

PhoenixTemp18436.tmp.txt
SEQUENCE LISTING

<110> BASF Plant Science GmbH

<120> TRANSGENIC PLANTS WITH INCREASED STRESS TOLERANCE AND YIELD

<130> PF 58991

<150> US 60/896505

<141> 2007-03-23

<160> 58

<170> PatentIn version 3.3

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<211> 1350

<212> DNA

<213> Physcomitrella patens

<220>

<221> CDS

<222> (133)..(1101)

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Met Gly Ser Ala Ala Ala Phe Gly Gly Gly Glu Gly Ser Arg Val Val	
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gga gat ggt tct act gct cca gag tca tcg tcc aga cag cat gaa tac	267
Gly Asp Gly Ser Thr Ala Pro Glu Ser Ser Ser Arg Gln His Glu Tyr	
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cga caa cca gcg gct act aga gag cgt ttt ggg gag gta gaa cac gaa	315
Arg Gln Pro Ala Ala Thr Arg Glu Arg Phe Gly Glu Val Glu His Glu	
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gat gaa gat gta tca ggt tca ggt gct ggt ggt agt caa gtg agg cca	363
Asp Glu Asp Val Ser Gly Ser Gly Ala Gly Gly Ser Gln Val Arg Pro	
65 70 75	
tca ggg ggt gga ggt cga ggt cga ggc cga ggc cga ggt cga ggg aga	411
Ser Gly Gly Gly Gly Arg Gly Arg Gly Arg Gly Arg Gly Arg Gly Arg	
80 85 90	
agg gat gct atg gat tca acg gaa gct ctg ggg aga tgc atg act gcg	459
Arg Asp Ala Met Asp Ser Thr Glu Ala Leu Gly Arg Cys Met Thr Ala	
95 100 105	
att cta gga cat cga gcc tcg gac tat gga cta gaa atg cag aac gat	507
Ile Leu Gly His Arg Ala Ser Asp Tyr Gly Leu Glu Met Gln Asn Asp	
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Gly Phe Val Leu Val Ala Asp Leu Leu Lys Leu Ser Lys Asn Thr Ala	
130 135 140	
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Ala Gly Ile Pro Leu Ser Ser His Ser Val Glu Asp Val Arg Lys Ala	
145 150 155	
gtt gca agg gat ggg aaa cga cgt ttt gga cta aaa gaa gag gat ggg	651
Val Ala Arg Asp Gly Lys Arg Arg Phe Gly Leu Lys Glu Glu Asp Gly	
160 165 170	
cat ctt tac atc agg gca aat caa ggt cat agt atc agg acc gtg gaa	699
His Leu Tyr Ile Arg Ala Asn Gln Gly His Ser Ile Arg Thr Val Glu	
175 180 185	
tct gga caa ctt ttg tcg ttg gtt aca tct cct tca caa att cca gtc	747
Ser Gly Gln Leu Leu Ser Ser Leu Val Thr Ser Pro Ser Gln Ile Pro Val	
190 195 200 205	
tgt gtt cat ggc acg tac gag aga ttt atg gac agt atc tgg caa gaa	795
Cys Val His Gly Thr Tyr Glu Arg Phe Met Asp Ser Ile Trp Gln Glu	
210 215 220	

PhoenixTemp18436.tmp.txt

ggg tta aaa cgc atg aat cga aat cat gtt cat ttt gct act ggc ttg	843
Gly Leu Lys Arg Met Asn Arg Asn His Val His Phe Ala Thr Gly Leu	
225 230 235	
cct gaa cag gac ggt gtc atc agt ggg atg cgt gga tct gct cag gtt	891
Pro Glu Gln Asp Gly Val Ile Ser Gly Met Arg Gly Ser Ala Gln Val	
240 245 250	
ctc ata tac ctg gat gtg gag aag gct atg gag gat gga atg aag ctc	939
Leu Ile Tyr Leu Asp Val Glu Lys Ala Met Glu Asp Gly Met Lys Leu	
255 260 265	
tac gtt tca gat aac aaa gtc gtt ctc acc gaa ggc ttt gat ggg gtg	987
Tyr Val Ser Asp Asn Lys Val Val Leu Thr Glu Gly Phe Asp Gly Val	
270 275 280 285	
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Val Pro Thr Lys Tyr Phe Lys Asn Val Val Lys Lys Leu Pro Arg Gly	
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aga gag atg cca ctc cat cca tca agt aat cag cct aag cct cat gag	1083
Arg Glu Met Pro Leu His Pro Ser Ser Asn Gln Pro Lys Pro His Glu	
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Asn Thr Ala Ala Asp Val	
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 <213> Physcomitrella patens

