gcg ccg ggc gtg tat gcg cat ccg aat gcc gat gca aac tcg cta      480
Ile Ala Pro Gly Val Tyr Ala His Pro Asn Ala Asp Ala Asn Ser Leu
145                               150                               155                               160
ggc gag atc atc cgt gca gcg cat gcg cag gac ttc gtc gcg gtg atg      528
Gly Glu Ile Ile Arg Ala Ala His Ala Gln Asp Phe Val Ala Val Met
                               165                               170                               175
gac gcg acc agc ctc gag aca ttc tcg atc cga ccg ctg cag acg ttg      576
Asp Ala Thr Ser Leu Glu Thr Phe Ser Ile Arg Pro Leu Gln Thr Leu
                               180                               185                               190
atg cac cag acg ttc aag ctc ggc gac gtg gcg tcc gcg tgg cag gcg      624
Met His Gln Thr Phe Lys Leu Gly Asp Val Ala Ser Ala Trp Gln Ala
195                               200                               205
ctg ctg cgc cgc ttc tcg ccc gtg ctg gcc gac gca cat gcc atg acg      672
Leu Leu Arg Arg Phe Ser Pro Val Leu Ala Asp Ala His Ala Met Thr
210                               215                               220
ccg gcc gac gcc ttt ttc gta cgc acg ctg ctg ctg cac gaa tac cgc      720
Pro Ala Asp Ala Phe Phe Val Arg Thr Leu Leu Leu His Glu Tyr Arg
225                               230                               235                               240
cgc gtg ctg ctg cgc gac ccg aac ctg ccg gaa caa ctg ctg ccc acg      768
Arg Val Leu Leu Arg Asp Pro Asn Leu Pro Glu Gln Leu Leu Pro Thr
245                               250                               255
gac tgg ccc ggt cgc act gcg cga gac ctg tgc cgt gat atg tac gcg      816
Asp Trp Pro Gly Arg Thr Ala Arg Asp Leu Cys Arg Asp Met Tyr Ala
260                               265                               270
gca ctg ctg gat gcc agc gag gac tat ctg cgc gag gtt gtg gag gta      864
Ala Leu Leu Asp Ala Ser Glu Asp Tyr Leu Arg Glu Val Val Glu Val
275                               280                               285
tcc gaa ggt acg ctg gcc aac gcc acc cgg ctt ctg cgc agg cgc ttt      912
Ser Glu Gly Thr Leu Ala Asn Ala Thr Arg Leu Leu Arg Arg Arg Phe
290                               295                               300
gcc atg gcg tag
Ala Met Ala
305

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<210> 112

<211> 307

<212> PRT

<213> Ralstonia eutropha JMP134

<400> 112

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

```

PhoenixTemp24825.tmp.txt

```

Met His Gln Thr Phe Lys Leu Gly Asp Val Ala Ser Ala Trp Gln Ala
    195    200    205
Leu Leu Arg Arg Phe Ser Pro Val Leu Ala Asp Ala His Ala Met Thr
    210    215    220
Pro Ala Asp Ala Phe Phe Val Arg Thr Leu Leu Leu His Glu Tyr Arg
225    230    235    240
Arg Val Leu Leu Arg Asp Pro Asn Leu Pro Glu Gln Leu Leu Pro Thr
    245    250    255
Asp Trp Pro Gly Arg Thr Ala Arg Asp Leu Cys Arg Asp Met Tyr Ala
    260    265    270
Ala Leu Leu Asp Ala Ser Glu Asp Tyr Leu Arg Glu Val Val Glu Val
    275    280    285
Ser Glu Gly Thr Leu Ala Asn Ala Thr Arg Leu Leu Arg Arg Arg Phe
    290    295    300
Ala Met Ala
305

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<210> 113

<211> 948

<212> DNA

<213> Dechloromonas aromatica RCB

<220>

<221> CDS

<222> (1)..(948)

<400> 113

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

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PhoenixTemp24825.tmp.txt

Arg	Ala	Trp	Asp	Leu	Gly	His	Leu	Ala	Glu	Ala	Tyr	Ser	Ala	Phe	Val		
		195					200					205					
gcc	acc	tat	cag	ccc	att	ctc	gac	gaa	ctc	cgg	cgc	gac	cat	ctg	gcc		672
Ala	Thr	Tyr	Gln	Pro	Ile	Leu	Asp	Glu	Leu	Arg	Arg	Asp	His	Leu	Ala		
		210				215					220						
ggg	gtc	agc	gag	cag	gat	gcc	ttc	ctg	ctg	cgc	atc	ctg	ctc	atc	cac		720
Gly	Val	Ser	Glu	Gln	Asp	Ala	Phe	Leu	Leu	Arg	Ile	Leu	Leu	Ile	His		
225					230					235					240		
gat	tac	cgg	cgc	ctg	ctg	ctg	cgc	gat	ccg	gaa	ttg	ccg	gaa	gtc	ctg		768
Asp	Tyr	Arg	Arg	Leu	Leu	Leu	Arg	Asp	Pro	Glu	Leu	Pro	Glu	Val	Leu		
				245				250						255			
ctg	ccg	gcc	aac	tgg	cca	ggg	cag	cag	tcg	cga	ctg	ttg	tgc	aag	gaa		816
Leu	Pro	Ala	Asn	Trp	Pro	Gly	Gln	Gln	Ser	Arg	Leu	Leu	Cys	Lys	Glu		
			260				265						270				
ctg	tac	aag	cgg	ctg	gaa	ccc	ctc	gcc	agc	cgc	cac	ctc	gac	cag	cag		864
Leu	Tyr	Lys	Arg	Leu	Glu	Pro	Leu	Ala	Ser	Arg	His	Leu	Asp	Gln	Gln		
		275				280					285						
ttg	tgc	ctg	gcc	gat	gga	cgc	gtg	ccg	gaa	gag	gac	ctg	tcg	ctc	ccc		912
Leu	Cys	Leu	Ala	Asp	Gly	Arg	Val	Pro	Glu	Glu	Asp	Leu	Ser	Leu	Pro		
290					295						300						
gag	cgc	ttc	ccg	cag	aac	gat	ccg	cta	tcg	gcc	tga						948
Glu	Arg	Phe	Pro	Gln	Asn	Asp	Pro	Leu	Ser	Ala							
305					310					315							

<210> 114

<211> 315

<212> PRT

<213> Dechloromonas aromatica RCB

<400> 114

Met	Ser	Thr	Ala	Ile	Gln	Ser	Arg	Leu	Asn	Glu	Phe	Arg	Gln	Gln	Arg		
1				5					10					15			
Arg	Val	Gln	Ala	Gly	Ser	Leu	Ile	Ile	Thr	Val	Phe	Gly	Asp	Ala	Ile		
			20					25					30				
Leu	Pro	Arg	Gly	Gly	Arg	Ile	Trp	Leu	Gly	Ser	Leu	Ile	Arg	Leu	Leu		
		35					40					45					
Glu	Pro	Leu	Glu	Leu	Asn	Glu	Arg	Leu	Ile	Arg	Thr	Ser	Val	Phe	Arg		
		50				55					60						
Leu	Val	Lys	Glu	Glu	Trp	Leu	Arg	Thr	Glu	Thr	Ile	Gly	Arg	Arg	Ala		
65					70					75					80		
Asp	Tyr	Val	Leu	Thr	Pro	Ser	Gly	Arg	Arg	Arg	Phe	Glu	Glu	Ala	Ser		
				85					90					95			
Arg	His	Ile	Tyr	Ala	Ser	Asp	Ala	Pro	Leu	Trp	Asp	Arg	Arg	Arg	Trp	Arg	
			100				105						110				
Leu	Ile	Leu	Val	Val	Gly	Asp	Leu	Asp	Pro	Lys	Leu	Arg	Glu	Gln	Val		
		115				120						125					
Arg	Arg	Ala	Leu	Phe	Trp	Gln	Gly	Phe	Gly	Ala	Leu	Gly	Ala	Asp	Cys		
		130				135				140							
Phe	Val	His	Pro	Ser	Ala	Glu	Leu	Ser	Ser	Val	Leu	Asp	Thr	Leu	Ile		
145					150					155					160		
Thr	Glu	Gly	Leu	Ser	Ser	Ala	Ile	Gly	Ala	Leu	Met	Pro	Leu	Phe	Ala		
				165					170					175			
Ala	Asp	Ser	Arg	Ser	Ala	Gln	Ser	Ala	Ser	Asp	Ala	Asp	Leu	Val	His		
			180					185					190				
Arg	Ala	Trp	Asp	Leu	Gly	His	Leu	Ala	Glu	Ala	Tyr	Ser	Ala	Phe	Val		
		195					200					205					
Ala	Thr	Tyr	Gln	Pro	Ile	Leu	Asp	Glu	Leu	Arg	Arg	Asp	His	Leu	Ala		
		210				215					220						
Gly	Val	Ser	Glu	Gln	Asp	Ala	Phe	Leu	Leu	Arg	Ile	Leu	Leu	Ile	His		
225					230					235					240		
Asp	Tyr	Arg	Arg	Leu	Leu	Arg	Asp	Pro	Glu	Leu	Pro	Glu	Val	Leu			
				245				250					255				
Leu	Pro	Ala	Asn	Trp	Pro	Gly	Gln	Gln	Ser	Arg	Leu	Leu	Cys	Lys	Glu		
			260				265						270				

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Leu Tyr Lys Arg Leu Glu Pro Leu Ala Ser Arg His Leu Asp Gln Gln
 275 280 285
 Leu Cys Leu Ala Asp Gly Arg Val Pro Glu Glu Asp Leu Ser Leu Pro
 290 295 300
 Glu Arg Phe Pro Gln Asn Asp Pro Leu Ser Ala
 305 310 315

<210> 115

<211> 843

<212> DNA

<213> Ralstonia eutropha JMP134

<220>

<221> CDS

<222> (1)..(843)

<400> 115

atg	ctc	gtg	aca	ctg	ttt	ggc	gat	gtg	gtc	gcg	ccg	ccg	cct	cag	gcg	48
Met	Leu	Val	Thr	Leu	Phe	Gly	Asp	Val	Val	Ala	Pro	Arg	Pro	Gln	Ala	
1				5				10					15			
ctg	tgg	ctg	ggc	agc	ctg	atc	cgc	ctg	gcc	gag	ccg	ttc	ggc	atc	aac	96
Leu	Trp	Leu	Gly	Ser	Leu	Ile	Arg	Leu	Ala	Glu	Pro	Phe	Gly	Ile	Asn	
			20					25					30			
gac	cgg	ctt	gta	cgc	act	gcg	acg	ttc	cgg	ctg	acg	tcc	gat	gac	tgg	144
Asp	Arg	Leu	Val	Arg	Thr	Ala	Thr	Phe	Arg	Leu	Thr	Ser	Asp	Asp	Trp	
			35					40					45			
ctc	aac	gcc	acg	cgc	atc	ggg	cgg	cgc	agc	tac	tac	ggc	ttg	tcc	gag	192
Leu	Asn	Ala	Thr	Arg	Ile	Gly	Arg	Arg	Ser	Tyr		Gly	Leu	Ser	Glu	
	50					55				60						
gcg	ggg	ctg	cag	cgc	tgc	ctg	cat	gcc	ggc	aag	cgc	atc	tac	gcc	ggc	240
Ala	Gly	Leu	Gln	Arg	Cys	Leu	His	Ala	Gly	Lys	Arg	Ile	Tyr	Ala	Gly	
	65				70					75					80	
gac	gca	ccc	gac	tgg	gac	ggc	cgc	tgg	acg	ttg	gcg	ctg	gtg	cgt	ggc	288
Asp	Ala	Pro	Asp	Trp	Asp	Gly	Arg	Trp	Thr	Leu	Ala	Leu	Val	Arg	Gly	
				85				90						95		
gac	gcg	cgc	gcc	acc	atc	cgc	cag	cga	ttg	aag	cgc	gag	ctg	ctg	tgg	336
Asp	Ala	Arg	Ala	Thr	Ile	Arg	Gln	Arg	Leu	Lys	Arg	Glu	Leu	Leu	Trp	
			100					105					110			
gaa	ggc	ttc	ggc	gcg	atc	gcg	ccg	ggc	gtg	tat	gcg	cat	ccg	aat	gcc	384
Glu	Gly	Phe	Gly	Ala	Ile	Ala	Pro	Gly	Val	Tyr	Ala	His	Pro	Asn	Ala	
			115					120					125			
gat	gca	aac	tcg	cta	ggc	gag	atc	atc	cgt	gca	gcg	cat	gcg	cag	gac	432
Asp	Ala	Asn	Ser	Leu	Gly	Glu	Ile	Ile	Arg	Ala	Ala	His	Ala	Gln	Asp	
			130			135				140						
ttc	gtc	gcg	gtg	atg	gac	gcg	acc	agc	ctc	gag	aca	ttc	tcg	atc	cga	480
Phe	Val	Ala	Val	Met	Asp	Ala	Thr	Ser	Leu	Glu	Thr	Phe	Ser	Ile	Arg	
				145		150				155					160	
ccg	ctg	cag	acg	ttg	atg	cac	cag	acg	ttc	aag	ctc	ggc	gac	gtg	gcg	528
Pro	Leu	Gln	Thr	Leu	Met	His	Gln	Thr	Phe	Lys	Leu	Gly	Asp	Val	Ala	
				165					170					175		
tcc	gcg	tgg	cag	gcg	ctg	ctg	cgc	cgc	ttc	tcg	ccc	gtg	ctg	gcc	gac	576
Ser	Ala	Trp	Gln	Ala	Leu	Leu	Arg	Arg	Phe	Ser	Pro	Val	Leu	Ala	Asp	
			180					185					190			
gca	cat	gcc	atg	acg	ccg	gcc	gac	gcc	ttt	ttc	gta	cgc	acg	ctg	ctg	624
Ala	His	Ala	Met	Thr	Pro	Ala	Asp	Ala	Phe	Phe	Val	Arg	Thr	Leu	Leu	
			195				200						205			
ctg	cac	gaa	tac	cgc	cgc	gtg	ctg	ctg	cgc	gac	ccg	aac	ctg	ccg	gaa	672
Leu	His	Glu	Tyr	Arg	Arg	Val	Leu	Leu	Arg	Asp	Pro	Asn	Leu	Pro	Glu	
			210			215					220					
caa	ctg	ctg	ccc	acg	gac	tgg	ccc	ggg	cgc	act	gcg	cga	gac	ctg	tgc	720
Gln	Leu	Leu	Pro	Thr	Asp	Trp	Pro	Gly	Arg	Thr	Ala	Arg	Asp	Leu	Cys	
			225			230				235					240	
cgt	gat	atg	tac	gcg	gca	ctg	ctg	gat	gcc	agc	gag	gac	tat	ctg	cgc	768
Arg	Asp	Met	Tyr	Ala	Ala	Leu	Leu	Asp	Ala	Ser	Glu	Asp	Tyr	Leu	Arg	

PhoenixTemp24825.tmp.txt

				245					250					255					
gag	gtt	gtg	gag	gta	tcc	gaa	ggt	acg	ctg	gcc	aac	gcc	acc	cgg	ctt				
Glu	Val	Val	Glu	Val	Ser	Glu	Gly	Thr	Leu	Ala	Asn	Ala	Thr	Arg	Leu				816
			260					265					270						
ctg	cgc	agg	cgc	ttt	gcc	atg	gcg	tag											
Leu	Arg	Arg	Arg	Phe	Ala	Met	Ala												843
			275				280												

<210> 116

<211> 280

<212> PRT

<213> Ralstonia eutropha JMP134

<400> 116

Met	Leu	Val	Thr	Leu	Phe	Gly	Asp	Val	Val	Ala	Pro	Arg	Pro	Gln	Ala				
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Leu	Trp	Leu	Gly	Ser	Leu	Ile	Arg	Leu	Ala	Glu	Pro	Phe	Gly	Ile	Asn				
			20				25						30						
Asp	Arg	Leu	Val	Arg	Thr	Ala	Thr	Phe	Arg	Leu	Thr	Ser	Asp	Asp	Trp				
			35				40						45						
Leu	Asn	Ala	Thr	Arg	Ile	Gly	Arg	Arg	Ser	Tyr	Tyr	Gly	Leu	Ser	Glu				
			50			55					60								
Ala	Gly	Leu	Gln	Arg	Cys	Leu	His	Ala	Gly	Lys	Arg	Ile	Tyr	Ala	Gly				
65					70				75						80				
Asp	Ala	Pro	Asp	Trp	Asp	Gly	Arg	Trp	Thr	Leu	Ala	Leu	Val	Arg	Gly				
				85				90						95					
Asp	Ala	Arg	Ala	Thr	Ile	Arg	Gln	Arg	Leu	Lys	Arg	Glu	Leu	Leu	Trp				
			100				105						110						
Glu	Gly	Phe	Gly	Ala	Ile	Ala	Pro	Gly	Val	Tyr	Ala	His	Pro	Asn	Ala				
			115				120					125							
Asp	Ala	Asn	Ser	Leu	Gly	Glu	Ile	Ile	Arg	Ala	Ala	His	Ala	Gln	Asp				
			130			135				140									
Phe	Val	Ala	Val	Met	Asp	Ala	Thr	Ser	Leu	Glu	Thr	Phe	Ser	Ile	Arg				
145				150					155					160					
Pro	Leu	Gln	Thr	Leu	Met	His	Gln	Thr	Phe	Lys	Leu	Gly	Asp	Val	Ala				
				165				170						175					
Ser	Ala	Trp	Gln	Ala	Leu	Leu	Arg	Arg	Phe	Ser	Pro	Val	Leu	Ala	Asp				
			180				185						190						
Ala	His	Ala	Met	Thr	Pro	Ala	Asp	Ala	Phe	Phe	Val	Arg	Thr	Leu	Leu				
			195				200					205							
Leu	His	Glu	Tyr	Arg	Arg	Val	Leu	Leu	Arg	Asp	Pro	Asn	Leu	Pro	Glu				
			210			215					220								
Gln	Leu	Leu	Pro	Thr	Asp	Trp	Pro	Gly	Arg	Thr	Ala	Arg	Asp	Leu	Cys				
225					230				235					240					
Arg	Asp	Met	Tyr	Ala	Ala	Leu	Leu	Asp	Ala	Ser	Glu	Asp	Tyr	Leu	Arg				
				245				250					255						
Glu	Val	Val	Glu	Val	Ser	Glu	Gly	Thr	Leu	Ala	Asn	Ala	Thr	Arg	Leu				
			260				265						270						
Leu	Arg	Arg	Arg	Phe	Ala	Met	Ala												
			275				280												

<210> 117

<211> 816

<212> DNA

<213> Brevibacterium linens BL2

<220>

<221> CDS

<222> (1) .. (816)

<400> 117

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Met	Thr	Val	His	Pro	Gln	Ser	Leu	Phe	Phe	Ala	Leu	Ala	Gly	Leu	His				
1				5				10					15						

48

PhoenixTemp24825.tmp.txt

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atg ctt gat gac ccc agg ccg ctg agc ggg gcc tcg atc gtg ttc gtc      96
Met Leu Asp Asp Pro Arg Pro Leu Ser Gly Ala Ser Ile Val Phe Val
      20      25      30
atg ggc agg ctg ggt gtg ggg gag tcg gcg gcc agg tcc gtg ctg cag      144
Met Gly Arg Leu Gly Val Gly Glu Ser Ala Ala Arg Ser Val Leu Gln
      35      40      45
cgg atg gcg gcg aag aac ttc atc gtg cga cac aaa gag ggc cgc aag      192
Arg Met Ala Ala Lys Asn Phe Ile Val Arg His Lys Glu Gly Arg Lys
      50      55      60
acc ttc tac acg ctc tcc gat cgc gga ccg gcg att ctg cgc gag ggt      240
Thr Phe Tyr Thr Leu Ser Asp Arg Gly Arg Ala Ile Leu Arg Glu Gly
      65      70      75      80
cag gag aag atg ttc gcc ggc tgg cag ccc cag gat tgg gac ggc cga      288
Gln Glu Lys Met Phe Ala Gly Trp Gln Pro Gln Asp Trp Asp Gly Arg
      85      90      95
tgg acc ttt gtg cgc atc cag gtg ccc gag tcg aag agg aca ctg cgc      336
Trp Thr Phe Val Arg Ile Gln Val Pro Glu Ser Lys Arg Thr Leu Arg
      100      105      110
cac cag atg gcg tcg agg ctg tcg tgg gct ggt ttc gct cag gtg gat      384
His Gln Met Ala Ser Arg Leu Ser Trp Ala Gly Phe Ala Gln Val Asp
      115      120      125
ggc ggc cct tgg gtg gct ccc ggg ccg cat gat gtt gcc acg ata ctg      432
Gly Gly Pro Trp Val Ala Pro Gly Pro His Asp Val Ala Thr Ile Leu
      130      135      140
ggg ccg gag cag tcg gtg atc tct ccg att gtc gtc tat ggc gag cct      480
Gly Pro Glu Gln Ser Val Ile Ser Pro Ile Val Val Tyr Gly Glu Pro
      145      150      155      160
aag ccc ccg acg tcc gaa gag atg ctg gca ggc gct ttc gac ctg gcg      528
Lys Pro Pro Thr Ser Glu Glu Met Leu Ala Gly Ala Phe Asp Leu Ala
      165      170      175
gag ttg gcc gcc gac tat gag tcg ttc ggc gag aag tgg cga gct gtt      576
Glu Leu Ala Ala Asp Tyr Glu Ser Phe Gly Glu Lys Trp Arg Ala Val
      180      185      190
gat ccg gat tca ctg tcg ccg gtt gac gcg ctg gtc aag cga gtc gag      624
Asp Pro Asp Ser Leu Ser Pro Val Asp Ala Leu Val Lys Arg Val Glu
      195      200      205
ctc cac ttg gat tgg ctg gct ctt gcg cgt acg gac ccg cag ctg cca      672
Leu His Leu Asp Trp Leu Ala Leu Ala Arg Thr Asp Pro Gln Leu Pro
      210      215      220
gcg acg ttg ttg ccg aag gga tgg ccg ggg gcc gcg cag agt att tcg      720
Ala Thr Leu Leu Pro Lys Gly Trp Pro Gly Ala Ala Gln Ser Ile Ser
      225      230      235      240
ttt cga gag ctt gat gct gag ttg ggc act ccg gaa gtt cat gca gtg      768
Phe Arg Glu Leu Asp Ala Glu Leu Gly Thr Arg Glu Val His Ala Val
      245      250      255
tcg ggt ttt ttc gcg gga gat ctg aat gaa ctc tat tca ttt ttg      813
Ser Gly Phe Phe Ala Gly Asp Leu Asn Glu Leu Tyr Ser Phe Leu
      260      265      270
tga
      816