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100 105 110	
His Arg Ala Ser Asp Tyr Gly Leu Glu Met Gln Asn Asp Gly Phe Val	
115 120 125	
Leu Val Ala Asp Leu Leu Lys Leu Ser Lys Asn Thr Ala Ala Gly Ile	
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Asp Gly Lys Arg Arg Phe Gly Leu Lys Glu Asp Gly His Leu Tyr	
165 170 175	
Ile Arg Ala Asn Gln Gly His Ser Ile Arg Thr Val Glu Ser Gly Gln	
180 185 190	
Leu Leu Ser Leu Val Thr Ser Pro Ser Gln Ile Pro Val Cys Val His	
195 200 205	
Gly Thr Tyr Glu Arg Phe Met Asp Ser Ile Trp Gln Gly Leu Lys	
210 215 220	
Arg Met Asn Arg Asn His Val His Phe Ala Thr Gly Leu Pro Glu Gln	
225 230 235 240	
Asp Gly Val Ile Ser Gly Met Arg Gly Ser Ala Gln Val Leu Ile Tyr	
245 250 255	
Leu Asp Val Glu Lys Ala Met Glu Asp Gly Met Lys Leu Tyr Val Ser	
260 265 270	
Asp Asn Lys Val Val Leu Thr Glu Gly Phe Asp Gly Val Val Pro Thr	

PhoenixTemp18436.tmp.txt

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<220>
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 <222> (37)..(918)

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gat cgc ctc act aat gaa act att gct ctg aaa aaa ata cgg ctg gag 150
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 25 30 35

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 Gln Glu Asp Glu Gly Val Pro Ser Thr Ala Ile Arg Glu Ile Ser Leu
 40 45 50

ctg aaa gaa atg cac cat ggc aac atc gtt cgg cta caa gat gtg gtg 246
 Leu Lys Glu Met His His Gly Asn Ile Val Arg Leu Gln Asp Val Val
 55 60 65 70

cat agt gag aaa cga ttg tac ttg gtt ttt gaa tac ctg gac ctc gac 294
 His Ser Glu Lys Arg Leu Tyr Leu Val Phe Glu Tyr Leu Asp Leu Asp
 75 80 85

cta aag aag cat atg gac acc tgc ccg gac ctt gcc aaa gac cca cgc 342
 Leu Lys Lys His Met Asp Thr Cys Pro Asp Leu Ala Lys Asp Pro Arg
 90 95 100

ttg atc aag acc ttt cta tac cag atc ttg cgg ggc att gct tat tgc 390
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 105 110 115

cat gcc cac agg gtc ctt cac aga gac ttg aaa cct cag aat ctt ttg 438
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 120 125 130

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 Ile Asp Arg Arg Thr Asn Ala Leu Lys Leu Ala Asp Phe Gly Leu Ala
 135 140 145 150

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 Arg Ala Phe Gly Ile Pro Val Arg Thr Phe Thr His Glu Val Val Thr
 155 160 165

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 Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu Gly Ser Arg His Tyr Ser
 170 175 180

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 Thr Pro Val Asp Val Trp Ser Val Gly Cys Ile Phe Ala Glu Met Val
 185 190 195

aat caa cgg ccc ttg ttt cca gga gat tct gag ata gat gag ctg ttc 678
 Asn Gln Arg Pro Leu Phe Pro Gly Asp Ser Glu Ile Asp Glu Leu Phe
 200 205 210

aaa atc ttc agg aca ctt ggc act cca aat gaa gaa gtt tgg cca ggt 726
 Lys Ile Phe Arg Thr Leu Gly Thr Pro Asn Glu Glu Val Trp Pro Gly
 215 220 225 230

gta act tca ttg cca gat ttc aag act gct ttt cca aag tgg cct ccg 774
 Val Thr Ser Leu Pro Asp Phe Lys Thr Ala Phe Pro Lys Trp Pro Pro
 235 240 245

aag cct ttg tca tca gtc gta cct agc ctt gag cca gca ggc atc gac 822
 Lys Pro Leu Ser Ser Val Val Pro Ser Leu Glu Pro Ala Gly Ile Asp
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PhoenixTemp18436.tmp.txt