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<210> 118

<211> 271

<212> PRT

<213> Brevibacterium linens BL2

<400> 118

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

```

PhoenixTemp24825.tmp.txt

```

Arg Met Ala Ala Lys Asn Phe Ile Val Arg His Lys Glu Gly Arg Lys
 50      55      60
Thr Phe Tyr Thr Leu Ser Asp Arg Gly Arg Ala Ile Leu Arg Glu Gly
65      70      75      80
Gln Glu Lys Met Phe Ala Gly Trp Gln Pro Gln Asp Trp Asp Gly Arg
      85      90      95
Trp Thr Phe Val Arg Ile Gln Val Pro Glu Ser Lys Arg Thr Leu Arg
      100      105      110
His Gln Met Ala Ser Arg Leu Ser Trp Ala Gly Phe Ala Gln Val Asp
      115      120      125
Gly Gly Pro Trp Val Ala Pro Gly Pro His Asp Val Ala Thr Ile Leu
      130      135      140
Gly Pro Glu Gln Ser Val Ile Ser Pro Ile Val Val Tyr Gly Glu Pro
145      150      155      160
Lys Pro Pro Thr Ser Glu Glu Met Leu Ala Gly Ala Phe Asp Leu Ala
      165      170      175
Glu Leu Ala Ala Asp Tyr Glu Ser Phe Gly Glu Lys Trp Arg Ala Val
      180      185      190
Asp Pro Asp Ser Leu Ser Pro Val Asp Ala Leu Val Lys Arg Val Glu
      195      200      205
Leu His Leu Asp Trp Leu Ala Leu Ala Arg Thr Asp Pro Gln Leu Pro
      210      215      220
Ala Thr Leu Leu Pro Lys Gly Trp Pro Gly Ala Ala Gln Ser Ile Ser
225      230      235      240
Phe Arg Glu Leu Asp Ala Glu Leu Gly Thr Arg Glu Val His Ala Val
      245      250      255
Ser Gly Phe Phe Ala Gly Asp Leu Asn Glu Leu Tyr Ser Phe Leu
      260      265      270

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<210> 119

<211> 828

<212> DNA

<213> Brevibacterium linens BL2

<220>

<221> CDS

<222> (1)..(828)

<400> 119

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

```

PhoenixTemp24825.tmp.txt

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His Leu Arg Ala Glu Val Glu Asp Ala Leu Val Gly Leu Asp Val Arg
130 135 140
gac cgg gcg acg atc ttc atc acg cag aca ccc ctg acc gct gaa ccc 480
Asp Arg Ala Thr Ile Phe Ile Thr Gln Thr Pro Leu Thr Ala Glu Pro
145 150 155 160
ttc gct caa gcg gcg gcg aaa tgg tgg cag ctg gac acc ctg gct gcc 528
Phe Ala Gln Ala Ala Ala Lys Trp Trp Gln Leu Asp Thr Leu Ala Ala
165 170 175
agg cac acc gaa ttc ctt cgc cgg tac gaa cac gct gcg cca ctg tcg 576
Arg His Thr Glu Phe Leu Arg Arg Tyr Glu His Ala Ala Pro Leu Ser
180 185 190
gag aac tca gcc cca ctg cca gag aac tca gcg ccg aag tcg tct ctc 624
Glu Asn Ser Ala Pro Leu Pro Glu Asn Ser Ala Pro Lys Ser Ser Leu
195 200 205
gaa ccg cgt gag gcg ttc gtt ctg tgg ctg cac tgc gtc gac gag tgg 672
Glu Pro Arg Glu Ala Phe Val Leu Trp Leu His Cys Val Asp Glu Trp
210 215 220
aag gcg atc ccc tac gtc gat ccg ggc ctt cca ccc agc gcc ctg ccc 720
Lys Ala Ile Pro Tyr Val Asp Pro Gly Leu Pro Pro Ser Ala Leu Pro
225 230 235 240
tcg gac tgg ccc ggg atg aga agc gtg gaa ctc ttc gca cag ctg cgc 768
Ser Asp Trp Pro Gly Met Arg Ser Val Glu Leu Phe Ala Gln Leu Arg
245 250 255
cgc acc cag gcg gag cct gcc cgt gcc cac gtc cgg gag atc agc tca 816
Arg Thr Gln Ala Glu Pro Ala Arg Ala His Val Arg Glu Ile Ser Ser
260 265 270
gca gag tcg tga 828
Ala Glu Ser
275

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<210> 120

<211> 275

<212> PRT

<213> Brevibacterium linens BL2

<400> 120

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Met Leu Arg Thr Phe Val Gly Leu His Leu Arg Asp Leu Gly Gly Trp
1 5 10 15
Ile Arg Val Ala Ala Leu Leu Asp Leu Leu Ala Thr Ala Gly Val Ser
20 25 30
Asn Ser Ser Thr Arg Ser Ala Val Ser Arg Leu Lys Gly Lys Gly Leu
35 40 45
Leu Ile Pro Asp Lys Arg Glu Ala Val Ala Gly Tyr Arg Leu Asp Ser
50 55 60
Ala Ala Val Ser Gly Leu Glu Arg Gly Asp Arg Ile Phe Thr Tyr
65 70 75 80
Arg Gly Gln Arg Asp Asp Glu Pro Trp Cys Leu Val Ser Tyr Ser Leu
85 90 95
Pro Glu Val Asp Arg Ser Lys Arg Val Gln Leu Arg Arg Thr Leu Met
100 105 110
Gly Leu Gly Phe Gly Ala Val Thr Asp Gly Leu Trp Ile Ala Pro Gly
115 120 125
His Leu Arg Ala Glu Val Glu Asp Ala Leu Val Gly Leu Asp Val Arg
130 135 140
Asp Arg Ala Thr Ile Phe Ile Thr Gln Thr Pro Leu Thr Ala Glu Pro
145 150 155 160
Phe Ala Gln Ala Ala Ala Lys Trp Trp Gln Leu Asp Thr Leu Ala Ala
165 170 175
Arg His Thr Glu Phe Leu Arg Arg Tyr Glu His Ala Ala Pro Leu Ser
180 185 190
Glu Asn Ser Ala Pro Leu Pro Glu Asn Ser Ala Pro Lys Ser Ser Leu
195 200 205
Glu Pro Arg Glu Ala Phe Val Leu Trp Leu His Cys Val Asp Glu Trp
210 215 220

```


PhoenixTemp24825.tmp.txt

Lys Ala Ile Pro Tyr Val Asp Pro Gly Leu Pro Pro Ser Ala Leu Pro
 225 230 235 240
 Ser Asp Trp Pro Gly Met Arg Ser Val Glu Leu Phe Ala Gln Leu Arg
 245 250 255
 Arg Thr Gln Ala Glu Pro Ala Arg Ala His Val Arg Glu Ile Ser Ser
 260 265 270
 Ala Glu Ser
 275

<210> 121

<211> 885

<212> DNA

<213> Exiguobacterium sp. 255-15

<220>

<221> CDS

<222> (1)..(885)

<223> transl_table=11

<400> 121

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1 5 10 15	
atc cgt cat tac ggc aat caa atc tgg gtc ggc agt ctg att cgt ctg	96
Ile Arg His Tyr Gly Asn Gln Ile Trp Val Gly Ser Leu Ile Arg Leu	
20 25 30	
ctc aaa gag ttt ggt cat aat gaa cag gcg gtc cgg gtc gcg gtt tcc	144
Leu Lys Glu Phe Gly His Asn Glu Gln Ala Val Arg Val Ala Val Ser	
35 40 45	
cgg atg gtc aag caa ggc tgg ctc acc tca caa aaa caa ggc acg aaa	192
Arg Met Val Lys Gln Gly Trp Leu Thr Ser Gln Lys Gln Gly Thr Lys	
50 55 60	
agt ttt tat tcg ctg acc ccg cgt ggt gtc gag cgg atg gaa gaa gcc	240
Ser Phe Tyr Ser Leu Thr Pro Arg Gly Val Glu Arg Met Glu Glu Ala	
65 70 75 80	
gcc cgg cgg att tat aaa tcg aca cct cat gtc tgg gac gga aaa tgg	288
Ala Arg Arg Ile Tyr Lys Ser Thr Pro His Val Trp Asp Gly Lys Trp	
85 90 95	
cgg acg ctg atg tac acg att ccg gaa gac aaa cgg caa atc cgt gat	336
Arg Thr Leu Met Tyr Thr Ile Pro Glu Asp Lys Arg Gln Ile Arg Asp	
100 105 110	
gaa ttg cgg aaa gag ttg tcg tgg agc gga ttc gga aat tta tcg aac	384
Glu Leu Arg Lys Glu Leu Ser Trp Ser Gly Phe Gly Asn Leu Ser Asn	
115 120 125	
ggt gtc tgg att tcg ccg aac cca ctc gaa aaa gaa gcg gaa cgg ttg	432
Gly Val Trp Ile Ser Pro Asn Pro Leu Glu Lys Glu Ala Glu Arg Leu	
130 135 140	
att gaa gct tat gat atc aag gcg tat atc gac ttt ttt gtc ggc gaa	480
Ile Glu Ala Tyr Asp Ile Lys Ala Tyr Ile Asp Phe Phe Val Gly Glu	
145 150 155 160	
tac cac gga ccg caa cag gat caa tca ctg gtc gaa cgg gcc ttt ccg	528
Tyr His Gly Pro Gln Gln Asp Gln Ser Leu Val Glu Arg Ala Phe Pro	
165 170 175	
ctc gat gaa tta cag gaa cga tat gaa cag ttc att gct gag tac agc	576
Leu Asp Glu Leu Gln Glu Arg Tyr Glu Gln Phe Ile Ala Glu Tyr Ser	
180 185 190	
cgg cgt tac atc gtc cat caa agc cgg atc cag ctc ggt gaa atg gat	624
Arg Arg Tyr Ile Val His Gln Ser Arg Ile Gln Leu Gly Glu Met Asp	
195 200 205	
gag gaa cag tgt ttt gtc gaa cgg acg aca ctc gtc cat gaa tac cgg	672
Glu Glu Gln Cys Phe Val Gln Arg Thr Thr Leu Val His Glu Tyr Arg	
210 215 220	
aag ttt tta ttt acg gat ccc gga ctg ccg cag gag ctg ttg ccg gat	720
Lys Phe Leu Phe Thr Asp Pro Gly Leu Pro Gln Glu Leu Leu Pro Asp	

PhoenixTemp24825.tmp.txt

225		230		235		240										
gag	tgg	agc	ggt	cat	cac	gcg	gcc	ttg	ttg	ttt	gaa	caa	tac	tac	cgg	768
Glu	Trp	Ser	Gly	His	His	Ala	Ala	Leu	Leu	Phe	Glu	Gln	Tyr	Tyr	Arg	
				245				250							255	
ctg	ctc	gca	gaa	ccg	gcg	agc	cgg	ttt	ttt	gaa	tcc	att	ttt	cgt	gaa	816
Leu	Leu	Ala	Glu	Pro	Ala	Ser	Arg	Phe	Phe	Glu	Ser	Ile	Phe	Arg	Glu	
				260				265							270	
acc	cac	gat	gtg	acg	caa	aaa	agt	gcc	gat	tat	gat	gct	tcg	gaa	cat	864
Thr	His	Asp	Val	Thr	Gln	Lys	Ser	Ala	Asp	Tyr	Asp	Ala	Ser	Glu	His	
				275				280							285	
ccg	ttg	ttc	gca	gaa	cgc	taa										885
Pro	Leu	Phe	Ala	Glu	Arg											
				290												

<210> 122

<211> 294

<212> PRT

<213> Exiguobacterium sp. 255-15

<400> 122

Met	Ser	Ala	Asn	Thr	Gln	Ser	Met	Ile	Phe	Thr	Val	Tyr	Gly	Asp	Tyr	
1				5				10						15		
Ile	Arg	His	Tyr	Gly	Asn	Gln	Ile	Trp	Val	Gly	Ser	Leu	Ile	Arg	Leu	
				20				25						30		
Leu	Lys	Glu	Phe	Gly	His	Asn	Glu	Gln	Ala	Val	Arg	Val	Ala	Val	Ser	
				35				40						45		
Arg	Met	Val	Lys	Gln	Gly	Trp	Leu	Thr	Ser	Gln	Lys	Gln	Gly	Thr	Lys	
				50				55						60		
Ser	Phe	Tyr	Ser	Leu	Thr	Pro	Arg	Gly	Val	Glu	Arg	Met	Glu	Glu	Ala	
65					70					75					80	
Ala	Arg	Arg	Ile	Tyr	Lys	Ser	Thr	Pro	His	Val	Trp	Asp	Gly	Lys	Trp	
				85						90				95		
Arg	Thr	Leu	Met	Tyr	Thr	Ile	Pro	Glu	Asp	Lys	Arg	Gln	Ile	Arg	Asp	
				100				105						110		
Glu	Leu	Arg	Lys	Glu	Leu	Ser	Trp	Ser	Gly	Phe	Gly	Asn	Leu	Ser	Asn	
				115				120						125		
Gly	Val	Trp	Ile	Ser	Pro	Asn	Pro	Leu	Glu	Lys	Glu	Ala	Glu	Arg	Leu	
				130				135						140		
Ile	Glu	Ala	Tyr	Asp	Ile	Lys	Ala	Tyr	Ile	Asp	Phe	Phe	Val	Gly	Glu	
145					150					155					160	
Tyr	His	Gly	Pro	Gln	Gln	Asp	Gln	Ser	Leu	Val	Glu	Arg	Ala	Phe	Pro	
				165						170					175	
Leu	Asp	Glu	Leu	Gln	Glu	Arg	Tyr	Glu	Gln	Phe	Ile	Ala	Glu	Tyr	Ser	
				180				185						190		
Arg	Arg	Tyr	Ile	Val	His	Gln	Ser	Arg	Ile	Gln	Leu	Gly	Glu	Met	Asp	
				195				200						205		
Glu	Glu	Gln	Cys	Phe	Val	Glu	Arg	Thr	Thr	Leu	Val	His	Glu	Tyr	Arg	
				210				215						220		
Lys	Phe	Leu	Phe	Thr	Asp	Pro	Gly	Leu	Pro	Gln	Glu	Leu	Leu	Pro	Asp	
225					230					235					240	
Glu	Trp	Ser	Gly	His	His	Ala	Ala	Leu	Leu	Phe	Glu	Gln	Tyr	Tyr	Arg	
				245						250					255	
Leu	Leu	Ala	Glu	Pro	Ala	Ser	Arg	Phe	Phe	Glu	Ser	Ile	Phe	Arg	Glu	
				260				265						270		
Thr	His	Asp	Val	Thr	Gln	Lys	Ser	Ala	Asp	Tyr	Asp	Ala	Ser	Glu	His	
				275				280							285	
Pro	Leu	Phe	Ala	Glu	Arg											
				290												

<210> 123

<211> 1002

<212> DNA

<213> Frankia sp. EAN1pec

<220>

<221> CDS

<222> (1)..(1002)

<223> transl_table=11

<400> 123

gtg	aca	gcg	ccc	gcg	cgg	ctc	gca	ggt	cgc	gac	cgt	gat	ccg	ggt	cgt	48
Met	Thr	Ala	Pro	Ala	Arg	Leu	Ala	Gly	Arg	Asp	Arg	Asp	Pro	Gly	Arg	
1				5				10					15			
ggc	cgg	cgc	ccg	acc	gtc	cgc	cgg	ccg	cag	gtc	ggg	gcc	caa	gga	gcg	96
Gly	Arg	Arg	Pro	Thr	Val	Arg	Arg	Pro	Gln	Val	Gly	Ala	Gln	Gly	Ala	
			20					25					30			
aat	ccg	gca	cct	cca	acg	gtc	gac	gtc	gtc	gac	ctg	ccc	agg	gtc	cag	144
Asn	Pro	Ala	Pro	Pro	Thr	Val	Asp	Val	Val	Asp	Leu	Pro	Arg	Val	Gln	
		35					40					45				
gcg	ggc	gca	cag	ccc	cag	cac	ctg	ctc	acc	acc	ctg	ctc	ggc	gat	tac	192
Ala	Gly	Ala	Gln	Pro	Gln	His	Leu	Leu	Thr	Thr	Leu	Leu	Gly	Asp	Tyr	
	50					55					60					
tgg	gcc	ggc	cgc	cgg	gag	cac	gtc	ccg	tcg	gtg	gtg	ctg	gtc	agc	ctg	240
Trp	Ala	Gly	Arg	Arg	Glu	His	Val	Pro	Ser	Val	Val	Leu	Val	Ser	Leu	
	65				70					75					80	
ctc	gcg	gat	ttc	gac	gtc	agc	acg	gtc	ggt	gcc	cgg	gcg	gcg	ctg	agc	288
Leu	Ala	Asp	Phe	Asp	Val	Ser	Thr	Val	Gly	Ala	Arg	Ala	Ala	Leu	Ser	
				85					90					95		
cgg	ctg	tcg	cgg	cgc	ggg	ctg	ctg	gag	tcg	tcc	cgg	atc	ggc	cgc	aac	336
Arg	Leu	Ser	Arg	Arg	Gly	Leu	Leu	Glu	Ser	Ser	Arg	Ile	Gly	Arg	Asn	
			100					105					110			
acc	tac	tac	ggg	ctg	aca	gcg	gag	gcc	tcg	gcc	gcg	atc	ctc	gcg	tcg	384
Thr	Tyr	Tyr	Gly	Leu	Thr	Ala	Glu	Ala	Ser	Ala	Ala	Ile	Leu	Ala	Ser	
		115					120					125				
gcg	aac	cgg	atc	ttc	acc	ttc	ggc	ctg	cgg	cac	gac	ccg	tgg	gac	ggg	432
Ala	Asn	Arg	Ile	Phe	Thr	Phe	Gly	Leu	Arg	His	Asp	Pro	Trp	Asp	Gly	
	130					135					140					
cgc	tgg	acg	gtg	gcg	gcg	ttc	tcc	atc	ccc	gag	gac	cag	cgc	gac	gtg	480
Arg	Trp	Thr	Val	Ala	Ala	Phe	Ser	Ile	Pro	Glu	Asp	Gln	Arg	Asp	Val	
	145				150					155					160	
cgg	cac	gcc	gtg	cgt	gca	cgg	ctg	cgt	tgg	ctg	ggc	ttc	gct	ccg	ctc	528
Arg	His	Ala	Val	Arg	Ala	Arg	Leu	Arg	Trp	Leu	Gly	Phe	Ala	Pro	Leu	
				165					170					175		
tac	gac	ggg	atg	tgg	gtc	acc	ccg	cgg	tct	gcc	ggt	gag	gcg	gcc	cgc	576
Tyr	Asp	Gly	Met	Trp	Val	Thr	Pro	Arg	Ser	Ala	Gly	Glu	Ala	Ala	Arg	
			180					185					190			
cgg	gtg	ttc	gcc	gag	ttg	ggc	gtc	atc	gcg	tcg	acg	gtg	ctg	atc	acg	624
Arg	Val	Phe	Ala	Glu	Leu	Gly	Val	Ile	Ala	Ser	Thr	Val	Leu	Ile	Thr	
		195					200						205			
acg	tcg	gag	gcg	cgc	cgc	agc	gac	ccc	cgc	ccg	ccg	atg	gcc	gcc	tgg	672
Thr	Ser	Glu	Ala	Arg	Arg	Ser	Asp	Pro	Arg	Pro	Pro	Met	Ala	Ala	Trp	
	210					215					220					
gat	ctc	acc	gag	ctg	cag	cgc	acc	tac	gag	gag	ttc	gtc	cgc	acc	tac	720
Asp	Leu	Thr	Glu	Leu	Gln	Arg	Thr	Tyr	Glu	Glu	Phe	Val	Arg	Thr	Tyr	
	225				230					235					240	
acc	ccc	ctg	ttg	gaa	cgg	gtc	cgg	cac	ggc	gag	gtg	tgc	ggc	gcg	gag	768
Thr	Pro	Leu	Leu	Glu	Arg	Val	Arg	His	Gly	Glu	Val	Cys	Gly	Ala	Glu	
				245					250					255		
gca	ctg	gcc	gca	cgc	acc	gcg	gtg	atg	gag	tcc	tgg	ggg	cgc	ttc	ccg	816
Ala	Leu	Ala	Ala	Arg	Thr	Ala	Val	Met	Glu	Ser	Trp	Gly	Arg	Phe	Pro	
			260					265					270			
agc	ctc	gac	ccg	gac	ctt	ccg	atc	gac	ctg	ctg	ccc	ggc	cgc	tgg	ccg	864
Ser	Leu	Asp	Pro	Asp	Leu	Pro	Ile	Asp	Leu	Leu	Pro	Gly	Arg	Trp	Pro	
		275					280					285				
cgg	cgc	gag	gcc	cgc	acg	gtc	ttc	gcc	gag	atc	tac	gac	ggg	ctg	gcc	912
Arg	Arg	Glu	Ala	Arg	Thr	Val	Phe	Ala	Glu	Ile	Tyr	Asp	Gly	Leu	Ala	
	290					295					300					
gtc	ccg	gct	gtg	gcg	cgg	gtc	cgg	gag	ctg	ctg	gcg	gag	gtg	tcg	ccg	960

PhoenixTemp24825.tmp.txt

Val Pro Ala Val Ala Arg Val Arg Glu Leu Leu Ala Glu Val Ser Pro
 305 310 315 320
 gag ctg gcc gac ctc gtc cgg ctg cgt acg acg gtc tcc tga
 Glu Leu Ala Asp Leu Val Arg Leu Arg Thr Thr Val Ser
 325 330

1002

<210> 124

<211> 333

<212> PRT

<213> Frankia sp. EAN1pec

<400> 124

Met Thr Ala Pro Ala Arg Leu Ala Gly Arg Asp Arg Asp Pro Gly Arg
 1 5 10 15
 Gly Arg Arg Pro Thr Val Arg Arg Pro Gln Val Gly Ala Gln Gly Ala
 20 25 30
 Asn Pro Ala Pro Pro Thr Val Asp Val Val Asp Leu Pro Arg Val Gln
 35 40 45
 Ala Gly Ala Gln Pro Gln His Leu Leu Thr Thr Leu Leu Gly Asp Tyr
 50 55 60
 Trp Ala Gly Arg Arg Glu His Val Pro Ser Val Val Leu Val Ser Leu
 65 70 75 80
 Leu Ala Asp Phe Asp Val Ser Thr Val Gly Ala Arg Ala Ala Leu Ser
 85 90 95
 Arg Leu Ser Arg Arg Gly Leu Leu Glu Ser Ser Arg Ile Gly Arg Asn
 100 105 110
 Thr Tyr Tyr Gly Leu Thr Ala Glu Ala Ser Ala Ala Ile Leu Ala Ser
 115 120 125
 Ala Asn Arg Ile Phe Thr Phe Gly Leu Arg His Asp Pro Trp Asp Gly
 130 135 140
 Arg Trp Thr Val Ala Ala Phe Ser Ile Pro Glu Asp Gln Arg Asp Val
 145 150 155 160
 Arg His Ala Val Arg Ala Arg Leu Arg Trp Leu Gly Phe Ala Pro Leu
 165 170 175
 Tyr Asp Gly Met Trp Val Thr Pro Arg Ser Ala Gly Glu Ala Ala Arg
 180 185 190
 Arg Val Phe Ala Glu Leu Gly Val Ile Ala Ser Thr Val Leu Ile Thr
 195 200 205
 Thr Ser Glu Ala Arg Arg Ser Asp Pro Arg Pro Pro Met Ala Ala Trp
 210 215 220
 Asp Leu Thr Glu Leu Gln Arg Thr Tyr Glu Glu Phe Val Arg Thr Tyr
 225 230 235 240
 Thr Pro Leu Leu Glu Arg Val Arg His Gly Glu Val Cys Gly Ala Glu
 245 250 255
 Ala Leu Ala Ala Arg Thr Ala Val Met Glu Ser Trp Gly Arg Phe Pro
 260 265 270
 Ser Leu Asp Pro Asp Leu Pro Ile Asp Leu Leu Pro Gly Arg Trp Pro
 275 280 285
 Arg Arg Glu Ala Arg Thr Val Phe Ala Glu Ile Tyr Asp Gly Leu Ala
 290 295 300
 Val Pro Ala Val Ala Arg Val Arg Glu Leu Leu Ala Glu Val Ser Pro
 305 310 315 320
 Glu Leu Ala Asp Leu Val Arg Leu Arg Thr Thr Val Ser
 325 330

<210> 125

<211> 906

<212> DNA

<213> Silicibacter sp. TM1040

<220>

<221> CDS

<222> (1)..(906)

<223> transl_table=11

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<400> 125
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  1          5          10          15
atg aca caa cac acc gac gac tgg ttt acc act gca atc acg gcg ctc      96
Met Thr Gln His Thr Asp Asp Trp Phe Thr Thr Ala Ile Thr Ala Leu
          20          25          30
act gaa ccg gat ggc ctg agg gtc tgg tcc atc atc gtg tcc ttc ctc      144
Thr Glu Pro Asp Gly Leu Arg Val Trp Ser Ile Ile Val Ser Phe Leu
          35          40          45
gga gat atg gcg caa gac aaa ggc gcc ggc gtc agc agt gct gcc ttg      192
Gly Asp Met Ala Gln Asp Lys Gly Ala Gly Val Ser Ser Ala Ala Leu
          50          55          60
acg cgg gtt att act ccg ctt ggc atc aaa cca gag gcc att cgg gtt      240
Thr Arg Val Ile Thr Pro Leu Gly Ile Lys Pro Glu Ala Ile Arg Val
          65          70          75          80
gcg ctg cac cgt ttg cgt aag gat ggc tgg acc gag agc cag cga cgc      288
Ala Leu His Arg Leu Arg Lys Asp Gly Trp Thr Glu Ser Gln Arg Arg
          85          90          95
ggg cgg ggc tcc ttt cat ttc ctg act ccc ttt ggg cgg cag caa tcc      336
Gly Arg Gly Ser Phe His Phe Leu Thr Pro Phe Gly Arg Gln Gln Ser
          100          105          110
gcg ttg gtg acc ccc cgt atc tac gcg cgc agc aca tgt gaa aca gac      384
Ala Leu Val Thr Pro Arg Ile Tyr Ala Arg Ser Thr Cys Glu Thr Asp
          115          120          125
gcc tgg acc ttg ctt gtt gcg ggc acg cca gac ggg ctg gag acg ctg      432
Ala Trp Thr Leu Leu Val Ala Gly Thr Pro Asp Gly Leu Glu Thr Leu
          130          135          140
gat gcg ctc tgc gac cag acg cca cta acc agc atc cgg gtc aat cgc      480
Asp Ala Leu Cys Asp Gln Thr Pro Leu Thr Ser Ile Arg Val Asn Arg
          145          150          155          160
cac gcc gcg atc aca ccg ggc cct gcc atg cag cac gcc gca gag acc      528
His Ala Ala Ile Thr Pro Gly Pro Ala Met Gln His Ala Ala Glu Thr
          165          170          175
tcg cac atg ctg gtt gca aat ctc gat gtg gcg cat gtg ccc ggc tgg      576
Ser His Met Leu Val Ala Asn Leu Asp Val Ala His Val Pro Gly Trp
          180          185          190
cta cag gac gat ctc ttt cca gaa cca ttg cgg cag agc tgc gcg gct      624
Leu Gln Asp Asp Leu Phe Pro Glu Pro Leu Arg Gln Ser Cys Ala Ala
          195          200          205
ctt gac cag gcc ctt gcg ccc ctc ggg agc cca cca gac ctc tct ccc      672
Leu Asp Gln Ala Leu Ala Pro Leu Gly Ser Pro Pro Asp Leu Ser Pro
          210          215          220
ttg caa cgc gcc tgc ctg cgc acg ctc ctc gtc cat cgc tgg cgc cgg      720
Leu Gln Arg Ala Cys Leu Arg Thr Leu Leu Val His Arg Trp Arg Arg
          225          230          235          240
att acg ctc cga cac ccg gac gtg cca cgc ata ttt cac ccc gca gat      768
Ile Thr Leu Arg His Pro Asp Val Pro Arg Ile Phe His Pro Ala Asp
          245          250          255
tgg agc gga gaa tcc tgt cgc acg cgg gtc ttt gcc ctg ctc gac aag      816
Trp Ser Gly Glu Ser Cys Arg Thr Arg Val Phe Ala Leu Leu Asp Lys
          260          265          270
ttg ccg cag ccc gaa ctg gca gaa atc gaa gac gct gcc cct gtg gcc      864
Leu Pro Gln Pro Glu Leu Ala Glu Ile Glu Asp Ala Ala Pro Val Ala
          275          280          285
gta caa gct gcg ccc caa ggc aca atc gcc gta act ggc tga      906
Val Gln Ala Ala Pro Gln Gly Thr Ile Ala Val Thr Gly
          290          295          300

```

<210> 126

<211> 301

<212> PRT

<213> Silicibacter sp. TM1040

<400> 126

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Met Ala Val Gly Leu Ala Leu Thr Arg Ala Ser Pro Tyr Arg Ile Cys
1      5      10      15
Met Thr Gln His Thr Asp Asp Trp Phe Thr Thr Ala Ile Thr Ala Leu
      20      25      30
Thr Glu Pro Asp Gly Leu Arg Val Trp Ser Ile Ile Val Ser Phe Leu
      35      40      45
Gly Asp Met Ala Gln Asp Lys Gly Ala Gly Val Ser Ser Ala Ala Leu
      50      55      60
Thr Arg Val Ile Thr Pro Leu Gly Ile Lys Pro Glu Ala Ile Arg Val
65      70      75      80
Ala Leu His Arg Leu Arg Lys Asp Gly Trp Thr Glu Ser Gln Arg Arg
      85      90      95
Gly Arg Gly Ser Phe His Phe Leu Thr Pro Phe Gly Arg Gln Gln Ser
      100      105      110
Ala Leu Val Thr Pro Arg Ile Tyr Ala Arg Ser Thr Cys Glu Thr Asp
      115      120      125
Ala Trp Thr Leu Leu Val Ala Gly Thr Pro Asp Gly Leu Glu Thr Leu
      130      135      140
Asp Ala Leu Cys Asp Gln Thr Pro Leu Thr Ser Ile Arg Val Asn Arg
145      150      155      160
His Ala Ala Ile Thr Pro Gly Pro Ala Met Gln His Ala Ala Glu Thr
      165      170      175
Ser His Met Leu Val Ala Asn Leu Asp Val Ala His Val Pro Gly Trp
      180      185      190
Leu Gln Asp Asp Leu Phe Pro Glu Pro Leu Arg Gln Ser Cys Ala Ala
      195      200      205
Leu Asp Gln Ala Leu Ala Pro Leu Gly Ser Pro Pro Asp Leu Ser Pro
      210      215      220
Leu Gln Arg Ala Cys Leu Arg Thr Leu Leu Val His Arg Trp Arg Arg
225      230      235      240
Ile Thr Leu Arg His Pro Asp Val Pro Arg Ile Phe His Pro Ala Asp
      245      250      255
Trp Ser Gly Glu Ser Cys Arg Thr Arg Val Phe Ala Leu Leu Asp Lys
      260      265      270
Leu Pro Gln Pro Glu Leu Ala Glu Ile Glu Asp Ala Ala Pro Val Ala
      275      280      285
Val Gln Ala Ala Pro Gln Gly Thr Ile Ala Val Thr Gly
      290      295      300

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<210> 127

<211> 855

<212> DNA

<213> Paracoccus denitrificans PD1222

<220>

<221> CDS

<222> (1)..(855)

<223> transl_table=11

<400> 127

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atg cgg cag ggc gag atg gcc aag cgc ggg ctg atc gac ggg ata ttg      48
Met Arg Gln Gly Glu Met Ala Lys Arg Gly Leu Ile Asp Gly Ile Leu
1      5      10      15
gag ggg atg gcg ctg cgt tgc gcc gcg ttc atc gtc acc gtc tat ggc      96
Glu Gly Met Ala Leu Arg Ser Ala Ala Phe Ile Val Thr Val Tyr Gly
      20      25      30
gat gtg gtc gtg ccg cgc ggc ggc gtg ttg tgg acc ggc acg ctg atc      144
Asp Val Val Val Pro Arg Gly Gly Val Leu Trp Thr Gly Thr Leu Ile
      35      40      45
gag gtc tgc gag cgg gtc ggc atc agc gaa tgc ctg gtg cgc acc gcc      192
Glu Val Cys Glu Arg Val Gly Ile Ser Glu Ser Leu Val Arg Thr Ala
      50      55      60

```

PhoenixTemp24825.tmp.txt

```

gtc tcg cgc ctt gtc gcc gcc cac cgg ctg cgg ggc gag cgg ctg ggg      240
Val Ser Arg Leu Val Ala Ala His Arg Leu Arg Gly Glu Arg Leu Gly
65      70      75      80
cgg cgc agc tat tac cgg ctg gac gcc tcg gcc cag cgg gag ttc gac      288
Arg Arg Ser Tyr Tyr Arg Leu Asp Ala Ser Ala Gln Arg Glu Phe Asp
85      90      95
cag gcg gcg cgg ttg ctt tac aaa ccc gag gtt ccg gcg cgc ggc tgg      336
Gln Ala Ala Arg Leu Leu Tyr Lys Pro Glu Val Pro Ala Arg Gly Trp
100      105      110
cag atc ctg cac gcc ccc gac ctc acc gag gac gag gcc cgc cac cag      384
Gln Ile Leu His Ala Pro Asp Leu Thr Glu Asp Glu Ala Arg His Gln
115      120      125
cgc atg ggc cat atg ggc ggg gcg gtc ttc atc cgt ccc gac cgc ggc      432
Arg Met Gly His Met Gly Gly Ala Val Phe Ile Arg Pro Asp Arg Gly
130      135      140
cag ccg gtg ccc gag ggc gcg ctg cct ttc ctt gcc tcg gac ccg ccc      480
Gln Pro Val Pro Glu Gly Ala Leu Pro Phe Leu Ala Ser Asp Pro Pro
145      150      155      160
gaa ctg ggc cgg atc ggg cag ttc tgg gat ctc tcg gcg ctg cat cag      528
Glu Leu Gly Arg Ile Gly Gln Phe Trp Asp Leu Ser Ala Leu His Gln
165      170      175
cgt tat ctc gac atg ctg gtg cgc ttt gcg ccg ctg gcc gag gca ggg      576
Arg Tyr Leu Asp Met Leu Val Arg Phe Ala Pro Leu Ala Glu Ala Gly
180      185      190
gcg gcg ctg tcg gac gag atg gcg ctg atc gcc cgg ctg ctc ttg gtg      624
Ala Ala Leu Ser Asp Glu Met Ala Leu Ile Ala Arg Leu Leu Leu Val
195      200      205
cat gat tat cgc ggc gtc ctg ctg cgc gat ccg cgc ctg ccg cag ccc      672
His Asp Tyr Arg Gly Val Leu Leu Arg Asp Pro Arg Leu Pro Gln Pro
210      215      220
gcc ctg ccg ccg gac tgg cag ggg cat gaa gcg cgg gcg ctg ttc cgc      720
Ala Leu Pro Pro Asp Trp Gln Gly His Glu Ala Arg Ala Leu Phe Arg
225      230      235      240
cgc ctc tat cgc cag ctt tcg ccg gcg gcg gag cgc tgg atc ggg acg      768
Arg Leu Tyr Arg Gln Leu Ser Pro Ala Ala Glu Arg Trp Ile Gly Thr
245      250      255
cat ttc gag ggc agc ggc ggc ttc ctg ccc gag aaa acc gcc gaa agc      816
His Phe Glu Gly Ser Gly Gly Phe Leu Pro Glu Lys Thr Ala Glu Ser
260      265      270
gag gcg agg ctg gcc gat ctg tgc cag gca aca gat tga      855
Glu Ala Arg Leu Ala Asp Leu Cys Gln Ala Thr Asp
275      280

```

<210> 128

<211> 284

<212> PRT

<213> Paracoccus denitrificans PD1222

<400> 128

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

```

PhoenixTemp24825.tmp.txt

```

115
Arg Met Gly His Met Gly Gly Ala Val Phe Ile Arg Pro Asp Arg Gly
130
Gln Pro Val Pro Glu Gly Ala Leu Pro Phe Leu Ala Ser Asp Pro Pro
145
Glu Leu Gly Arg Ile Gly Gln Phe Trp Asp Leu Ser Ala Leu His Gln
165
Arg Tyr Leu Asp Met Leu Val Arg Phe Ala Pro Leu Ala Glu Ala Gly
180
Ala Ala Leu Ser Asp Glu Met Ala Leu Ile Ala Arg Leu Leu Leu Val
195
His Asp Tyr Arg Gly Val Leu Leu Arg Asp Pro Arg Leu Pro Gln Pro
210
Ala Leu Pro Pro Asp Trp Gln Gly His Glu Ala Arg Ala Leu Phe Arg
225
Arg Leu Tyr Arg Gln Leu Ser Pro Ala Ala Glu Arg Trp Ile Gly Thr
245
His Phe Glu Gly Ser Gly Gly Phe Leu Pro Glu Lys Thr Ala Glu Ser
260
Glu Ala Arg Leu Ala Asp Leu Cys Gln Ala Thr Asp
275
280

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<210> 129

<211> 984

<212> DNA

<213> Nocardioides sp. JS614

<220>

<221> CDS

<222> (1)..(984)

<223> transl_table=11

<400> 129

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atg ccg cgc cct tcc ttg gtg acc tcc agc gga ccg tcg cct gtc cgc      48
Met Pro Arg Pro Ser Leu Val Thr Ser Ser Gly Pro Ser Pro Val Arg
1
ggc ttc atc gcc gcc atc cgc gca cct tcc tct tgt gat gtg gca gcg      96
Gly Phe Ile Ala Ala Ile Arg Ala Pro Ser Ser Cys Asp Val Ala Ala
20
ggc ctc cga gga ccc gcc tgc gcc gta cgc acg gac cat tat ccc cta      144
Gly Leu Arg Gly Pro Gly Cys Ala Val Arg Thr Asp His Tyr Pro Leu
35
tcc gac ggt gac gcg gag cac agc ccg ccc gga gcc ccg ccg ggc tac      192
Ser Asp Gly Asp Ala Glu His Ser Pro Pro Gly Ala Arg Pro Gly Tyr
50
tgg cac act cct gac atg cag gcc cgc tcg gcg ctc ttc gac gtg tac      240
Trp His Thr Pro Asp Met Gln Ala Arg Ser Ala Leu Phe Asp Val Tyr
65
ggc gac cac ctg cgc gcg cgc gcc agc gag gcc ccg gtg gcc gcg ttg      288
Gly Asp His Leu Arg Ala Arg Gly Ser Glu Ala Pro Val Ala Ala Leu
85
gtg cgg ctc ctg gac ccg gtc gcc atc gcg gcc ccg gcc gtg cgc acg      336
Val Arg Leu Leu Asp Pro Val Gly Ile Ala Ala Pro Ala Val Arg Thr
100
gcg atc tcc ccg atg gtg atg cag gcc tgg ctc gag ccg gtc cag ctc      384
Ala Ile Ser Arg Met Val Met Gln Gly Trp Leu Glu Pro Val Gln Leu
115
gac ggc ggc cgc gcc tac cgc acc acc acg ccg gcg gac ccg cgt ctc      432
Asp Gly Gly Arg Gly Tyr Arg Thr Thr Thr Arg Ala Asp Arg Arg Leu
130
gac gag acc ggg cgt cgc gtc tac cgc cgc gac gca ccc gcc tgg gac      480
Asp Glu Thr Gly Arg Arg Val Tyr Arg Arg Asp Ala Pro Ala Trp Asp
145
ggc cac tgg cac ctg gcg ttc gtc agc ccg ccg ccg gcc ccg gcc gcc      528