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cga aat gca ttg gaa cac gag	tat ttc aag gat atc ggt ctt gta ccc	918
Arg Asn Ala Leu Glu His	Glu Tyr Phe Lys Asp Ile Gly Leu Val Pro	
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gc		980

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Ile Arg Glu Ile Ser Leu Leu Lys Glu Met His His Gly Asn Ile Val	
50 55 60	
Arg Leu Gln Asp Val Val His Ser Glu Lys Arg Leu Tyr Leu Val Phe	
65 70 75 80	
Glu Tyr Leu Asp Leu Asp Leu Lys Lys His Met Asp Thr Cys Pro Asp	
85 90 95	
Leu Ala Lys Asp Pro Arg Leu Ile Lys Thr Phe Leu Tyr Gln Ile Leu	
100 105 110	
Arg Gly Ile Ala Tyr Cys His Ala His Arg Val Leu His Arg Asp Leu	
115 120 125	
Lys Pro Gln Asn Leu Leu Ile Asp Arg Arg Thr Asn Ala Leu Lys Leu	
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Ala Asp Phe Gly Leu Ala Arg Ala Phe Gly Ile Pro Val Arg Thr Phe	
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Gly Ser Arg His Tyr Ser Thr Pro Val Asp Val Trp Ser Val Gly Cys	
180 185 190	
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195 200 205	
Glu Ile Asp Glu Leu Phe Lys Ile Phe Arg Thr Leu Gly Thr Pro Asn	
210 215 220	
Glu Glu Val Trp Pro Gly Val Thr Ser Leu Pro Asp Phe Lys Thr Ala	
225 230 235 240	
Phe Pro Lys Trp Pro Pro Lys Pro Leu Ser Ser Val Val Pro Ser Leu	
245 250 255	
Glu Pro Ala Gly Ile Asp Leu Leu Glu Lys Met Leu Thr Leu Glu Pro	
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gca Ala	tac Tyr	gag Glu	ggt Gly 30	gac Asp	gag Glu	gag Glu	gaa Glu	gag Glu 35	ttt Phe	gag Glu	aaa Lys	gac Asp	cga Arg 40	aat Asn	tct Ser	269
cgc Arg	agt Ser	atc Ile 45	cgg Arg	act Thr	ggg Gly	cgt Arg	cat His 50	tcc Ser	gag Glu	gga Gly	tca Ser	cgt Arg 55	agt Ser	ggt Gly	cag Gln	317
ctt Leu	ttt Phe 60	cca Pro	gat Asp	gaa Glu	cgg Arg	cac His 65	tca Ser	ggg Gly	tct Ser	agt Ser	gcg Ala 70	ggc Gly	gat Asp	gca Ala	tct Ser	365
gct Ala 75	aca Thr	tat Tyr	tat Tyr	gag Glu	ctc Leu 80	cac His	tcc Ser	aac Asn	atg Met	gct Ala 85	tgc Cys	aag Lys	tct Ser	ggc Gly	aca Thr 90	413
gca Ala	gca Ala	ggg Gly	cat His 95	atc Ile	ttt Phe	gat Asp	gag Glu	gaa Glu	ggt Gly 100	gtt Val	gga Gly	gat Asp	tac Tyr	gcc Ala 105	agt Ser	461
gat Asp	cca Pro	ggt Gly 110	gtt Val	tac Tyr	cat His	gat Asp	gac Asp	tcc Ser 115	tgt Cys	ctg Leu	aac Asn	cca Pro 120	ttg Leu	gaa Glu	aaa Lys	509
gac Asp	ttg Leu	gag Glu 125	gat Asp	gat Asp	caa Gln	ctc Leu	tgc His 130	cat Gly	ggt Gly	gaa Glu	gat Asp	gca Ala 135	gat Asp	cac His	ttc Phe	557
ctc Leu	aag Lys 140	aag Lys	gcc Ala	cgt Arg	agt Ser	gaa Glu 145	gga Gly	ggt Gly	ctg Leu	tac Tyr	gaa Glu 150	ctg Leu	ggg Gly	ctt Leu	ata Ile	605
tct Ser 155	cag Gln	caa Gln	ctt Leu	aca Thr	ggt Gly 160	cat Gln	tca Ser	act Thr	gaa Glu	caa Gln 165	gat Asp	ttg Leu	gca Ala	cat His	cat His 170	653
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att Ile	cac His	ttg Leu 190	cca Pro	aaa Lys	ggt Gly	cta Leu	gtt Val	gaa Glu 195	ggt Gly	ccc Pro	cac His	tca Ser 200	gaa Glu	att Ile	gat Asp	749
caa Gln	aga Arg	gat Asp 205	gcc Ala	aaa Lys	gat Asp	ctt Leu	ttc Phe 210	ttg Leu	aat Asn	gag Glu	agg Arg	tct Ser 215	tct Ser	gac Asp	aaa Lys	797
gat Asp	gtc Val 220	gat Asp	tac Tyr	tgc Cys	aat Asn	ggt Gly 225	tcc Ser	tca Ser	agg Arg	ttg Leu	gaa Glu 230	ttt Phe	gac Asp	gca Ala	tat Tyr	845
tat Tyr 235	ccc Pro	agg Arg	agt Ser	gat Asp	gtt Val 240	cat His	aac Asn	ccc Pro	gag Glu	agc Ser 245	ata Ile	cgt Arg	agt Ser	gga Gly	tct Ser 250	893
ttc Phe	tta Leu	caa Gln	aaa Lys	gat Asp 255	gac Asp	att Ile	gcg Ala	gaa Glu	ttt Phe 260	gat Asp	gct Ala	gac Asp	aat Asn	gtt Val 265	aag Lys	941
tca Ser	cat His	aat Asn 270	tcg Ser	gct Ala	gga Gly	gtt Val	gat Asp	gga Gly 275	gtc Val	cct Pro	gat Asp	ggt Gly	tgc Cys 280	ata Ile	tct Ser	989
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ttc Phe	tta Leu	gca Ala	gat Asp	gaa Glu 335	gaa Glu	gtt Val	gag Glu	ccc Pro	aca Thr 340	gct Ala	tac Tyr	tca Ser	gat Asp	aca Thr 345	gag Glu	1181
cct Pro	tca Ser	gca Ala	ccg Pro 350	gcc Ala	gct Ala	tcc Ser	ttt Phe	ttc Phe 355	cgg Arg	gct Ala	aga Arg	gct Ala	cga Arg 360	cct Pro	gat Asp	1229
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PhoenixTemp18436.tmp.txt