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PhoenixTemp24825.tmp.txt

Gly	His	Trp	His	Leu	Ala	Phe	Val	Ser	Pro	Pro	Pro	Gly	Arg	Ala	Ala		
				165					170					175			
cgg	gcc	cgg	ctg	cgc	gcc	ggg	ctc	acc	ttc	atc	ggg	tac	gcc	gag	ctc		576
Arg	Ala	Arg	Leu	Arg	Ala	Gly	Leu	Thr	Phe	Ile	Gly	Tyr	Ala	Glu	Leu		
			180					185					190				
gcc	gac	cac	gtg	tgg	gtc	acc	ccg	ttc	gag	cgg	acc	gag	ctc	ggc	tgc		624
Ala	Asp	His	Val	Trp	Val	Thr	Pro	Phe	Glu	Arg	Thr	Glu	Leu	Gly	Ser		
		195					200					205					
gtg	ctg	gac	cgc	gag	cgc	gcc	agc	gcc	acg	acc	gcg	cgg	gcc	gac	cgc		672
Val	Leu	Asp	Arg	Glu	Arg	Ala	Ser	Ala	Thr	Thr	Ala	Arg	Ala	Asp	Arg		
	210					215					220						
ttc	gac	ccc	ccg	ccg	acc	ggc	gcc	tgg	gac	ctg	gcc	gcc	ctg	cgg	ctg		720
Phe	Asp	Pro	Pro	Pro	Thr	Gly	Ala	Trp	Asp	Leu	Ala	Ala	Leu	Arg	Leu		
225					230					235					240		
gcc	tac	gag	ggg	tgg	ctg	cag	gcc	gcc	gac	gac	ctg	gtc	gaa	cag	cac		768
Ala	Tyr	Glu	Gly	Trp	Leu	Gln	Ala	Ala	Asp	Asp	Leu	Val	Glu	Gln	His		
			245						250					255			
ctc	gcc	gcc	cac	gag	gac	ccc	gac	gag	gcc	gcg	ttc	gcg	gcc	cgg	ttc		816
Leu	Ala	Ala	His	Glu	Asp	Pro	Asp	Glu	Ala	Ala	Phe	Ala	Ala	Arg	Phe		
			260					265						270			
cac	ctc	gtc	cac	gag	tgg	cgc	aag	ttc	ctc	ttc	acc	gac	ccc	ggg	ctg		864
His	Leu	Val	His	Glu	Trp	Arg	Lys	Phe	Leu	Phe	Thr	Asp	Pro	Gly	Leu		
		275					280					285					
ccc	gac	gcc	ctg	ctg	ccg	cgc	gac	tgg	ccg	ggc	cac	gcc	gcg	gcc	gag		912
Pro	Asp	Ala	Leu	Leu	Pro	Arg	Asp	Trp	Pro	Gly	His	Ala	Ala	Ala	Glu		
	290					295					300						
ctg	ttc	gcg	ggc	gcg	gcc	ggc	cgg	ctc	aag	ccg	ggg	gcc	gac	cgg	ttc		960
Leu	Phe	Ala	Gly	Ala	Ala	Gly	Arg	Leu	Lys	Pro	Gly	Ala	Asp	Arg	Phe		
305					310					315					320		
gtg	gcc	cgc	tgc	ctg	ggc	gac	tga										984
Val	Ala	Arg	Cys	Leu	Gly	Asp											
				325													

<210> 130

<211> 327

<212> PRT

<213> Nocardioides sp. JS614

<400> 130

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

PhoenixTemp24825.tmp.txt

[illegible]

<210> 131
<211> 924
<212> DNA
<213> *Oceanospirillum* sp. MED92

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<220>  
<221> CDS  
<222> (1)..(924)  
<223> transl table=11
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<400> 131																	
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Met	Pro	Ala	Phe	Pro	Ala	Leu	Glu	Thr	Leu	Val	Asp	Asn	Phe	Arg	Asn		
1				5					10					15			
cgt	cgg	cct	atc	cgt	gca	gga	tca	ctg	att	att	acc	gta	tat	ggg	gat		96
Arg	Arg	Pro	Ile	Arg	Ala	Gly	Ser	Leu	Ile	Ile	Thr	Val	Tyr	Gly	Asp		
			20					25					30				
gcg	atc	gca	ccc	cgt	ggg	gga	acc	gta	tgg	ttg	ggc	agc	atg	atc	aaa		144
Ala	Ile	Ala	Pro	Arg	Gly	Gly	Thr	Val	Trp	Leu	Gly	Ser	Met	Ile	Lys		
		35				40						45					
ctc	ctg	gag	ccg	ctg	ggg	ctt	aac	cag	cgc	ctg	gta	cgc	acc	tcg	gtg		192
Leu	Leu	Glu	Pro	Leu	Gly	Leu	Asn	Gln	Arg	Leu	Val	Arg	Thr	Ser	Val		
	50				55					60							
ttc	cgt	ctg	gca	aaa	gaa	aac	tgg	ctg	gtt	gcc	gaa	cag	gtt	ggc	cgc		240
Phe	Arg	Leu	Ala	Lys	Glu	Asn	Trp	Leu	Val	Ala	Glu	Gln	Val	Gly	Arg		
65				70				75						80			
cgc	agc	tat	tac	agc	ctg	acc	ggg	ccc	ggg	atc	cgc	cgc	ttc	cag	aaa		288
Arg	Ser	Tyr	Tyr	Ser	Leu	Thr	Gly	Pro	Gly	Ile	Arg	Arg	Phe	Gln	Lys		
				85				90					95				
gcc	ttt	aaa	cgt	gtc	tat	gcc	gat	caa	aac	ccg	gaa	tgg	gat	ggg	cgc		336
Ala	Phe	Lys	Arg	Val	Tyr	Ala	Asp	Gln	Asn	Pro	Glu	Trp	Asp	Gly	Arg		
			100					105					110				
tgg	ctg	atg	gcc	atc	tta	agc	cag	ctt	gaa	caa	gat	gaa	cgc	caa	aag		384
Trp	Leu	Met	Ala	Ile	Leu	Ser	Gln	Leu	Glu	Gln	Asp	Glu	Arg	Gln	Lys		
		115					120					125					
ctt	cgt	cag	gaa	ctt	gaa	tgg	cac	ggg	ttc	ggc	acc	ctg	tct	ccc	acc		432
Leu	Arg	Gln	Glu	Leu	Glu	Trp	His	Gly	Phe	Gly	Thr	Leu	Ser	Pro	Thr		
	130					135					140						
gtt	tta	ctg	cat	cca	cag	atg	cag	aaa	agc	gaa	ctg	cag	gcc	gtg	ttg		480
Val	Leu	Leu	His	Pro	Gln	Met	Gln	Lys	Ser	Glu	Leu	Gln	Ala	Val	Leu		
145				150					155					160			
cag	gaa	tac	gac	tac	acc	gat	gat	gtg	atc	atc	ttt	gaa	gat	atg	ggc		528
Gln	Glu	Tyr	Asp	Tyr	Thr	Asp	Asp	Val	Ile	Ile	Phe	Glu	Asp	Met	Gly		
				165				170						175			
gaa	ggc	agc	acc	gcg	acc	cgc	ccg	ctc	cgt	ctg	caa	acc	cgt	gaa	tcc		576
Glu	Gly	Ser	Thr	Ala	Thr	Arg	Pro	Leu	Arg	Leu	Gln	Thr	Arg	Glu	Ser		

PhoenixTemp24825.tmp.txt

180							185					190					
tgg	aac	ctg	ccg	aaa	ctg	gct	gaa	agc	tac	cag	agc	ttc	ctc	gat	aaa	624	
Trp	Asn	Leu	Pro	Lys	Leu	Ala	Glu	Ser	Tyr	Gln	Ser	Phe	Leu	Asp	Lys		
195							200					205					
ttc	cg	ccg	atc	tgg	aac	cac	atc	aac	gac	aag	gg	atc	cca	acc	cct	672	
Phe	Arg	Pro	Ile	Trp	Asn	His	Ile	Asn	Asp	Lys	Gly	Ile	Pro	Thr	Pro		
210							215					220					
gaa	caa	tgc	ttc	cag	atc	cg	acc	ctg	ctg	att	cac	gaa	tac	cg	cga	720	
Glu	Gln	Cys	Phe	Gln	Ile	Arg	Thr	Leu	Leu	Ile	His	Glu	Tyr	Arg	Arg		
225							230					235					240
atc	atc	ctt	cga	gat	ccg	gaa	cta	ccg	gat	gaa	cta	ctt	ccg	ggc	gac	768	
Ile	Ile	Leu	Arg	Asp	Pro	Glu	Leu	Pro	Asp	Glu	Leu	Leu	Pro	Gly	Asp		
245							250					255					
tgg	gca	ggc	agc	gcc	gca	cg	cag	ctg	tgt	acc	aat	atc	tat	cag	cg	816	
Trp	Ala	Gly	Ser	Ala	Ala	Arg	Gln	Leu	Cys	Thr	Asn	Ile	Tyr	Gln	Arg		
260							265					270					
gtc	tgg	caa	ggg	gct	gaa	cag	cat	atg	gat	gcc	gta	ctg	gaa	acc	gcc	864	
Val	Trp	Gln	Gly	Ala	Glu	Gln	His	Met	Asp	Ala	Val	Leu	Glu	Thr	Ala		
275							280					285					
gaa	ggg	cca	cta	cct	ccg	ccg	aat	aat	aag	ttt	tat	aag	cg	tat	gg	912	
Glu	Gly	Pro	Leu	Pro	Pro	Pro	Asn	Asn	Lys	Phe	Tyr	Lys	Arg	Tyr	Gly		
290							295					300					
gga	ttg	aat	taa													924	
Gly	Leu	Asn															
305																	

<210> 132

<211> 307

<212> PRT

<213> Oceanospirillum sp. MED92

<400> 132

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

PhoenixTemp24825.tmp.txt

Trp Ala Gly Ser Ala Ala Arg Gln Leu Cys Thr Asn Ile Tyr Gln Arg
 260 265 270
 Val Trp Gln Gly Ala Glu Gln His Met Asp Ala Val Leu Glu Thr Ala
 275 280 285
 Glu Gly Pro Leu Pro Pro Pro Asn Asn Lys Phe Tyr Lys Arg Tyr Gly
 290 295 300
 Gly Leu Asn
 305

<210> 133

<211> 918

<212> DNA

<213> Xanthobacter autotrophicus Py2

<220>

<221> CDS

<222> (1)..(918)

<223> transl_table=11

<400> 133

atg gtc tcg gcc ggg gtt tcc gct tcc gct tat ctc gcg cta tgg aac	48
Met Val Ser Ala Gly Val Ser Ala Ser Ala Tyr Leu Ala Leu Trp Asn	
1 5 10 15	
gcc atg tcg cgc cgc gcc ctc gat ctc atc ctc gac cat gtc cgc gcc	96
Ala Met Ser Arg Arg Ala Leu Asp Leu Ile Leu Asp His Val Arg Ala	
20 25 30	
gag ccc tcg cgc acc tgg tcc atc atc gtc acc atc tat ggc gat gcc	144
Glu Pro Ser Arg Thr Trp Ser Ile Ile Val Thr Ile Tyr Gly Asp Ala	
35 40 45	
atc gtg ccg cgc ggc ggc tcg gtg tgg ctc ggc acc ctg ctt gcc ttc	192
Ile Val Pro Arg Gly Gly Ser Val Trp Leu Gly Thr Leu Leu Ala Phe	
50 55 60	
ttc aag ggg ctg gat atc gcc gac ggg gtg gtg cgc acc gcc atg tcg	240
Phe Lys Gly Leu Asp Ile Ala Asp Gly Val Val Arg Thr Ala Met Ser	
65 70 75 80	
cgc ctc gcc gcc gac ggc tgg ctg acg cgc acc cgc atc ggc cgc aac	288
Arg Leu Ala Ala Asp Gly Trp Leu Thr Arg Thr Arg Ile Gly Arg Asn	
85 90 95	
agc ttc tat ggt ctc gcc gac aag ggt cgc gag acc ttc gcc cgc gcc	336
Ser Phe Tyr Gly Leu Ala Asp Lys Gly Arg Glu Thr Phe Ala Arg Ala	
100 105 110	
acc gag cac atc tac agc cac cgc ccg ccg gaa tgg cgc ggc cac ttc	384
Thr Glu His Ile Tyr Ser His Arg Pro Pro Glu Trp Arg Gly His Phe	
115 120 125	
cag atg ctg ctc atc gag ccc gcc gcg ccg gaa ggc gcg cgc gcc gcg	432
Gln Met Leu Leu Ile Glu Pro Ala Ala Arg Glu Gly Ala Arg Ala Ala	
130 135 140	
ctg gat gcg gcc ggc tat ggg gtt ccc ctg ccg ggc gtc ttc atc gcg	480
Leu Asp Ala Ala Gly Tyr Gly Val Pro Leu Pro Gly Val Phe Ile Ala	
145 150 155 160	
ccg gca ggc gcc gag gtg ccg gag gag gcg ctg gcc gcc ctg cgg ctt	528
Pro Ala Gly Ala Glu Val Pro Glu Glu Ala Leu Ala Ala Leu Arg Leu	
165 170 175	
gag gtt tcg ggc acg ccg gag gcc cag cag gaa ctg gcg ggc cgc gcc	576
Glu Val Ser Gly Thr Pro Glu Ala Gln Gln Glu Leu Ala Gly Arg Ala	
180 185 190	
tgg ccg ctg gag gag acg gcg cag gcg tat gtg agc ttc atg gag gtg	624
Trp Arg Leu Glu Glu Thr Ala Gln Ala Tyr Val Ser Phe Met Glu Val	
195 200 205	
ttc gcg ccc ctg cgc gcg gcg ctg gcg gcg ggg gaa acc ctc acc gac	672
Phe Ala Pro Leu Arg Ala Ala Leu Ala Ala Gly Glu Thr Leu Thr Asp	
210 215 220	
ctt gag gcc atg gtg gca cgg gtg ctg ctc atc cat gaa tat cgc cgc	720
Leu Glu Ala Met Val Ala Arg Val Leu Leu Ile His Glu Tyr Arg Arg	

PhoenixTemp24825.tmp.txt

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225          230          235          240
atc gtg ctg cgc gat ccc atc ctg ccg gcc gct atc ctg ccc gcc gac      768
Ile Val Leu Arg Asp Pro Ile Leu Pro Ala Ala Ile Leu Pro Ala Asp
          245          250          255
tgg ccc ggc ccg gcg gcc cgt gcc ctg tgc gcc gac atc tat gcc cat      816
Trp Pro Gly Pro Ala Ala Arg Ala Leu Cys Ala Asp Ile Tyr Ala His
          260          265          270
gtg atc gcc gcg tcc gag cgc tgg ctc gat gac aac gcc gtg ggc gag      864
Val Ile Ala Ala Ser Glu Arg Trp Leu Asp Asp Asn Ala Val Gly Glu
          275          280          285
gac ggc gat ccg ctg ccg gcc agc gct aaa atc ggg cgt cgt ttc aag      912
Asp Gly Asp Pro Leu Pro Ala Ser Ala Lys Ile Gly Arg Arg Phe Lys
          290          295          300
gac taa
Asp
305

```

<210> 134

<211> 305

<212> PRT

<213> Xanthobacter autotrophicus Py2

<400> 134

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Met Val Ser Ala Gly Val Ser Ala Ser Ala Tyr Leu Ala Leu Trp Asn
1          5          10          15
Ala Met Ser Arg Arg Ala Leu Asp Leu Ile Leu Asp His Val Arg Ala
          20          25          30
Glu Pro Ser Arg Thr Trp Ser Ile Val Thr Ile Tyr Gly Asp Ala
          35          40          45
Ile Val Pro Arg Gly Gly Ser Val Trp Leu Gly Thr Leu Leu Ala Phe
          50          55          60
Phe Lys Gly Leu Asp Ile Ala Asp Gly Val Val Arg Thr Ala Met Ser
65          70          75          80
Arg Leu Ala Ala Asp Gly Trp Leu Thr Arg Thr Arg Ile Gly Arg Asn
          85          90          95
Ser Phe Tyr Gly Leu Ala Asp Lys Gly Arg Glu Thr Phe Ala Arg Ala
          100          105          110
Thr Glu His Ile Tyr Ser His Arg Pro Pro Glu Trp Arg Gly His Phe
          115          120          125
Gln Met Leu Leu Ile Glu Pro Ala Ala Arg Glu Gly Ala Arg Ala Ala
          130          135          140
Leu Asp Ala Ala Gly Tyr Gly Val Pro Leu Pro Gly Val Phe Ile Ala
145          150          155          160
Pro Ala Gly Ala Glu Val Pro Glu Glu Ala Leu Ala Ala Leu Arg Leu
          165          170          175
Glu Val Ser Gly Thr Pro Glu Ala Gln Gln Glu Leu Ala Gly Arg Ala
          180          185          190
Trp Arg Leu Glu Glu Thr Ala Gln Ala Tyr Val Ser Phe Met Glu Val
          195          200          205
Phe Ala Pro Leu Arg Ala Ala Leu Ala Ala Gly Glu Thr Leu Thr Asp
          210          215          220
Leu Glu Ala Met Val Ala Arg Val Leu Leu Ile His Glu Tyr Arg Arg
225          230          235          240
Ile Val Leu Arg Asp Pro Ile Leu Pro Ala Ala Ile Leu Pro Ala Asp
          245          250          255
Trp Pro Gly Pro Ala Ala Arg Ala Leu Cys Ala Asp Ile Tyr Ala His
          260          265          270
Val Ile Ala Ala Ser Glu Arg Trp Leu Asp Asp Asn Ala Val Gly Glu
          275          280          285
Asp Gly Asp Pro Leu Pro Ala Ser Ala Lys Ile Gly Arg Arg Phe Lys
          290          295          300
Asp
305

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<210> 135
 <211> 876
 <212> DNA
 <213> marine gamma proteobacterium HTCC2080

<220>
 <221> CDS
 <222> (1)..(876)
 <223> transl_table=11

<400> 135
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 Met Arg Ala Lys Ser Leu Ile Ile Thr Leu Phe Gly Asp Val Ile Ser
 1 5 10 15
 caa cac ggt gga gaa att tgg ctg ggc agt atc gcg aag tca gtt gag 96
 Gln His Gly Gly Glu Ile Trp Leu Gly Ser Ile Ala Lys Ser Val Glu
 20 25 30
 gct tta ggc gtc aat gat cgc ctg gtg aga acc tct gtt ttc agg ctg 144
 Ala Leu Gly Val Asn Asp Arg Leu Val Arg Thr Ser Val Phe Arg Leu
 35 40 45
 gca aaa gag ggc tgg ctg gaa gtg gag cga gaa ggc cgc aag agc ttt 192
 Ala Lys Glu Gly Trp Leu Glu Val Glu Arg Glu Gly Arg Lys Ser Phe
 50 55 60
 tac gga ttt acc cgc agt ggc agt aaa gaa tat caa cgc gca gcg cag 240
 Tyr Gly Phe Thr Arg Ser Gly Ser Lys Glu Tyr Gln Arg Ala Ala Gln
 65 70 75 80
 cgc atc tac agt gct ggc gga gac agt tgg cat ggc act tgg cag ctg 288
 Arg Ile Tyr Ser Ala Gly Gly Asp Ser Trp His Gly Thr Trp Gln Leu
 85 90 95
 ctt gta ccc aca aat tta ccg gaa gct caa cgc gac aat ttt agg cgc 336
 Leu Val Pro Thr Asn Leu Pro Glu Ala Gln Arg Asp Asn Phe Arg Arg
 100 105 110
 agt tta cat tgg ctg ggc ttt cgc gcg att agt aat ggc acc ttc gca 384
 Ser Leu His Trp Leu Gly Phe Arg Ala Ile Ser Asn Gly Thr Phe Ala
 115 120 125
 cgc cca ggc gga gac gag gat tcg att cgt gac cta ctc gac gaa ttt 432
 Arg Pro Gly Gly Asp Glu Asp Ser Ile Arg Asp Leu Leu Asp Glu Phe
 130 135 140
 gat ctg aat agc ggc gtg gta gtc atg gaa gca aaa acc tca tca ctg 480
 Asp Leu Asn Ser Gly Val Val Val Met Glu Ala Lys Thr Ser Ser Leu
 145 150 155 160
 acc aca ccg aaa gag tgg cgc gag ctt gtt agc gag cac tgg caa ctg 528
 Thr Thr Pro Lys Glu Trp Arg Glu Leu Val Ser Glu His Trp Gln Leu
 165 170 175
 cgg aat ctt gag gat gag tac cgc caa atc atc gga tta ttc agc ccc 576
 Arg Asn Leu Glu Asp Glu Tyr Arg Gln Ile Ile Gly Leu Phe Ser Pro
 180 185 190
 ctg aaa aag gcc ctc gat aaa ggt aag gta ccc acc cca cta gag gcc 624
 Leu Lys Lys Ala Leu Asp Lys Gly Lys Val Pro Thr Pro Leu Glu Ala
 195 200 205
 ttt cag gca cga ctg ctg ctc att cac gaa tac cgc cgc att ctt ctc 672
 Phe Gln Ala Arg Leu Leu Leu Ile His Glu Tyr Arg Arg Ile Leu Leu
 210 215 220
 aga gat acc ccg ctg ccc acg gac ctt ctt cca aac cgt tgg cag ggc 720
 Arg Asp Thr Pro Leu Pro Thr Asp Leu Leu Pro Asn Arg Trp Gln Gly
 225 230 235 240
 aca gta gcc cga cag ctc gcg cag gct ttg tat cga gat ctg gcc aaa 768
 Thr Val Ala Arg Gln Leu Ala Gln Ala Leu Tyr Arg Asp Leu Ala Lys
 245 250 255
 cct tct aca agc tac att caa act gag ctt gtg aac cgt cag gga cgg 816
 Pro Ser Thr Ser Tyr Ile Gln Thr Leu Val Asn Arg Gln Gly Arg
 260 265 270
 ctc ccg gaa tca gaa tac tat ttc tat cag cgg ttt ggg ggt att agt 864
 Leu Pro Glu Ser Glu Tyr Tyr Phe Tyr Gln Arg Phe Gly Gly Ile Ser

275
 aaa aac ctg taa
 Lys Asn Leu
 290

280 285

876

<210> 136
 <211> 291
 <212> PRT
 <213> marine gamma proteobacterium HTCC2080

<400> 136
 Met Arg Ala Lys Ser Leu Ile Ile Thr Leu Phe Gly Asp Val Ile Ser
 1 5 10 15
 Gln His Gly Gly Glu Ile Trp Leu Gly Ser Ile Ala Lys Ser Val Glu
 20 25 30
 Ala Leu Gly Val Asn Asp Arg Leu Val Arg Thr Ser Val Phe Arg Leu
 35 40 45
 Ala Lys Glu Gly Trp Leu Glu Val Glu Arg Glu Gly Arg Lys Ser Phe
 50 55 60
 Tyr Gly Phe Thr Arg Ser Gly Ser Lys Glu Tyr Gln Arg Ala Ala Gln
 65 70 75 80
 Arg Ile Tyr Ser Ala Gly Gly Asp Ser Trp His Gly Thr Trp Gln Leu
 85 90 95
 Leu Val Pro Thr Asn Leu Pro Glu Ala Gln Arg Asp Asn Phe Arg Arg
 100 105 110
 Ser Leu His Trp Leu Gly Phe Arg Ala Ile Ser Asn Gly Thr Phe Ala
 115 120 125
 Arg Pro Gly Gly Asp Glu Asp Ser Ile Arg Asp Leu Leu Asp Glu Phe
 130 135 140
 Asp Leu Asn Ser Gly Val Val Val Met Glu Ala Lys Thr Ser Ser Leu
 145 150 155 160
 Thr Thr Pro Lys Glu Trp Arg Glu Leu Val Ser Glu His Trp Gln Leu
 165 170 175
 Arg Asn Leu Glu Asp Glu Tyr Arg Gln Ile Ile Gly Leu Phe Ser Pro
 180 185 190
 Leu Lys Lys Ala Leu Asp Lys Gly Lys Val Pro Thr Pro Leu Glu Ala
 195 200 205
 Phe Gln Ala Arg Leu Leu Leu Ile His Glu Tyr Arg Arg Ile Leu Leu
 210 215 220
 Arg Asp Thr Pro Leu Pro Thr Asp Leu Leu Pro Asn Arg Trp Gln Gly
 225 230 235 240
 Thr Val Ala Arg Gln Leu Ala Gln Ala Leu Tyr Arg Asp Leu Ala Lys
 245 250 255
 Pro Ser Thr Ser Tyr Ile Gln Thr Glu Leu Val Asn Arg Gln Gly Arg
 260 265 270
 Leu Pro Glu Ser Glu Tyr Tyr Phe Tyr Gln Arg Phe Gly Gly Ile Ser
 275 280 285
 Lys Asn Leu
 290

<210> 137
 <211> 924
 <212> DNA
 <213> Pseudomonas putida

<220>
 <221> CDS
 <222> (1)..(924)
 <223> transl_table=11

<400> 137
 atg agc aat ctt gcc cca ctg aac aac ctg atc act cgc ttt cag gag
 Met Ser Asn Leu Ala Pro Leu Asn Asn Leu Ile Thr Arg Phe Gln Glu
 1 5 10 15

48

PhoenixTemp24825.tmp.txt

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cag acg cca atc cgc gcc agc tca ctg atc atc acc ttg tac ggc gat      96
Gln Thr Pro Ile Arg Ala Ser Ser Leu Ile Ile Thr Leu Tyr Gly Asp
      20      25      30
gcc atc gag ccc cat ggg ggg acc gtc tgg ctg ggt agc ctg atc aac      144
Ala Ile Glu Pro His Gly Gly Thr Val Trp Leu Gly Ser Leu Ile Asn
      35      40      45
ctg ctg gag ccc atc ggc atc aac gaa cga ctg atc cgc acg tcg atc      192
Leu Leu Glu Pro Ile Gly Ile Asn Glu Arg Leu Ile Arg Thr Ser Ile
      50      55      60
ttt cgc ctc acc aaa gag ggt tgg ctc acc gct gaa aaa gtt ggc cga      240
Phe Arg Leu Thr Lys Glu Gly Trp Leu Thr Ala Glu Lys Val Gly Arg
      65      70      75      80
cgc agt tac tac agc ctg acg ggc act ggc cgc cgc cgt ttc gaa aaa      288
Arg Ser Tyr Tyr Ser Leu Thr Gly Thr Gly Arg Arg Arg Phe Glu Lys
      85      90      95
gcc ttc aaa cgt gtc tac agc ccg agc caa ccg gcc tgg gat ggc gcc      336
Ala Phe Lys Arg Val Tyr Ser Pro Ser Gln Pro Ala Trp Asp Gly Ala
      100      105      110
tgg acg ctg gtg ttg ctg tcg cag ctt gag gcc ggc aag cgc aag gcc      384
Trp Thr Leu Val Leu Leu Ser Gln Leu Glu Ala Gly Lys Arg Lys Ala
      115      120      125
ttg cgt gaa gag ctg gaa tgg cag ggg ttt ggc gtt atg gcg ccg aac      432
Leu Arg Glu Glu Leu Glu Trp Gln Gly Phe Gly Val Met Ala Pro Asn
      130      135      140
ctg ctt ggc tgc cca cgg gca gac cgc gct gat ctg acc gca acc ttg      480
Leu Leu Gly Cys Pro Arg Ala Asp Arg Ala Asp Leu Thr Ala Thr Leu
      145      150      155      160
cgt gac ctg gaa gcc agc gac gac agt atc gtc ttc gaa acc cac acc      528
Arg Asp Leu Glu Ala Ser Asp Asp Ser Ile Val Phe Glu Thr His Thr
      165      170      175
cag gaa gtg ctc gcg tcc aag gcc atg cgc gcc cag gtg cgg gag agc      576
Gln Glu Val Leu Ala Ser Lys Ala Met Arg Ala Gln Val Arg Glu Ser
      180      185      190
tgg cgt atc gat gag ctg ggg cag cag tac agc gag ttc atc cag ctg      624
Trp Arg Ile Asp Glu Leu Gly Gln Gln Tyr Ser Glu Phe Ile Gln Leu
      195      200      205
ttc agg ccg ctg tgg cag agc ctg aaa gag cag caa ctg ctc gat gcg      672
Phe Arg Pro Leu Trp Gln Ser Leu Lys Glu Gln Gln Leu Leu Asp Ala
      210      215      220
caa gat tgt ttc ctg gcg cgc acc ctg ctg att cac gag tac cgc cgc      720
Gln Asp Cys Phe Leu Ala Arg Thr Leu Leu Ile His Glu Tyr Arg Arg
      225      230      235      240
ctg ctg ttg cgc gac ccg caa ctg cca gac gag ctg ctg cca ggg gac      768
Leu Leu Leu Arg Asp Pro Gln Leu Pro Asp Glu Leu Leu Pro Gly Asp
      245      250      255
tgg gag gga agg gct gcg cgg cag ttg tgc cgc aac ctg tat cgg ctg      816
Trp Glu Gly Arg Ala Ala Arg Gln Leu Cys Arg Asn Leu Tyr Arg Leu
      260      265      270
gtg ttt gcc aag gca gag gag tgg ctg aat gca gcc ctg gag acg gcc      864
Val Phe Ala Lys Ala Glu Glu Trp Leu Asn Ala Ala Leu Glu Thr Ala
      275      280      285
gac ggg cct ttg ccg gat gtg aac gag ggt ttc tac cag cgc ttt ggc      912
Asp Gly Pro Leu Pro Asp Val Asn Glu Gly Phe Tyr Gln Arg Phe Gly
      290      295      300
ggg ctg gcc tga
Gly Leu Ala
305

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<210> 138

<211> 307

<212> PRT

<213> Pseudomonas putida

<400> 138

PhoenixTemp24825.tmp.txt

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Met Ser Asn Leu Ala Pro Leu Asn Asn Leu Ile Thr Arg Phe Gln Glu
1      5      10      15
Gln Thr Pro Ile Arg Ala Ser Ser Leu Ile Ile Thr Leu Tyr Gly Asp
      20      25      30
Ala Ile Glu Pro His Gly Gly Thr Val Trp Leu Gly Ser Leu Ile Asn
      35      40      45
Leu Leu Glu Pro Ile Gly Ile Asn Glu Arg Leu Ile Arg Thr Ser Ile
      50      55      60
Phe Arg Leu Thr Lys Glu Gly Trp Leu Thr Ala Glu Lys Val Gly Arg
65      70      75      80
Arg Ser Tyr Tyr Ser Leu Thr Gly Thr Gly Arg Arg Arg Phe Glu Lys
      85      90      95
Ala Phe Lys Arg Val Tyr Ser Pro Ser Gln Pro Ala Trp Asp Gly Ala
      100      105      110
Trp Thr Leu Val Leu Leu Ser Gln Leu Glu Ala Gly Lys Arg Lys Ala
      115      120      125
Leu Arg Glu Glu Leu Glu Trp Gln Gly Phe Gly Val Met Ala Pro Asn
130      135      140
Leu Leu Gly Cys Pro Arg Ala Asp Arg Ala Asp Leu Thr Ala Thr Leu
145      150      155      160
Arg Asp Leu Glu Ala Ser Asp Asp Ser Ile Val Phe Glu Thr His Thr
      165      170      175
Gln Glu Val Leu Ala Ser Lys Ala Met Arg Ala Gln Val Arg Glu Ser
      180      185      190
Trp Arg Ile Asp Glu Leu Gly Gln Gln Tyr Ser Glu Phe Ile Gln Leu
195      200      205
Phe Arg Pro Leu Trp Gln Ser Leu Lys Glu Gln Gln Leu Leu Asp Ala
210      215      220
Gln Asp Cys Phe Leu Ala Arg Thr Leu Leu Ile His Glu Tyr Arg Arg
225      230      235      240
Leu Leu Leu Arg Asp Pro Gln Leu Pro Asp Glu Leu Leu Pro Gly Asp
      245      250      255
Trp Glu Gly Arg Ala Ala Arg Gln Leu Cys Arg Asn Leu Tyr Arg Leu
      260      265      270
Val Phe Ala Lys Ala Glu Glu Trp Leu Asn Ala Ala Leu Glu Thr Ala
275      280      285
Asp Gly Pro Leu Pro Asp Val Asn Glu Gly Phe Tyr Gln Arg Phe Gly
290      295      300
Gly Leu Ala
305

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<210> 139

<211> 927

<212> DNA

<213> Klebsiella sp

<220>

<221> CDS

<222> (1)..(927)

<223> transl_table=11

<400> 139

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atg agt aaa ctc gat acc ttt att caa cag gcc acg gaa acg atg ccc      48
Met Ser Lys Leu Asp Thr Phe Ile Gln Gln Ala Thr Glu Thr Met Pro
1      5      10      15
atc agt gga acc tcg ctt att gct tct tta tac ggc gac gcc ttg ctc      96
Ile Ser Gly Thr Ser Leu Ile Ala Ser Leu Tyr Gly Asp Ala Leu Leu
      20      25      30
caa cgc ggt ggg gag gtc tgg ctc ggc agc gta gcg gcg ctg ctg gag      144
Gln Arg Gly Gly Glu Val Trp Leu Gly Ser Val Ala Ala Leu Leu Glu
      35      40      45
gga ctg ggc ttc ggc gaa cga ttc gtg cgt act gcg ctg ttc cgc ctg      192
Gly Leu Gly Phe Gly Glu Arg Phe Val Arg Thr Ala Leu Phe Arg Leu
      50      55      60

```

PhoenixTemp24825.tmp.txt

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aat aaa gaa gag tgg ctt gac gtg gtg cgc att ggc cgc cga agc ttc      240
Asn Lys Glu Glu Trp Leu Asp Val Val Arg Ile Gly Arg Arg Ser Phe
65      70      75      80
tac cgt ctc agc gac aaa ggt ctg cgc ttg act cgc cgc gcc gaa cat      288
Tyr Arg Leu Ser Asp Lys Gly Leu Arg Leu Thr Arg Arg Ala Glu His
85      90      95
aaa atc tat cgc gtc agc gcc ccg gaa tgg gac ggc acc tgg cta ctg      336
Lys Ile Tyr Arg Val Ser Ala Pro Glu Trp Asp Gly Thr Trp Leu Leu
100      105      110
cta ctg tcg gaa ggg ctt gag aag agc acg ctg gcg gag gtc aaa aaa      384
Leu Leu Ser Glu Gly Leu Glu Lys Ser Thr Leu Ala Glu Val Lys Lys
115      120      125
cag ctg cta tgg cag gga ttt ggc gcg ctg gcg ccg agc ctg ctg gct      432
Gln Leu Leu Trp Gln Gly Phe Gly Ala Leu Ala Pro Ser Leu Leu Ala
130      135      140
tca ccg tcg caa aag ctg gcg gat gtg caa tct ctg ctg cac gac gcg      480
Ser Pro Ser Gln Lys Leu Ala Asp Val Gln Ser Leu Leu His Asp Ala
145      150      155      160
ggc gtg gcg gaa aat gtc atc tgc ttc gaa gcc cac tcc ccg ctg gcg      528
Gly Val Ala Glu Asn Val Ile Cys Phe Glu Ala His Ser Pro Leu Ala
165      170      175
ctc tcc cgg gcg gcg ctg cgc gcc cgc gtt gaa gag tgc tgg cat ctc      576
Leu Ser Arg Ala Ala Leu Arg Ala Arg Val Glu Glu Cys Trp His Leu
180      185      190
acc gaa cag aac gcg atg tat gag acg ttt atc aat ttg ttt cgt cct      624
Thr Glu Gln Asn Ala Met Tyr Glu Thr Phe Ile Asn Leu Phe Arg Pro
195      200      205
ctg ctg ccg ctg ctt cgc gac tgc gag ccc gca gaa ctg acg ccc gaa      672
Leu Leu Pro Leu Leu Arg Asp Cys Glu Pro Ala Glu Leu Thr Pro Glu
210      215      220
cgc tgc ttt cac att caa cta ctg ctg att cac ctc tac cgc cgg gtg      720
Arg Cys Phe His Ile Gln Leu Leu Leu Ile His Leu Tyr Arg Arg Val
225      230      235      240
gtg ctt aag gat ccg ctg ctg ccc gaa gaa ctg ctc cct gca cac tgg      768
Val Leu Lys Asp Pro Leu Leu Pro Glu Glu Leu Leu Pro Ala His Trp
245      250      255
gcc ggg caa acc gcg cgc cag ctg tgc atc aat att tat caa cgc gtt      816
Ala Gly Gln Thr Ala Arg Gln Leu Cys Ile Asn Ile Tyr Gln Arg Val
260      265      270
gcg ccc ggc gcg ctg gcc ttc gtc ggc gag agg ggc gaa agc tcg gtg      864
Ala Pro Gly Ala Leu Ala Phe Val Gly Glu Arg Gly Glu Ser Ser Val
275      280      285
ggg gaa ctt ccc gcg ccg ggg ccg ctc tat ttc cag cgt ttc ggc gga      912
Gly Glu Leu Pro Ala Pro Gly Pro Leu Tyr Phe Gln Arg Phe Gly Gly
290      295      300
ctg tcg ggc gta taa
Leu Ser Gly Val
305

```

<210> 140

<211> 308

<212> PRT

<213> Klebsiella sp

<400> 140

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

```

PhoenixTemp24825.tmp.txt

```

65          70          75          80
Tyr Arg Leu Ser Asp Lys Gly Leu Arg Leu Thr Arg Arg Ala Glu His
85
Lys Ile Tyr Arg Val Ser Ala Pro Glu Trp Asp Gly Thr Trp Leu Leu
100
Leu Leu Ser Glu Gly Leu Glu Lys Ser Thr Leu Ala Glu Val Lys Lys
115
Gln Leu Leu Trp Gln Gly Phe Gly Ala Leu Ala Pro Ser Leu Leu Ala
130
Ser Pro Ser Gln Lys Leu Ala Asp Val Gln Ser Leu Leu His Asp Ala
145
Gly Val Ala Glu Asn Val Ile Cys Phe Glu Ala His Ser Pro Leu Ala
165
Leu Ser Arg Ala Ala Leu Arg Ala Arg Val Glu Glu Cys Trp His Leu
180
Thr Glu Gln Asn Ala Met Tyr Glu Thr Phe Ile Asn Leu Phe Arg Pro
195
Leu Leu Pro Leu Leu Arg Asp Cys Glu Pro Ala Glu Leu Thr Pro Glu
210
Arg Cys Phe His Ile Gln Leu Leu Leu Ile His Leu Tyr Arg Arg Val
225
Val Leu Lys Asp Pro Leu Leu Pro Glu Glu Leu Leu Pro Ala His Trp
245
Ala Gly Gln Thr Ala Arg Gln Leu Cys Ile Asn Ile Tyr Gln Arg Val
260
Ala Pro Gly Ala Leu Ala Phe Val Gly Glu Arg Gly Glu Ser Ser Val
275
Gly Glu Leu Pro Ala Pro Gly Pro Leu Tyr Phe Gln Arg Phe Gly Gly
290
Leu Ser Gly Val
305

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<210> 141

<211> 924

<212> DNA

<213> Pseudomonas sp

<220>

<221> CDS

<222> (1)..(924)

<223> transl_table=11

<400> 141

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atg tcg tcc ctc aca ccg ctc gac cat ctg atc gac cgt ttc cag cag      48
Met Ser Ser Leu Thr Pro Leu Asp His Leu Ile Asp Arg Phe Gln Gln
1          5          10          15
cag acg ccg att cgc gcc agt tcc ctg atc atc acc ctc tat ggc gat      96
Gln Thr Pro Ile Arg Ala Ser Ser Leu Ile Ile Thr Leu Tyr Gly Asp
20          25          30
gcc atc gaa ccc cgt ggc ggc acc gtg tgg ctg ggc agc ctg atc cag      144
Ala Ile Glu Pro Arg Gly Gly Thr Val Trp Leu Gly Ser Leu Ile Gln
35          40          45
ttg ctc gaa ccc atg ggc atc aac gag cgg ctg atc cgc acc tcg atc      192
Leu Leu Glu Pro Met Gly Ile Asn Glu Arg Leu Ile Arg Thr Ser Ile
50          55          60
ttt cgc ctg acc aag gaa aac tgg ctg act gcc gag aag gtc ggc cgg      240
Phe Arg Leu Thr Lys Glu Asn Trp Leu Thr Ala Glu Lys Val Gly Arg
65          70          75          80
cgc agc tac tac agc ctg acc ggc acc ggg cgg cgg cgt ttc gag aaa      288
Arg Ser Tyr Tyr Ser Leu Thr Gly Thr Gly Arg Arg Arg Phe Glu Lys
85          90          95
gcc ttc aag cgg gtc tac gct gcc aat ccg ccg gcc tgg gat ggc tcc      336
Ala Phe Lys Arg Val Tyr Ala Ala Asn Pro Pro Ala Trp Asp Gly Ser
100          105          110

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```

tgg tgc ctg gcg gtg ctg act caa ttg ccc cag gac aag cgc aag atc      384
Trp Cys Leu Ala Val Leu Thr Gln Leu Pro Gln Asp Lys Arg Lys Ile
115 120 125
gtt cgc gaa gaa ctg gag tgg cag ggc ttc ggc gcc atc tcg ccg ggg      432
Val Arg Glu Glu Leu Glu Trp Gln Gly Phe Gly Ala Ile Ser Pro Gly
130 135 140
gtg ctg ggc tgc ccg cgc tgc gac cgg gcc gac gtc aac gcc acc ctg      480
Val Leu Gly Cys Pro Arg Cys Asp Arg Ala Asp Val Asn Ala Thr Leu
145 150 155 160
gtg gac ctt ggc gcc cag gaa gac acc atc ctc ttc gaa acc acc gcc      528
Val Asp Leu Gly Ala Gln Glu Asp Thr Ile Leu Phe Glu Thr Thr Ala
165 170 175
cag gat gtg ctg gcc tcc aag gcc ctg cgc atg cag gtg cgc gag agc      576
Gln Asp Val Leu Ala Ser Lys Ala Leu Arg Met Gln Val Arg Glu Ser
180 185 190
tgg aag atc gac gaa ctg gcg gcg cac tac agc gag ttc atc cag ttg      624
Trp Lys Ile Asp Glu Leu Ala Ala His Tyr Ser Glu Phe Ile Gln Leu
195 200 205
ttc cgc ccc ttg tgg cag agc ctc aag gaa cag gac agc ctc gac ccg      672
Phe Arg Pro Leu Trp Gln Ser Leu Lys Glu Gln Asp Ser Leu Asp Pro
210 215 220
aaa gcc tgc ttc ctc gcc cgc gtg ctg ctg att cac gag tac cgc aag      720
Lys Ala Cys Phe Leu Ala Arg Val Leu Leu Ile His Glu Tyr Arg Lys
225 230 235 240
ctg ctg ctg cgt gat ccg caa ttg ccc gac gag ctg ctg ccg ggc gac      768
Leu Leu Leu Arg Asp Pro Gln Leu Pro Asp Glu Leu Leu Pro Gly Asp
245 250 255
tgg gaa ggc cgt gct gcc cgg cag ctg tgc cgc aac atc tac cgc ctg      816
Trp Glu Gly Arg Ala Ala Arg Gln Leu Cys Arg Asn Ile Tyr Arg Leu
260 265 270
atc cat ggc gct gcg gag cag tgg ctg gaa gcg gcg atg gaa acc gcc      864
Ile His Gly Ala Ala Glu Gln Trp Leu Glu Ala Ala Met Glu Thr Ala
275 280 285
gac ggg ccg ctg ccc gag gcc ggg gaa ggt ttc tac aag cgc ttt ggc      912
Asp Gly Pro Leu Pro Glu Ala Gly Glu Gly Phe Tyr Lys Arg Phe Gly
290 295 300
ggg ctg ggc tga
Gly Leu Gly
305

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<210> 142

<211> 307

<212> PRT

<213> Pseudomonas sp

<400> 142

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