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Gly	Glu	Gln	Leu	Ile	Asp	Ala	Asp	Ser	Glu	Met	Ala	Ser	Phe	Ile	Ala	
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cgg	tct	gtg	aat	cca	ctt	tgt	aca	gtg	gct	cat	ttc	tcg	gga	gtg	gga	1373
Arg	Ser	Val	Asn	Pro	Leu	Cys	Thr	Val	Ala	His	Phe	Ser	Gly	Val	Gly	
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			430					435					440			
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Lys	Ser	Leu	His	Thr	Leu	Asp	Leu	Ser	Arg	Asn	Lys	Ile	Val	Val	Ile	
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Arg	Glu	Ile	Tyr	Leu	Ala	Gly	Asn	Lys	Ile	Ser	Glu	Ile	Glu	Gly	Leu	
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His	Arg	Leu	Leu	Lys	Leu	Ser	Phe	Ile	Asp	Leu	Ser	Phe	Asn	Lys	Ile	
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Glu	Pro	Leu	Arg	Lys	Leu	Ile	Val	Gly	Leu	Thr	Pro	His	Val	Val	Tyr	
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Gln	Arg	Gly	Lys	Thr	Ser	Ser	Gln	Ser	Lys	Ser	Phe	Gly	Glu	Ala	Val	
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cgc	ctg	ccc	cat	cca	ctg	ctt	cca	gcc	ccc	gtc	acc	ggg	aca	aac	gga	2045
Arg	Leu	Pro	His	Pro	Leu	Leu	Pro	Ala	Pro	Val	Thr	Gly	Thr	Asn	Gly	
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Leu	Ala	Arg	Ser	Leu	Gln	Gln	Val	Val	Pro	Met	His					
	635				640					645						
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PhoenixTemp18436.tmp.txt