```

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Val Leu Gly Cys Pro Arg Cys Asp Arg Ala Asp Val Asn Ala Thr Leu
 145 150 155 160
 Val Asp Leu Gly Ala Gln Glu Asp Thr Ile Leu Phe Glu Thr Thr Ala
 165 170 175
 Gln Asp Val Leu Ala Ser Lys Ala Leu Arg Met Gln Val Arg Glu Ser
 180 185 190
 Trp Lys Ile Asp Glu Leu Ala Ala His Tyr Ser Glu Phe Ile Gln Leu
 195 200 205
 Phe Arg Pro Leu Trp Gln Ser Leu Lys Glu Gln Asp Ser Leu Asp Pro
 210 215 220
 Lys Ala Cys Phe Leu Ala Arg Val Leu Leu Ile His Glu Tyr Arg Lys
 225 230 235 240
 Leu Leu Leu Arg Asp Pro Gln Leu Pro Asp Glu Leu Leu Pro Gly Asp
 245 250 255
 Trp Glu Gly Arg Ala Ala Arg Gln Leu Cys Arg Asn Ile Tyr Arg Leu
 260 265 270
 Ile His Gly Ala Ala Glu Gln Trp Leu Glu Ala Ala Met Glu Thr Ala
 275 280 285
 Asp Gly Pro Leu Pro Glu Ala Gly Glu Gly Phe Tyr Lys Arg Phe Gly
 290 295 300
 Gly Leu Gly
 305

<210> 143

<211> 924

<212> DNA

<213> Pseudomonas sp

<220>

<221> CDS

<222> (1)..(924)

<223> transl_table=11

<400> 143

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

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cag gat ctc gac gcc ctg gaa gac acc atc ctc ttc gac act tac gct	528
Gln Asp Leu Asp Ala Leu Glu Asp Thr Ile Leu Phe Asp Thr Tyr Ala	
165 170 175	
cag gac gtg ctc gcg tcc aag gcc ctg cgc atg cag gtg cgc gag agc	576
Gln Asp Val Leu Ala Ser Lys Ala Leu Arg Met Gln Val Arg Glu Ser	
180 185 190	
tgg aag atc gac gaa ctg gcg tcc cac tac agc gag ttc atc cag ctg	624
Trp Lys Ile Asp Glu Leu Ala Ser His Tyr Ser Glu Phe Ile Gln Leu	
195 200 205	
ttc cgt ccg ctc tgg caa gcc ttg cgc gag aag gac agc cta cag cct	672
Phe Arg Pro Leu Trp Gln Ala Leu Arg Glu Lys Asp Ser Leu Gln Pro	
210 215 220	
gcg gac tgc ttc ctt gcc cga atc ctg ctc atc cat gag tac cgg aag	720
Ala Asp Cys Phe Leu Ala Arg Ile Leu Leu Ile His Glu Tyr Arg Lys	
225 230 235 240	
ttg ctg ctg cgc gac ccg cag ttg ccc gac gaa ctg ctc ccg ggc gac	768
Leu Leu Leu Arg Asp Pro Gln Leu Pro Asp Glu Leu Leu Pro Gly Asp	
245 250 255	
tgg gaa ggg cgc gcg gca cgg caa ctg tgc cgc aat atc tat cgt ctg	816
Trp Glu Gly Arg Ala Ala Arg Gln Leu Cys Arg Asn Ile Tyr Arg Leu	
260 265 270	
att cac gct gaa gct gag cag tgg ctg aac gat act ctg gag acc gct	864
Ile His Ala Glu Ala Glu Gln Trp Leu Asn Asp Thr Leu Glu Thr Ala	
275 280 285	
gac ggc ccg ttg ccg gac gtg ggg gaa agt ttc tac caa cgc ttt gga	912
Asp Gly Pro Leu Pro Asp Val Gly Glu Ser Phe Tyr Gln Arg Phe Gly	
290 295 300	
gga tta ggg taa	924
Gly Leu Gly	
305	

<210> 144

<211> 307

<212> PRT

<213> Pseudomonas sp

<400> 144

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

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210		215		220											
Ala	Asp	Cys	Phe	Leu	Ala	Arg	Ile	Leu	Leu	Ile	His	Glu	Tyr	Arg	Lys
225					230					235					240
Leu	Leu	Leu	Arg	Asp	Pro	Gln	Leu	Pro	Asp	Glu	Leu	Leu	Pro	Gly	Asp
				245					250					255	
Trp	Glu	Gly	Arg	Ala	Ala	Arg	Gln	Leu	Cys	Arg	Asn	Ile	Tyr	Arg	Leu
			260					265					270		
Ile	His	Ala	Glu	Ala	Glu	Gln	Trp	Leu	Asn	Asp	Thr	Leu	Glu	Thr	Ala
		275					280					285			
Asp	Gly	Pro	Leu	Pro	Asp	Val	Gly	Glu	Ser	Phe	Tyr	Gln	Arg	Phe	Gly
	290					295					300				
Gly	Leu	Gly													
305															

<210> 145
 <211> 27
 <212> DNA
 <213> Artificial sequence

<220>
 <223> primer

<400> 145
 atgagtaaac ttgatacttt tatccaa

27

<210> 146
 <211> 26
 <212> DNA
 <213> Artificial sequence

<220>
 <223> primer

<400> 146
 ttatctgata aattggcata acgcct

26

<210> 147
 <211> 261
 <212> PRT
 <213> Artificial sequence

<220>
 <223> consensus sequence

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 <222> (2)..(7)
 <223> Xaa in position 2 to 7 is any amino acid

<220>
 <221> Variant
 <222> (10)..(13)
 <223> Xaa in position 10 to 13 is any amino acid

<220>
 <221> Variant
 <222> (14)..(14)
 <223> Xaa in position 14 is any or no amino acid

<220>
 <221> Variant
 <222> (16)..(22)
 <223> Xaa in position 16 to 22 is any amino acid

<220>
<221> Variant
<222> (24)..(30)
<223> Xaa in position 24 to 30 is any amino acid

<220>
<221> Variant
<222> (32)..(37)
<223> Xaa in position 32 to 37 is any amino acid

<220>
<221> Variant
<222> (39)..(42)
<223> Xaa in position 39 to 42 is any amino acid

<220>
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<222> (44)..(54)
<223> Xaa in position 44 to 54 is any amino acid

<220>
<221> Variant
<222> (55)..(56)
<223> Xaa in position 55 to 56 is any or no amino acid

<220>
<221> Variant
<222> (58)..(60)
<223> Xaa in position 58 to 60 is any amino acid

<220>
<221> Variant
<222> (61)..(61)
<223> Xaa in position 61 is any or no amino acid

<220>
<221> Variant
<222> (63)..(63)
<223> Xaa in position 63 is any amino acid

<220>
<221> Variant
<222> (65)..(79)
<223> Xaa in position 65 to 79 is any amino acid

<220>
<221> Variant
<222> (81)..(85)
<223> Xaa in position 81 to 85 is any amino acid

<220>
<221> Variant
<222> (86)..(88)
<223> Xaa in position 86 to 88 is any or no amino acid

<220>
<221> Variant
<222> (90)..(92)
<223> Xaa in position 90 to 92 is any amino acid

<220>
<221> Variant
<222> (94)..(102)

<223> Xaa in position 94 to 102 is any amino acid

<220>
<221> Variant
<222> (103)..(108)
<223> Xaa in position 103 to 108 is any or no amino acid

<220>
<221> Variant
<222> (110)..(115)
<223> Xaa in position 110 to 115 is any amino acid

<220>
<221> Variant
<222> (117)..(119)
<223> Xaa in position 117 to 119 is any amino acid

<220>
<221> Variant
<222> (121)..(121)
<223> Xaa in position 121 is any amino acid

<220>
<221> Variant
<222> (123)..(127)
<223> Xaa in position 123 to 127 is any amino acid

<220>
<221> Variant
<222> (128)..(131)
<223> Xaa in position 128 to 131 is any or no amino acid

<220>
<221> Variant
<222> (133)..(159)
<223> Xaa in position 133 to 159 is any amino acid

<220>
<221> Variant
<222> (160)..(178)
<223> Xaa in position 160 to 178 is any or no amino acid

<220>
<221> Variant
<222> (180)..(180)
<223> Xaa in position 180 is any amino acid

<220>
<221> Variant
<222> (182)..(184)
<223> Xaa in position 182 to 184 is any amino acid

<220>
<221> Variant
<222> (185)..(187)
<223> Xaa in position 185 to 187 is any or no amino acid

<220>
<221> Variant
<222> (189)..(211)
<223> Xaa in position 189 to 211 is any amino acid

<220>
<221> Variant

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<222> (212)..(229)
<223> Xaa in position 212 to 229 is any or no amino acid

<220>
<221> Variant
<222> (231)..(231)
<223> Xaa in position 231 is any amino acid

<220>
<221> Variant
<222> (233)..(234)
<223> Xaa in position 233 to 234 is any amino acid

<220>
<221> Variant
<222> (236)..(240)
<223> Xaa in position 236 to 240 is any amino acid

<220>
<221> Variant
<222> (243)..(243)
<223> Xaa in position 243 is any amino acid

<220>
<221> Variant
<222> (246)..(248)
<223> Xaa in position 246 to 248 is any amino acid

<220>
<221> Variant
<222> (251)..(252)
<223> Xaa in position 251 to 252 is any amino acid

<220>
<221> Variant
<222> (254)..(254)
<223> Xaa in position 254 is any amino acid

<220>
<221> Variant
<222> (256)..(260)
<223> Xaa in position 256 to 260 is any amino acid

<400> 147
Ser Xaa Xaa Xaa Xaa Xaa Xaa Gly Asp Xaa Xaa Xaa Xaa Xaa Gly Xaa
1      5      10      15
Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Gly Xaa
20      25      30
Xaa Xaa Xaa Xaa Xaa Arg Xaa Xaa Xaa Xaa Arg Xaa Xaa Xaa Xaa Xaa
35      40      45
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Tyr Xaa Leu
50      55      60
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
65      70      75      80
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Trp Xaa Xaa Xaa Trp Xaa Xaa Xaa
85      90      95
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Arg Xaa Xaa Xaa
100     105     110
Xaa Xaa Xaa Leu Xaa Xaa Xaa Gly Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa
115     120     125
Xaa Xaa Xaa Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
130     135     140
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
145     150     155     160

```

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```

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
      165      170      175
Xaa Xaa Trp Xaa Leu Xaa Xaa Xaa Xaa Xaa Tyr Xaa Xaa Xaa Xaa
      180      185      190
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
      195      200      205
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
      210      215      220
Xaa Xaa Xaa Xaa Xaa Leu Xaa His Xaa Xaa Arg Xaa Xaa Xaa Xaa Xaa
      225      230      235      240
Asp Pro Xaa Leu Pro Xaa Xaa Xaa Leu Pro Xaa Xaa Trp Xaa Gly Xaa
      245      250      255
Xaa Xaa Xaa Xaa Leu
      260

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<210> 148
 <211> 34
 <212> PRT
 <213> Artificial sequence

<220>
 <223> protein pattern

<220>
 <221> Variant
 <222> (2)..(8)
 <223> Xaa in position 2 to 8 is any amino acid

<220>
 <221> Variant
 <222> (9)..(9)
 <223> Xaa in position 9 is any or no amino acid

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

<220>
 <221> Variant
 <222> (12)..(13)
 <223> Xaa in position 12 to 13 is any or no amino acid

<220>
 <221> Variant
 <222> (15)..(15)
 <223> Xaa in position 15 is Pro or Thr

<220>
 <221> Variant
 <222> (16)..(16)
 <223> Xaa in position 16 is any amino acid

<220>
 <221> Variant
 <222> (19)..(22)
 <223> Xaa in position 19 to 22 is any amino acid

<220>
 <221> Variant
 <222> (23)..(23)
 <223> Xaa in position 23 is Gly or Pro

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<220>
<221> Variant
<222> (24)..(25)
<223> Xaa in position 24 to 25 is any amino acid

<220>
<221> Variant
<222> (26)..(26)
<223> Xaa in position 26 is Phe or Trp

<220>
<221> Variant
<222> (27)..(27)
<223> Xaa in position 27 is any amino acid

<220>
<221> Variant
<222> (29)..(30)
<223> Xaa in position 29 to 30 is any amino acid

<220>
<221> Variant
<222> (31)..(31)
<223> Xaa in position 31 is Ala, Ser or Val

<220>
<221> Variant
<222> (32)..(33)
<223> Xaa in position 32 to 33 is any amino acid

<220>
<221> Variant
<222> (34)..(34)
<223> Xaa in position 34 is Leu or Val

<400> 148
Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Xaa Asp Xaa Xaa
1          5          10          15
Leu Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa
          20          25          30
Xaa Xaa

<210> 149
<211> 369
<212> DNA
<213> Escherichia coli

<220>
<221> CDS
<222> (1)..(369)
<223> transl_table=11

<400> 149
atg tgg tta ctt gac cag tgg gca gag cgc cat ata gca gaa gcg caa      48
Met Trp Leu Leu Asp Gln Trp Ala Glu Arg His Ile Ala Glu Ala Gln
1          5          10          15
gcg aaa ggt gag ttt gat aac ctg gca ggt agc ggc gaa cca ttg ata      96
Ala Lys Gly Glu Phe Asp Asn Leu Ala Gly Ser Gly Glu Pro Leu Ile
          20          25          30
ctg gat gat gat tct cac gtg cca ccg gaa tta cgt gcg ggg tat cgc      144
Leu Asp Asp Asp Ser His Val Pro Glu Leu Arg Ala Gly Tyr Arg
          35          40          45
ttg ctg aag aat gcc ggt tgc tta ccg cca gaa ctt gag caa cgg aga      192

```

PhoenixTemp24825.tmp.txt

```

Leu Leu Lys Asn Ala Gly Cys Leu Pro Pro Glu Leu Glu Gln Arg Arg
  50      55      60
gaa gca att cag ctt ctg gat att ctc aaa ggt atc cgt cac gat gat      240
Glu Ala Ile Gln Leu Asp Ile Leu Lys Gly Ile Arg His Asp Asp
  65      70      75      80
ccg caa tat caa gag gtt agc cgt cga ttg tca tta ctg gaa ttg aag      288
Pro Gln Tyr Gln Glu Val Ser Arg Arg Leu Ser Leu Leu Glu Leu Lys
      85      90      95
ctg cga caa gct gga ttg agt acc gat ttt tta cgc ggc gat tat gct      336
Leu Arg Gln Ala Gly Leu Ser Thr Asp Phe Leu Arg Gly Asp Tyr Ala
      100      105      110
gac aag ttg ttg gac aaa atc aac gat aac taa      369
Asp Lys Leu Leu Asp Lys Ile Asn Asp Asn
      115      120

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<210> 150

<211> 122

<212> PRT

<213> Escherichia coli

<400> 150

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

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<210> 151

<211> 372

<212> DNA

<213> Bacillus halodurans C-125

<220>

<221> CDS

<222> (1)..(372)

<223> transl_table=11

<400> 151

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atg gat ttt gct agt cgt ctg gca gag gaa cga atc caa aag gca ata      48
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  1      5      10      15
aag gaa gga gcc ttt gat gat ctt gaa gga aaa gga aag ccg ttg acg      96
Lys Glu Gly Ala Phe Asp Asp Leu Glu Gly Lys Gly Lys Pro Leu Thr
      20      25      30
ttt gaa gaa gat caa ggg gtt ccc gag gag ctt aga cta agc tat aaa      144
Phe Glu Glu Asp Gln Gly Val Pro Glu Glu Leu Arg Leu Ser Tyr Lys
      35      40      45
atc tta aaa aat gct gga ttt gtc ccg aag gaa gta gaa gtc caa aag      192
Ile Leu Lys Asn Ala Gly Phe Val Pro Lys Glu Val Glu Val Gln Lys
      50      55      60
gaa atc atc cag cta aag cag tta gtg gaa gca tgt gtt gat cca gat      240
Glu Ile Ile Gln Leu Lys Gln Leu Val Glu Ala Cys Val Asp Pro Asp
      65      70      75      80

```

PhoenixTemp24825.tmp.txt

gaa gag gtg aag ctg aag aaa aag ctc agc gaa aaa acg ctc cgc tac 288
 Glu Glu Val Lys Leu Lys Lys Lys Leu Ser Glu Lys Thr Leu Arg Tyr
 85 90 95
 aac caa ctt atg gag caa cga aaa tgg agt tcc tca agt agc ttt cgt 336
 Asn Gln Leu Met Glu Gln Arg Lys Trp Ser Ser Ser Ser Ser Phe Arg
 100 105 110
 cgc tac cgc cac aag tta aca gag cgt ttc ttt tag 372
 Arg Tyr Arg His Lys Leu Thr Glu Arg Phe Phe
 115 120

<210> 152

<211> 123

<212> PRT

<213> Bacillus halodurans C-125

<400> 152

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

<210> 153

<211> 369

<212> DNA

<213> Salmonella enterica subsp. enterica serovar Typhi Ty2

<220>

<221> CDS

<222> (1)..(369)

<223> transl_table=11

<400> 153

atg tgg tta ctt gac cag tgg gca gag cgt cat att atc gag gca cag 48
 Met Trp Leu Leu Asp Gln Trp Ala Glu Arg His Ile Ile Glu Ala Gln
 5 10 15
 cgt aaa ggc gag ttt gat aat ctg cct ggc cgc ggc gaa ccg ctt att 96
 Arg Lys Gly Glu Phe Asp Asn Leu Pro Gly Arg Gly Glu Pro Leu Ile
 20 25 30
 ctg gat gat gat tct cat gtg cca gcg gaa ctt cgt gcg ggt tat cgc 144
 Leu Asp Asp Asp Ser His Val Pro Ala Glu Leu Arg Ala Gly Tyr Arg
 35 40 45
 tta ctg aag aat gcg ggc tgt ctt ccc cct gaa ctg gag cag cgc aga 192
 Leu Leu Lys Asn Ala Gly Cys Leu Pro Pro Glu Leu Glu Gln Arg Arg
 50 55 60
 gac gct att cag tta ctt gat atc ctc aac agt atc ccg gaa gat gac 240
 Asp Ala Ile Gln Leu Leu Asp Ile Leu Asn Ser Ile Arg Glu Asp Asp
 65 70 75 80
 cct caa tac cat cag gtt agt cgc cag ctc tcg ctg ctt gaa cta aaa 288
 Pro Gln Tyr His Gln Val Ser Arg Gln Leu Ser Leu Leu Glu Leu Lys
 85 90 95
 ctt cgg cag gct ggg ttg agt acc gat ttt tta cac ggt gag tat gca 336
 Leu Arg Gln Ala Gly Leu Ser Thr Asp Phe Leu His Gly Glu Tyr Ala

```

100      105      110
gaa aaa ctg ctg cat aaa atc aac gat aat taa
Glu Lys Leu Leu His Lys Ile Asn Asp Asn
115      120

<210> 154
<211> 122
<212> PRT
<213> Salmonella enterica subsp. enterica serovar Typhi Ty2

<400> 154
Met Trp Leu Leu Asp Gln Trp Ala Glu Arg His Ile Ile Glu Ala Gln
1      5      10      15
Arg Lys Gly Glu Phe Asp Asn Leu Pro Gly Arg Gly Glu Pro Leu Ile
20      25      30
Leu Asp Asp Asp Ser His Val Pro Ala Glu Leu Arg Ala Gly Tyr Arg
35      40      45
Leu Leu Lys Asn Ala Gly Cys Leu Pro Pro Glu Leu Glu Gln Arg Arg
50      55      60
Asp Ala Ile Gln Leu Leu Asp Ile Leu Asn Ser Ile Arg Glu Asp Asp
65      70      75      80
Pro Gln Tyr His Gln Val Ser Arg Gln Leu Ser Leu Leu Glu Leu Lys
85      90      95
Leu Arg Gln Ala Gly Leu Ser Thr Asp Phe Leu His Gly Glu Tyr Ala
100      105      110
Glu Lys Leu Leu His Lys Ile Asn Asp Asn
115      120

<210> 155
<211> 372
<212> DNA
<213> Bacillus cereus ATCC 14579

<220>
<221> CDS
<222> (1)..(372)
<223> transl_table=11

<400> 155
gtg gat gtg ttt ttg aac att gct gaa gaa aaa att cga caa gca ata
Met Asp Val Phe Leu Asn Ile Ala Glu Glu Lys Ile Arg Gln Ala Ile
1      5      10      15
cgg aat ggt gat ctt gat tat ctt ccg gga aaa gga aaa cca cta caa
Arg Asn Gly Asp Leu Asp Tyr Leu Pro Gly Lys Gly Lys Pro Leu Gln
20      25      30
tta gaa gat ctt tca atg gta cct cca gaa ctt aga atg agt tat aaa
Leu Glu Asp Leu Ser Met Val Pro Pro Glu Leu Arg Met Ser Tyr Lys
35      40      45
att tta aaa aat gcg gga atg att cca cca gaa atg gaa cta caa aaa
Ile Leu Lys Asn Ala Gly Met Ile Pro Pro Glu Met Glu Leu Gln Lys
50      55      60
gat ata tta aaa ata gag gat tta att gct tgc tgt tat gat gaa gaa
Asp Ile Leu Lys Ile Glu Asp Leu Ile Ala Cys Cys Tyr Asp Glu Glu
65      70      75      80
gag aga aag aaa tta cga gaa gag tta aca gca aaa act ctt cgt ttt
Glu Arg Lys Lys Leu Arg Glu Glu Leu Thr Ala Lys Thr Leu Arg Phe
85      90      95
cag cag gta atg gaa aag aga aag att aaa gat agt tca gct ttt cgt
Gln Gln Val Met Glu Lys Arg Lys Ile Lys Asp Ser Ser Ala Phe Arg
100      105      110
atg tat caa ggc aaa tta ttt cgt aaa tta cgc taa
Met Tyr Gln Gly Lys Leu Phe Arg Lys Leu Arg
115      120

```

<210> 156
 <211> 123
 <212> PRT
 <213> Bacillus cereus ATCC 14579

<400> 156
 Met Asp Val Phe Leu Asn Ile Ala Glu Glu Lys Ile Arg Gln Ala Ile
 1 5 10 15
 Arg Asn Gly Asp Leu Asp Tyr Leu Pro Gly Lys Gly Lys Pro Leu Gln
 20 25 30
 Leu Glu Asp Leu Ser Met Val Pro Pro Glu Leu Arg Met Ser Tyr Lys
 35 40 45
 Ile Leu Lys Asn Ala Gly Met Ile Pro Pro Glu Met Glu Leu Gln Lys
 50 55 60
 Asp Ile Leu Lys Ile Glu Asp Leu Ile Ala Cys Cys Tyr Asp Glu Glu
 65 70 75 80
 Glu Arg Lys Lys Leu Arg Glu Glu Leu Thr Ala Lys Thr Leu Arg Phe
 85 90 95
 Gln Gln Val Met Glu Lys Arg Lys Ile Lys Asp Ser Ser Ala Phe Arg
 100 105 110
 Met Tyr Gln Gly Lys Leu Phe Arg Lys Leu Arg
 115 120

<210> 157
 <211> 375
 <212> DNA
 <213> Geobacter sulfurreducens PCA

<220>
 <221> CDS
 <222> (1)..(375)
 <223> transl_table=11

<400> 157
 atg gac att ctg gca acc atg gcg gaa cga aag atc cag gag gca atg 48
 Met Asp Ile Leu Ala Thr Met Ala Glu Arg Lys Ile Gln Glu Ala Met
 1 5 10 15
 gcg cgg gga gag ttg agc aac ctc gtc ggc gcg ggc aag ctg ctg gcc 96
 Ala Arg Gly Glu Leu Ser Asn Leu Val Gly Ala Gly Lys Leu Leu Ala
 20 25 30
 atg gac gag gac ctt tcc ggc gtg ccg gcc gag ctc cgc atg gcc tac 144
 Met Asp Glu Asp Leu Ser Gly Val Pro Ala Glu Leu Arg Met Ala Tyr
 35 40 45
 cgg att ttg aag aat gcg ggt ttt gtc ccg ccc gag gtg gag ttg cgc 192
 Arg Ile Leu Lys Asn Ala Gly Phe Val Pro Pro Glu Val Glu Leu Arg
 50 55 60
 aag gag atc gtc tcg ctc cgt gag ctg gtg aac tcc ctg gag gag agc 240
 Lys Glu Ile Val Ser Leu Arg Glu Leu Val Asn Ser Leu Glu Glu Ser
 65 70 75 80
 gag gag cgc cgt cag cgg cga cgg gag ctg gac ttc aag ctg ctc aag 288
 Glu Glu Arg Arg Gln Arg Arg Arg Glu Leu Asp Phe Lys Leu Leu Lys
 85 90 95
 ctc gcc atg atg cgt aac cgc ccc atg aac ctg gac gac ttt ccc gag 336
 Leu Ala Met Met Arg Asn Arg Pro Met Asn Leu Asp Asp Phe Pro Glu
 100 105 110
 tac cgg gat aag gtc gcc gca aag ctc ggc ggc gaa taa 375
 Tyr Arg Asp Lys Val Ala Ala Lys Leu Gly Gly Glu
 115 120

<210> 158
 <211> 124
 <212> PRT
 <213> Geobacter sulfurreducens PCA

PhoenixTemp24825.tmp.txt

<400> 158

```

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

```

<210> 159

<211> 372

<212> DNA

<213> Bacillus cereus ATCC 10987

<220>

<221> CDS

<222> (1)..(372)

<223> transl_table=11

<400> 159

```

gtg gat gtg ttt ttg aat att gcc gaa gaa aag att cga caa gca ata      48
Met Asp Val Phe Leu Asn Ile Ala Glu Glu Lys Ile Arg Gln Ala Ile
1      5      10      15
cgg aat gga gac ctt gat cat att ccg gga aaa gga aaa cca cta caa      96
Arg Asn Gly Asp Leu Asp His Ile Pro Gly Lys Gly Lys Pro Leu Gln
      20      25      30
tta gaa gac ctt tca atg gta cct cca gaa ctt aga atg agt tat aaa      144
Leu Glu Asp Leu Ser Met Val Pro Pro Glu Leu Arg Met Ser Tyr Lys
      35      40      45
att tta aaa aac gcg ggc atg att cca cca gaa atg gaa cta caa aaa      192
Ile Leu Lys Asn Ala Gly Met Ile Pro Pro Glu Met Glu Leu Gln Lys
      50      55      60
gat ata tta aaa ata gaa gac tta att gcg tgc tgt tat gat gaa gta      240
Asp Ile Leu Lys Ile Glu Asp Leu Ile Ala Cys Cys Tyr Asp Glu Val
65      70      75      80
gag aga ata aag tta caa gaa gag tta aca gca aaa acg ctt cgt ttt      288
Glu Arg Ile Lys Leu Gln Glu Glu Leu Thr Ala Lys Thr Leu Arg Phe
      85      90      95
cag cag gta atg gaa aag aga aag att aaa gat agt tca gct ttt cgt      336
Gln Gln Val Met Glu Lys Arg Lys Ile Lys Asp Ser Ser Ala Phe Arg
      100      105      110
atg tat caa gat aaa gta ttt cgt aaa tta cgc taa      372
Met Tyr Gln Asp Lys Val Phe Arg Lys Leu Arg
      115      120

```

<210> 160

<211> 123

<212> PRT

<213> Bacillus cereus ATCC 10987

<400> 160

```

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

```

PhoenixTemp24825.tmp.txt

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

<210> 161

<211> 381

<212> DNA

<213> Desulfovibrio vulgaris subsp. vulgaris str. Hildenborough

<220>

<221> CDS

<222> (1)..(381)

<223> transl_table=11

<400> 161

atg gac gcc atc acg ctc att gcg gaa aag cgc ata acc gaa gcg caa	48
Met Asp Ala Ile Thr Leu Ile Ala Glu Lys Arg Ile Thr Glu Ala Gln	
1 5 10 15	
gaa gag ggt gcc ttc gag aat ctg ccc ggc acg gga aaa ccg ctc tca	96
Glu Glu Gly Ala Phe Glu Asn Leu Pro Gly Thr Gly Lys Pro Leu Ser	
20 25 30	
atc gaa gat gat tcg ctc atc cct gaa gac ttg cgc atg gca tac aag	144
Ile Glu Asp Asp Ser Leu Ile Pro Glu Asp Leu Arg Met Ala Tyr Lys	
35 40 45	
att ctg cga aac gca ggc tat ctg ccc tcc gag atc cag gac agg aaa	192
Ile Leu Arg Asn Ala Gly Tyr Leu Pro Ser Glu Ile Gln Asp Arg Lys	
50 55 60	
gaa gtg cag acc atg ctt gaa tta ctg gag aat tgc gca gat gaa cgg	240
Glu Val Gln Thr Met Leu Glu Leu Leu Glu Asn Cys Ala Asp Glu Arg	
65 70 75 80	
gac aag gta cgg cag atg cgc aaa ctc gag gtc atc ctg cgc cgg ata	288
Asp Lys Val Arg Gln Met Arg Lys Leu Glu Val Ile Leu Arg Arg Ile	
85 90 95	
ctc gac aga cgc ggg aag ccg gtg ccc cta tcc gat gat gat gcc tat	336
Leu Asp Arg Arg Gly Lys Pro Val Pro Leu Ser Asp Asp Ala Tyr	
100 105 110	
tat gcg agc atc ctt gag cga atc aca ctc cag cca aag cct tga	381
Tyr Ala Ser Ile Leu Glu Arg Ile Thr Leu Gln Pro Lys Pro	
115 120 125	

<210> 162

<211> 126

<212> PRT

<213> Desulfovibrio vulgaris subsp. vulgaris str. Hildenborough

<400> 162

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

PhoenixTemp24825.tmp.txt

```

65          70          75          80
Asp Lys Val Arg Gln Met Arg Lys Leu Glu Val Ile Leu Arg Arg Ile
      85          90          95
Leu Asp Arg Arg Gly Lys Pro Val Pro Leu Ser Asp Asp Ala Tyr
      100         105         110
Tyr Ala Ser Ile Leu Glu Arg Ile Thr Leu Gln Pro Lys Pro
      115         120         125

```

<210> 163

<211> 372

<212> DNA

<213> Bacillus thuringiensis serovar konkukian str. 97-27

<220>

<221> CDS

<222> (1)..(372)

<223> transl_table=11

<400> 163

```

gtg gat gtg ttt ttg aat att gct gaa gaa aaa att cga caa gca ata      48
Met Asp Val Phe Leu Asn Ile Ala Glu Glu Lys Ile Arg Gln Ala Ile
  1          5          10         15
cgg aat ggt gat ctc gat aat att ccg gga aaa gga aaa cca cta caa      96
Arg Asn Gly Asp Leu Asp Asn Ile Pro Gly Lys Gly Lys Pro Leu Gln
      20         25         30
tta gaa gat ctt tca atg gta cct cca gaa ctt aga atg agt tat aaa      144
Leu Glu Asp Leu Ser Met Val Pro Pro Glu Leu Arg Met Ser Tyr Lys
      35         40         45
att tta aaa aat gcg gga atg att ccc cca gaa atg gaa cta caa aaa      192
Ile Leu Lys Asn Ala Gly Met Ile Pro Pro Glu Met Glu Leu Gln Lys
      50         55         60
gat ata tta aaa ata gag gat tta att gct tgc tgt tat gat gaa gaa      240
Asp Ile Leu Lys Ile Glu Asp Leu Ile Ala Cys Cys Tyr Asp Glu Glu
      65         70         75         80
gag cga aaa aaa tta caa gaa gag tta acg gca aaa aca cta cgt ttt      288
Glu Arg Lys Lys Leu Gln Glu Glu Leu Thr Ala Lys Thr Leu Arg Phe
      85         90         95
cag caa gta atg gaa aaa aga aag att aaa gat agt tca gca ttt cgt      336
Gln Gln Val Met Glu Lys Arg Lys Ile Lys Asp Ser Ser Ala Phe Arg
      100        105        110
atg tat caa gat aaa gta ttt cat aaa cta cgt taa      372
Met Tyr Gln Asp Lys Val Phe His Lys Leu Arg
      115        120

```

<210> 164

<211> 123

<212> PRT

<213> Bacillus thuringiensis serovar konkukian str. 97-27

<400> 164

```

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

```

Met Tyr Gln Asp Lys Val Phe His Lys Leu Arg
115 120

<210> 165

<211> 372

<212> DNA

<213> Bacillus cereus E33L

<220>

<221> CDS

<222> (1)..(372)

<223> transl_table=11

<400> 165

gtg gat gtg ttt ttg aat att gct gaa gaa aaa att cga caa gca ata	48
Met Asp Val Phe Leu Asn Ile Ala Glu Glu Lys Ile Arg Gln Ala Ile	
1 5 10 15	
cgg aat ggt gat ctc gat aat att ccg gga aaa gga aaa cca cta caa	96
Arg Asn Gly Asp Leu Asp Asn Ile Pro Gly Lys Gly Lys Pro Leu Gln	
20 25 30	
tta gaa gat ctt tca atg gta cct cca gaa ctt aga atg agt tat aaa	144
Leu Glu Asp Leu Ser Met Val Pro Pro Glu Leu Arg Met Ser Tyr Lys	
35 40 45	
att tta aaa aat gcg gga atg att ccc cca gaa atg gaa cta caa aaa	192
Ile Leu Lys Asn Ala Gly Met Ile Pro Pro Glu Met Glu Leu Gln Lys	
50 55 60	
gat ata tta aaa ata gag gat tta att gct tgc tgt tat gat gaa gaa	240
Asp Ile Leu Lys Ile Glu Asp Leu Ile Ala Cys Cys Tyr Asp Glu Glu	
65 70 75 80	
gag aga aaa aaa tta caa caa gag tta acg gca aaa aca cta cgt ttt	288
Glu Arg Lys Lys Leu Gln Gln Glu Leu Thr Ala Lys Thr Leu Arg Phe	
85 90 95	
cag caa gta atg gaa aaa aga aag att aaa gat agt tca gca ttt cgt	336
Gln Gln Val Met Glu Lys Arg Lys Ile Lys Asp Ser Ser Ala Phe Arg	
100 105 110	
atg tat caa gat aaa gta ttt cat aaa cta cgt taa	372
Met Tyr Gln Asp Lys Val Phe His Lys Leu Arg	
115 120	

<210> 166

<211> 123

<212> PRT

<213> Bacillus cereus E33L

<400> 166

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

<210> 167

<211> 402

<212> DNA

<213> Burkholderia pseudomallei K96243

<220>

<221> CDS

<222> (1)..(402)

<223> transl_table=11

<400> 167

```

atg aaa ctg ctt gac gct cta gtc gaa caa cgt atc gcc gcc gcc gcc      48
Met Lys Leu Leu Asp Ala Leu Val Glu Gln Arg Ile Ala Ala Ala Ala
 1          5          10          15
gcg cgg ggg gcg ttc gac gat ttg ccg ggc gcc ggc gcg ccg atg gag      96
Ala Arg Gly Ala Phe Asp Asp Leu Pro Gly Ala Gly Ala Pro Met Glu
          20          25          30
ctg gac gac gat ctg ctc gtc ccg gaa gag gtg cgc gtc gcg aat cgg      144
Leu Asp Asp Asp Leu Leu Val Pro Glu Glu Val Arg Val Ala Asn Arg
          35          40          45
atc ctg aag aac gcg ggc ttc gtg ccg cct gcg gtc gag cag ttg cgg      192
Ile Leu Lys Asn Ala Gly Phe Val Pro Pro Ala Val Glu Gln Leu Arg
          50          55          60
gcg ctg cgc aat ctg cag gac gag ctg cgc gcg gtc agc gat cgc gcg      240
Ala Leu Arg Asn Leu Gln Asp Glu Leu Arg Ala Val Ser Asp Arg Ala
          65          70          75          80
acc cgt tgc cgt ctg cag gcg aag atg ctc gcg ctc gat atg gca ctg      288
Thr Arg Cys Arg Leu Gln Ala Lys Met Leu Ala Leu Asp Met Ala Leu
          85          90          95
gaa tcg ttg cgc ggc ggc ccg atg gtc gtg ccg cgc gaa tac tgc cgt      336
Glu Ser Leu Arg Gly Gly Pro Met Val Val Pro Arg Glu Tyr Cys Arg
          100          105          110
cgc atc gcc gag cgg ctg tcc gag cgt gtg ctc ggc gac gcg cag ggc      384
Arg Ile Ala Glu Arg Leu Ser Glu Arg Val Leu Gly Asp Ala Gln Gly
          115          120          125
gaa gcg ggg gcg atg tga      402
Glu Ala Gly Ala Met
          130

```

<210> 168

<211> 133

<212> PRT

<213> Burkholderia pseudomallei K96243

<400> 168

```

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

```

<210> 169

<211> 372

<212> DNA

<213> Carboxydotherrmus hydrogenoformans Z-2901

<220>

<221> CDS

<222> (1)..(372)

<223> transl_table=11

<400> 169

```

atg gat atc ttg atg cat ctt gcg gag gaa aga att cgg gaa gct atg      48
Met Asp Ile Leu Met His Leu Ala Glu Glu Arg Ile Arg Glu Ala Met
 1          5          10          15
gaa aat ggg gtt ttt gat aat ctt ccg gga aag ggg caa aaa att att      96
Glu Asn Gly Val Phe Asp Asn Leu Pro Gly Lys Gly Gln Lys Ile Ile
          20          25          30
ccc gag gat ttg tcc atg atc ccg gaa gat tta cgc gca gga tat atc      144
Pro Glu Asp Leu Ser Met Ile Pro Glu Asp Leu Arg Ala Gly Tyr Ile
          35          40          45
att tta aaa aat gcc ggc gtg ctg ccc gaa gaa atg cag ctc aaa aaa      192
Ile Leu Lys Asn Ala Gly Val Leu Pro Glu Glu Met Gln Leu Lys Lys
          50          55          60
gaa ttg gtg act tta caa aat ctt atc gat tgc tgc tac gat gaa gaa      240
Glu Leu Val Thr Leu Gln Asn Leu Ile Asp Cys Cys Tyr Asp Glu Glu
          65          70          75          80
gaa aag aag gaa ata aag aaa aaa att aac gaa aaa atc ctg cgc ttt      288
Glu Lys Lys Glu Ile Lys Lys Lys Ile Asn Glu Lys Ile Leu Arg Phe
          85          90          95
aat ctt tta atg gaa aaa cgg aaa aag caa aat tca ccg gct tta aaa      336
Asn Leu Leu Met Glu Lys Arg Lys Lys Gln Asn Ser Pro Ala Leu Lys
          100          105          110
gct tat ctt gga aaa att tat gga cgt ttt aga taa      372
Ala Tyr Leu Gly Lys Ile Tyr Gly Arg Phe Arg
          115          120

```

<210> 170

<211> 123

<212> PRT

<213> Carboxydotherrmus hydrogenoformans Z-2901

<400> 170

```

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

```

<210> 171

<211> 402

<212> DNA

<213> Burkholderia sp. 383

<220>

<221> CDS

<222> (1)..(402)