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

PhoenixTemp18436.tmp.txt

Ile	Val	Gly	Leu	Thr	Pro	His	Val	Val	Tyr	Leu	Asn	Lys	Gln	Ala	Thr
				565					570					575	
Lys	Ala	Val	Ser	Ala	Arg	Asp	Ala	Ser	Val	Asp	Ser	Val	Ala	Arg	Ala
			580					585					590		
Ala	Leu	Ala	Asn	Pro	Ser	His	His	Thr	His	Gln	Arg	Gly	Lys	Thr	Ser
		595					600					605			
Ser	Gln	Ser	Lys	Ser	Phe	Gly	Glu	Ala	Val	Arg	Leu	Pro	His	Pro	Leu
	610					615					620				
Leu	Pro	Ala	Pro	Val	Thr	Gly	Thr	Asn	Gly	Leu	Ala	Arg	Ser	Leu	Gln
625					630					635					640
Gln	Val	Val	Pro	Met	His										
				645											

<210> 7
 <211> 944
 <212> DNA
 <213> Physcomitrella patens

<220>
 <221> CDS
 <222> (55)..(693)

<400> 7
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 Ala Gly Asp Asp Glu Lys Asp Val Arg Glu Val Glu Glu Ala Thr Ser
 5 10 15
 tcg gga gcc act gcg gag gga tcc gac gaa gtc tcg aag gct ggt gag 153
 Ser Gly Ala Thr Ala Glu Gly Ser Asp Glu Val Ser Lys Ala Gly Glu
 20 25 30
 gaa gag gat act ggt gct cag atc gct cct atc gtg acg ctg cag gaa 201
 Glu Glu Asp Thr Gly Ala Glu Ile Ala Pro Ile Val Thr Leu Gln Glu
 35 40 45
 gtt gcc gtt atc acc ggc gag gag aat gag gac gtg cta att gat atg 249
 Val Ala Val Ile Thr Gly Glu Glu Asn Glu Asp Val Leu Ile Asp Met
 50 55 60 65
 aag gct aag ctg tat cga ttt gat aag gag gga aca cag tgg aaa gag 297
 Lys Ala Lys Leu Tyr Arg Phe Asp Lys Glu Gly Thr Gln Trp Lys Glu
 70 75 80
 aga ggt gtt ggt cag gtg aag atc ctg gag cac aag aca act gga aag 345
 Arg Gly Val Gly Gln Val Lys Ile Leu Glu His Lys Thr Thr Gly Lys
 85 90 95
 gtt cga ttg cta atg cga cag aac agg acc ctt aag atc tgt gcc aac 393
 Val Arg Leu Leu Met Arg Gln Asn Arg Thr Leu Lys Ile Cys Ala Asn
 100 105 110
 cac atg gtc tcg tca tct acg caa ctg caa gag cac gct ggt agc gat 441
 His Met Val Ser Ser Ser Thr Gln Leu Gln Glu His Ala Gly Ser Asp
 115 120 125
 aag act tgg gtc tgg cat gct cgg gat tac tca gat ggt gaa tta aaa 489
 Lys Thr Trp Val Trp His Ala Arg Asp Tyr Ser Asp Gly Glu Leu Lys
 130 135 140 145
 gag gag ctt ttc tgc atg cga ttt ggc agc gtt gaa agc gct caa aaa 537
 Glu Glu Leu Phe Cys Met Arg Phe Gly Ser Val Glu Ser Ala Gln Lys
 150 155 160
 ttc aag gat gtg tac gag gcc gcc caa gaa aag gca tcc agc aag aca 585
 Phe Lys Asp Val Tyr Glu Ala Ala Gln Glu Lys Ala Ser Ser Lys Thr
 165 170 175
 gag gag aag gac gaa gag gct gat gag gct gca gat ctt ttg gat aag 633
 Glu Glu Lys Asp Glu Glu Ala Asp Glu Ala Ala Asp Leu Leu Asp Lys
 180 185 190
 ttg aag gtg ggc tca aaa gcc gag aag gct gat gca cct gaa gag gcc 681
 Leu Lys Val Gly Ser Lys Ala Glu Lys Ala Asp Ala Pro Glu Glu Ala
 195 200 205
 aag act gaa aac taggggtgtg attaacatgt gcttgagttg atgttaggta 733
 Lys Thr Glu Asn
 210

PhoenixTemp18436.tmp.txt

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gtcgatcgtg ggttaccg gctacatgat acagtgtttt gctaaccctt tagcagggtc 793
ttagtgtggg atgtttccct ccaagttcaa tagctcaatc gtctcgacct gttgtttaga 853
gttaattagt atgacatcag ttgcttttaa atgcctgttc tactacttct agcagcatgt 913
attggatcac ttgctagggt ctcgagctcg c 944