<223> transl_table=11

<400> 171

atg	aga	ttg	ctt	gac	gcc	ctg	gtc	gaa	caa	cgt	att	gcc	gcc	gcc	gcc	48
Met	Arg	Leu	Leu	Asp	Ala	Leu	Val	Glu	Gln	Arg	Ile	Ala	Ala	Ala	Ala	
1				5				10						15		
gcg	cgg	ggc	gag	ttc	gac	gat	ttg	ccg	ggg	acc	ggc	gcg	ccg	cag	gcg	96
Ala	Arg	Gly	Glu	Phe	Asp	Asp	Leu	Pro	Gly	Thr	Gly	Ala	Pro	Gln	Ala	
		20						25					30			
ctg	gat	gac	gac	ctg	ctc	gtg	ccc	gag	gag	gtg	cgg	gtg	gcc	aac	cgt	144
Leu	Asp	Asp	Asp	Leu	Leu	Val	Pro	Glu	Glu	Val	Arg	Val	Ala	Asn	Arg	
		35					40					45				
atc	ctg	aag	aat	gcg	ggc	ttc	gtg	ccg	ccg	gcc	gtc	gag	caa	ttg	cgc	192
Ile	Leu	Lys	Asn	Ala	Gly	Phe	Val	Pro	Pro	Ala	Val	Glu	Gln	Leu	Arg	
	50					55				60						
gcg	ctg	cgc	aac	ttg	cat	gac	gaa	gtg	cag	gcg	gtc	agc	gac	cgt	gcc	240
Ala	Leu	Arg	Asn	Leu	His	Asp	Glu	Val	Gln	Ala	Val	Ser	Asp	Arg	Ala	
	65				70				75					80		
gcg	cgg	tgc	cgg	ctg	cag	gca	aag	atc	ctc	gca	ctc	gac	atg	gcg	ctc	288
Ala	Arg	Cys	Arg	Leu	Gln	Ala	Lys	Ile	Leu	Ala	Leu	Asp	Met	Ala	Leu	
				85				90					95			
gaa	tcg	ctg	cgc	ggc	ggc	ccg	atg	gtg	atg	ccg	cgc	gac	tac	tgc	cgg	336
Glu	Ser	Leu	Arg	Gly	Gly	Pro	Met	Val	Met	Pro	Arg	Asp	Tyr	Cys	Arg	
		100						105				110				
cgc	atc	gcg	gag	cgg	ctg	tgc	gag	cgc	ggg	ctc	gac	gaa	gcg	tcc	gcc	384
Arg	Ile	Ala	Glu	Arg	Leu	Cys	Glu	Arg	Gly	Leu	Asp	Glu	Ala	Ser	Ala	
		115					120					125				
gaa	gcg	ggg	ccg	atg	tga											402
Glu	Ala	Gly	Pro	Met												
		130														

<210> 172

<211> 133

<212> PRT

<213> Burkholderia sp. 383

<400> 172

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

<210> 173

<211> 381

<212> DNA

<213> Desulfovibrio desulfuricans G20

<220>

<221> CDS

<222> (1)..(381)

<223> transl_table=11

<400> 173

atg	gac	tgc	atg	caa	tat	ata	gcc	gag	caa	cgc	att	aaa	gaa	gcg	gcg	48
Met	Asp	Cys	Met	Gln	Tyr	Ile	Ala	Glu	Gln	Arg	Ile	Lys	Glu	Ala	Ala	
1				5					10					15		
gaa	aat	ggt	gag	ctg	gac	gac	tat	gaa	ggc	aaa	ggc	aag	cca	ctg	gtg	96
Glu	Asn	Gly	Glu	Leu	Asp	Asp	Tyr	Glu	Gly	Lys	Gly	Lys	Pro	Leu	Val	
			20					25					30			
cac	aat	gat	gac	ccg	ctg	atg	cct	ccg	gaa	ttg	cgc	atg	gca	tac	aag	144
His	Asn	Asp	Asp	Pro	Leu	Met	Pro	Pro	Glu	Leu	Arg	Met	Ala	Tyr	Lys	
			35				40					45				
ata	ttg	aaa	aac	agc	gga	ttt	atg	ccg	ccg	gaa	gcg	cag	gat	ttg	aaa	192
Ile	Leu	Lys	Asn	Ser	Gly	Phe	Met	Pro	Pro	Glu	Ala	Gln	Asp	Leu	Lys	
			50			55					60					
gaa	gtc	cat	tcc	ata	atg	gag	ctg	ctg	gac	aca	tgc	agc	gac	gag	cag	240
Glu	Val	His	Ser	Ile	Met	Glu	Leu	Leu	Asp	Thr	Cys	Ser	Asp	Glu	Gln	
	65				70				75				80			
gtg	cgc	tac	cgg	cag	atg	aat	aag	gta	cag	gtg	ctt	ctt	gcc	cgt	ata	288
Val	Arg	Tyr	Arg	Gln	Met	Asn	Lys	Val	Gln	Val	Leu	Leu	Ala	Arg	Ile	
				85					90					95		
aac	cgc	ggc	cgc	cgc	tat	ccg	gtg	cgg	ctg	gaa	gaa	ttg	cag	gaa	tac	336
Asn	Arg	Gly	Arg	Arg	Tyr	Pro	Val	Arg	Leu	Glu	Glu	Leu	Gln	Glu	Tyr	
			100					105					110			
tac	cgc	aaa	acc	gtg	gaa	aga	gtg	acg	gtg	aac	ggc	ggc	agc	tga		381
Tyr	Arg	Lys	Thr	Val	Glu	Arg	Val	Thr	Val	Asn	Gly	Gly	Ser			
		115					120					125				

<210> 174

<211> 126

<212> PRT

<213> Desulfovibrio desulfuricans G20

<400> 174

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

<210> 175

<211> 426

<212> DNA

<213> Burkholderia thailandensis E264

<220>

<221> CDS

<222> (1)..(426)

<223> transl_table=11

<400> 175

atg	ccg	cat	tgt	tat	gaa	acc	ccg	atg	aaa	ctg	ctt	gac	gct	cta	gtc	48
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	----

PhoenixTemp24825.tmp.txt

```

Met Pro His Cys Tyr Glu Thr Pro Met Lys Leu Leu Asp Ala Leu Val
1      5      10      15
gaa caa cgt atc gcc gcc gcc gcc aag cgg ggt gcg ttc gac gat ttg      96
Glu Gln Arg Ile Ala Ala Ala Ala Lys Arg Gly Ala Phe Asp Asp Leu
20      25      30
ccg ggc gcc ggc gcg ccg atg gag ctg gac gac gat ctg ctc gtc ccc      144
Pro Gly Ala Gly Ala Pro Met Glu Leu Asp Asp Asp Leu Leu Val Pro
35      40      45
gaa gaa gtg cgc gtc gcg aat cgg atc ctg aag aac gcg ggc ttc gtg      192
Glu Glu Val Arg Val Ala Asn Arg Ile Leu Lys Asn Ala Gly Phe Val
50      55      60
ccg ccc gcg gtc gag caa ctg ccg gcg ctg cgc aat ctg cag gac gag      240
Pro Pro Ala Val Glu Gln Leu Arg Ala Leu Arg Asn Leu Gln Asp Glu
65      70      75      80
ctg cgc gcg gtc ggc gac cgc gcg acc cgc tgc cgc ctg cag gcg aag      288
Leu Arg Ala Val Gly Asp Arg Ala Thr Arg Cys Arg Leu Gln Ala Lys
85      90      95
atg ctc gcg ctc gat atg gca ctg gaa tcg ctg cgc ggc ggc ccg atg      336
Met Leu Ala Leu Asp Met Ala Leu Glu Ser Leu Arg Gly Gly Pro Met
100      105      110
gtc gtg ccg ccg gaa tac tgc cgt cgc atc gct gag cgt ctt tcc gag      384
Val Val Pro Arg Glu Tyr Cys Arg Arg Ile Ala Glu Arg Leu Ser Glu
115      120      125
cgc gtg ctc ggc gac gcg cag ggc gaa gcg ggg gcg atg tga      426
Arg Val Leu Gly Asp Ala Gln Gly Glu Ala Gly Ala Met
130      135      140

```

<210> 176

<211> 141

<212> PRT

<213> Burkholderia thailandensis E264

<400> 176

```

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

```

<210> 177

<211> 402

<212> DNA

<213> Burkholderia xenovorans LB400

<220>

<221> CDS

<222> (1)..(402)

<223> transl_table=11

<400> 177

```

atg aaa ttg ctt gat gcg tta gtc gaa cag cgt att gcc gcc gca gcc      48

```

PhoenixTemp24825.tmp.txt

```

Met Lys Leu Leu Asp Ala Leu Val Glu Gln Arg Ile Ala Ala Ala Ala
1      5      10      15
gca cgc ggc gag ttc gac cag tta ccg ggc gcg ggc gcg ccg cta tcc      96
Ala Arg Gly Glu Phe Asp Gln Leu Pro Gly Ala Gly Ala Pro Leu Ser
      20      25      30
ctg ggc gac gat gcg ctg gtc ccc gaa gaa gtg cgc gtc gcc aac cgg      144
Leu Gly Asp Asp Ala Leu Val Pro Glu Glu Val Arg Val Ala Asn Arg
      35      40      45
att ttg aag aac gcg ggt ttc gtg ccg ccc gct gtc gag cag ttg cgc      192
Ile Leu Lys Asn Ala Gly Phe Val Pro Pro Ala Val Glu Gln Leu Arg
      50      55      60
gcg ttg cgc gac ctg cga gcg gag ttg aat gcc gtg agc gac cgg gct      240
Ala Leu Arg Asp Leu Arg Ala Glu Leu Asn Ala Val Ser Asp Arg Ala
      65      70      75      80
gcc cgc tgc cgg ctt cag gcg cgc atg ctg gcg ctc gat atg gcg ctt      288
Ala Arg Cys Arg Leu Gln Ala Arg Met Leu Ala Leu Asp Met Ala Leu
      85      90      95
gaa tca ctg cgc ggc ggc ccg ctg gtt ctg cca cgc gaa tac tgt cgg      336
Glu Ser Leu Arg Gly Gly Pro Leu Val Leu Pro Arg Glu Tyr Cys Arg
      100      105      110
cgg atc gcc gag cgg ttg tcg gag cgc gcc ggc agt ccc gat acg gca      384
Arg Ile Ala Glu Arg Leu Ser Glu Arg Ala Gly Ser Pro Asp Thr Ala
      115      120      125
gag gcg ggt tcg ccg tga      402
Glu Ala Gly Ser Pro
      130

```

<210> 178

<211> 133

<212> PRT

<213> Burkholderia xenovorans LB400

<400> 178

```

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

```

<210> 179

<211> 399

<212> DNA

<213> Alkalilimnicola ehrlichei MLHE-1

<220>

<221> CDS

<222> (1)..(399)

<223> transl_table=11

<400> 179

```

atg aag ttt ctg gat gag ttg gcc gat gcc cgg atc agg gag gcc ctg      48

```

PhoenixTemp24825.tmp.txt

```

Met Lys Phe Leu Asp Glu Leu Ala Asp Ala Arg Ile Arg Glu Ala Leu
 1      5      10      15
gaa cag ggc gag ctg gac gat ctg ccc gga gcc ggc aag ccg ctg gca      96
Glu Gln Gly Glu Leu Asp Asp Leu Pro Gly Ala Gly Lys Pro Leu Ala
      20      25      30
ctc gat gac gac agt atg gtg ccg gag gag ttg cgg acg gcg tac cga      144
Leu Asp Asp Asp Ser Met Val Pro Glu Glu Leu Arg Thr Ala Tyr Arg
      35      40      45
atc ctc aag aat gcc aac tgc ctg ccg ccg gaa ctg cag gat cag cgc      192
Ile Leu Lys Asn Ala Asn Cys Leu Pro Pro Glu Leu Gln Asp Gln Arg
      50      55      60
gag gtg gag tcc ctt gag gcg ctg ctg gcc ggg ctc gac gac gac acc      240
Glu Val Glu Ser Leu Glu Ala Leu Leu Ala Gly Leu Asp Asp Asp Thr
      65      70      75      80
gcc atc cag cgc cgc cag cgc act gag gcg gag aag cgc ctg gcg ctg      288
Ala Ile Gln Arg Arg Gln Arg Thr Glu Ala Glu Lys Arg Leu Ala Leu
      85      90      95
ctt cgg gcc cgg ctg gag cag cgc cgg ggc cgc ggg cgg ggc ggc ggc      336
Leu Arg Ala Arg Leu Glu Gln Arg Arg Gly Arg Gly Arg Gly Gly Gly
      100      105      110
ctg gtc gcg gtg gag cgt gct tac cag gag cgg ctg cta cgc cgg ctg      384
Leu Val Ala Val Glu Arg Ala Tyr Gln Glu Arg Leu Leu Arg Arg Leu
      115      120      125
ggt ggc gag gag tag      399
Gly Gly Glu Glu
      130

```

<210> 180

<211> 132

<212> PRT

<213> Alkalilimnicola ehrlichei MLHE-1

<400> 180

```

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

```

<210> 181

<211> 366

<212> DNA

<213> Solibacter usitatus Ellin6076

<220>

<221> CDS

<222> (1)..(366)

<223> transl_table=11

<400> 181

```

atg gac gtc tgg aat ctg atc gcg gag cgc aag atc cag gaa gcg atg      48

```

PhoenixTemp24825.tmp.txt

```

Met Asp Val Trp Asn Leu Ile Ala Glu Arg Lys Ile Gln Glu Ala Met
1      5      10      15
gaa gag ggc gag ttc gac cgg ctc gaa gga acc ggc cgg ccg att tcg      96
Glu Glu Gly Glu Phe Asp Arg Leu Glu Gly Thr Gly Arg Pro Ile Ser
      20      25      30
ctg gac gag aat ccc tac gag gat ccc gcc cag agg atg gcg cac cgc      144
Leu Asp Glu Asn Pro Tyr Glu Asp Pro Ala Gln Arg Met Ala His Arg
      35      40      45
ctg ctc cgt aac aat ggc ttc gct ccg gcc tgg atc ctg gag agc aag      192
Leu Leu Arg Asn Asn Gly Phe Ala Pro Ala Trp Ile Leu Glu Ser Lys
      50      55      60
gat ctg gac tcc gac atc gac cgc ctg cgc tcc gcc cgc cgc ctc      240
Asp Leu Asp Ser Asp Ile Asp Arg Leu Arg Ser Ser Ala Arg Arg Leu
      65      70      75      80
gat tcc gac gaa ctg gcg cgc cgc gtc gcc gcc ctc aat cgc cgc atc      288
Asp Ser Asp Glu Leu Ala Arg Arg Val Ala Gly Leu Asn Arg Arg Ile
      85      90      95
gag gcc tat aat ctg aag gcg ccc ttc gcc gcc gca cag aaa gta ccc      336
Glu Ala Tyr Asn Leu Lys Ala Pro Phe Ala Gly Ala Gln Lys Val Pro
      100      105      110
att tcc atc cag agc ctg atg aat gcc tga      366
Ile Ser Ile Gln Ser Leu Met Asn Ala
      115      120

```

<210> 182

<211> 121

<212> PRT

<213> Solibacter usitatus Ellin6076

<400> 182

```

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

```

<210> 183

<211> 372

<212> DNA

<213> Bacillus cereus G9241

<220>

<221> CDS

<222> (1)..(372)

<223> transl_table=11

<400> 183

```

gtg gat gtg ttt ttg aat att gct gaa gaa aaa att cgg caa gca ata      48
Met Asp Val Phe Leu Asn Ile Ala Glu Glu Lys Ile Arg Gln Ala Ile
1      5      10      15
cgg aat gga gat ctt gat cat att ccg gga aaa gga aaa cca cta caa      96
Arg Asn Gly Asp Leu Asp His Ile Pro Gly Lys Gly Lys Pro Leu Gln
      20      25      30

```

PhoenixTemp24825.tmp.txt

tta gaa gac ctt tca atg gta cct cca gaa ctt aga atg agt tat aaa	144
Leu Glu Asp Leu Ser Met Val Pro Pro Glu Leu Arg Met Ser Tyr Lys	
35 40 45	
att tta aaa aat gcg gga atg att cca cca gaa atg gaa cta caa aaa	192
Ile Leu Lys Asn Ala Gly Met Ile Pro Pro Glu Met Glu Leu Gln Lys	
50 55 60	
gat ata tta aaa ata gaa gac tta att gct tgc tgt tat gat gaa gaa	240
Asp Ile Leu Lys Ile Glu Asp Leu Ile Ala Cys Cys Tyr Asp Glu Glu	
65 70 75 80	
gag aga aaa aaa tta caa gaa gag tta aca gca aaa acg ctt cgt ttt	288
Glu Arg Lys Lys Leu Gln Glu Glu Leu Thr Ala Lys Thr Leu Arg Phe	
85 90 95	
cag cag gta atg gaa aag aga aag att aaa gat agt tca gct ttt cgt	336
Gln Gln Val Met Glu Lys Arg Lys Ile Lys Asp Ser Ser Ala Phe Arg	
100 105 110	
atg tat caa gat aaa gta ttt cgt aaa tta cgc taa	372
Met Tyr Gln Asp Lys Val Phe Arg Lys Leu Arg	
115 120	

<210> 184

<211> 123

<212> PRT

<213> Bacillus cereus G9241

<400> 184

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

<210> 185

<211> 402

<212> DNA

<213> Burkholderia vietnamiensis G4

<220>

<221> CDS

<222> (1)..(402)

<223> transl_table=11

<400> 185

atg aga ttg ctt gac gca ctg gtc gaa caa cgc atc gcc gcc gcc gcc	48
Met Arg Leu Leu Asp Ala Leu Val Glu Gln Arg Ile Ala Ala Ala Ala	
1 5 10 15	
gcg cgg ggc gag ttt gac gat ttg ccc ggt acc ggc gcg ccg cag gcg	96
Ala Arg Gly Glu Phe Asp Asp Leu Pro Gly Thr Gly Ala Pro Gln Ala	
20 25 30	
ctg gat gac gac ctc ctc gtc ccc gag gag gtc cgg gtg gcc aac cgt	144
Leu Asp Asp Asp Leu Leu Val Pro Glu Glu Val Arg Val Ala Asn Arg	
35 40 45	
atc ctg aag aac gcc ggc ttc gtg ccg ccg gcc gtc gag caa ttg cgc	192
Ile Leu Lys Asn Ala Gly Phe Val Pro Pro Ala Val Glu Gln Leu Arg	

PhoenixTemp24825.tmp.txt

```

      50                      55                      60
gcg ctg cgc aac ctg cag gac gaa ctg cag gcg gtc ggc gat cgt gcc      240
Ala Leu Arg Asn Leu Gln Asp Glu Leu Gln Ala Val Gly Asp Arg Ala
  65                      70                      75                      80
gca cgt tgc cgg ctt cag gcg aag atc ctc gcg ctc gac atg gcg ctg      288
Ala Arg Cys Arg Leu Gln Ala Lys Ile Leu Ala Leu Asp Met Ala Leu
                      85                      90                      95
gaa tcg ctg cgc ggc ggt ccg atg gtg atg ccg cgc gac tat tgc cgc      336
Glu Ser Leu Arg Gly Gly Pro Met Val Met Pro Arg Asp Tyr Cys Arg
                      100                      105                      110
cgc atc gcc gag cgt ctg tgc gaa cgc ggg ctc gac gaa gcg ccc gcc      384
Arg Ile Ala Glu Arg Leu Cys Glu Arg Gly Leu Asp Glu Ala Pro Ala
                      115                      120                      125
gaa gcg ggg ccg atg tga      402
Glu Ala Gly Pro Met
  130

```

<210> 186

<211> 133

<212> PRT

<213> Burkholderia vietnamiensis G4

<400> 186

```

Met Arg Leu Leu Asp Ala Leu Val Glu Gln Arg Ile Ala Ala Ala Ala
  1                      5                      10                      15
Ala Arg Gly Glu Phe Asp Asp Leu Pro Gly Thr Gly Ala Pro Gln Ala
                      20                      25                      30
Leu Asp Asp Asp Leu Leu Val Pro Glu Glu Val Arg Val Ala Asn Arg
                      35                      40                      45
Ile Leu Lys Asn Ala Gly Phe Val Pro Pro Ala Val Glu Gln Leu Arg
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Ala Leu Arg Asn Leu Gln Asp Glu Leu Gln Ala Val Gly Asp Arg Ala
  65                      70                      75                      80
Ala Arg Cys Arg Leu Gln Ala Lys Ile Leu Ala Leu Asp Met Ala Leu
                      85                      90                      95
Glu Ser Leu Arg Gly Gly Pro Met Val Met Pro Arg Asp Tyr Cys Arg
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<223> primer

<400> 187

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27

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Xaa Xaa Gly Xaa Xaa Asp Xaa Xaa Xaa Gly Xaa Gly Xaa Pro Xaa Xaa
          20          25          30
Xaa Xaa Xaa Asp Xaa Xaa Xaa Xaa Pro Xaa Glu Xaa Arg Xaa Xaa Xaa
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Xaa Ile Leu Lys Asn Ala Gly Xaa Xaa Pro
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<223> Xaa in position 3 is Asp or Glu

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<223> Xaa in position 4 is Leu or Val

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<222> (6)..(6)
<223> Xaa in position 6 is any amino acid

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<222> (7)..(7)
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1          5          10          15
Xaa Pro Xaa Xaa Xaa Glu
          20

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<223> Xaa in position 5 to 7 is any amino acid

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