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<210> 8
<211> 213
<212> PRT
<213> Physcomitrella patens

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<400> 8
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Ser Ser Gly Ala Thr Ala Glu Gly Ser Asp Glu Val Ser Lys Ala Gly
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Glu Glu Glu Asp Thr Gly Ala Gln Ile Ala Pro Ile Val Thr Leu Gln
35 40 45
Glu Val Ala Val Ile Thr Gly Glu Glu Asn Glu Asp Val Leu Ile Asp
50 55 60
Met Lys Ala Lys Leu Tyr Arg Phe Asp Lys Glu Gly Thr Gln Trp Lys
65 70 75 80
Glu Arg Gly Val Gly Gln Val Lys Ile Leu Glu His Lys Thr Thr Gly
85 90 95
Lys Val Arg Leu Leu Met Arg Gln Asn Arg Thr Leu Lys Ile Cys Ala
100 105 110
Asn His Met Val Ser Ser Ser Thr Gln Leu Gln Glu His Ala Gly Ser
115 120 125
Asp Lys Thr Trp Val Trp His Ala Arg Asp Tyr Ser Asp Gly Glu Leu
130 135 140
Lys Glu Glu Leu Phe Cys Met Arg Phe Gly Ser Val Glu Ser Ala Gln
145 150 155 160
Lys Phe Lys Asp Val Tyr Glu Ala Ala Gln Glu Lys Ala Ser Ser Lys
165 170 175
Thr Glu Glu Lys Asp Glu Glu Ala Asp Glu Ala Ala Asp Leu Leu Asp
180 185 190
Lys Leu Lys Val Gly Ser Lys Ala Glu Lys Ala Asp Ala Pro Glu Glu
195 200 205
Ala Lys Thr Glu Asn
210

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<210> 9
<211> 1772
<212> DNA
<213> Physcomitrella patens

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<220>
<221> CDS
<222> (47)..(1516)

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Cys Arg Val Trp Val Gly Leu Gly Pro Val Ser Pro Ser Leu Ile Leu
5 10 15
ctg ccc tcg aag agt aac gga gaa tgc gtc cta agt gca aga aaa gct 151
Leu Pro Ser Lys Ser Asn Gly Glu Cys Val Leu Ser Ala Arg Lys Ala
20 25 30 35
gat tgg gga tta ctg agc caa gtg caa tgc caa cgc ttt cga tgt cta 199
Asp Trp Gly Leu Leu Ser Gln Val Gln Cys Gln Arg Phe Arg Cys Leu
40 45 50
tct tca gaa tat aag ggt cat aat ctt aaa ctt aga aga cgt agc cgt 247
Ser Ser Glu Tyr Lys Gly His Asn Leu Lys Leu Arg Arg Arg Ser Arg
55 60 65
gtc tca gct tcc aac aga gaa aac ggt agt tta aat ggg cgt ttc cag 295
Val Ser Ala Ser Asn Arg Glu Asn Gly Ser Leu Asn Gly Arg Phe Gln

```

PhoenixTemp18436.tmp.txt																
70					75					80						
gaa	tca	ctg	agt	caa	gag	aat	ggg	tat	ccg	gca	cca	act	gaa	ggg	act	343
Glu	Ser	Leu	Ser	Gln	Glu	Asn	Gly	Tyr	Pro	Ala	Pro	Thr	Glu	Gly	Thr	
	85					90					95					
gat	cct	cac	act	ttc	tcc	acg	gcg	atg	gac	tcc	tta	gct	att	aaa	gca	391
Asp	Pro	His	Thr	Phe	Ser	Thr	Ala	Met	Asp	Ser	Leu	Ala	Ile	Lys	Ala	
100					105					110					115	
gag	gaa	gct	tac	aat	gac	gta	cag	gat	tct	ttt	gcc	aag	agt	agt	aaa	439
Glu	Glu	Ala	Tyr	Asn	Asp	Val	Gln	Asp	Ser	Phe	Ala	Lys	Ser	Ser	Lys	
				120					125					130		
caa	cgg	agc	tta	tct	ggc	tgc	gct	tct	atc	aaa	gtg	ttc	ggg	gtc	ggg	487
Gln	Arg	Ser	Leu	Ser	Gly	Cys	Ala	Ser	Ile	Lys	Val	Phe	Gly	Val	Gly	
			135					140					145			
ggg	ggg	gga	tgc	aat	gcg	gta	gac	gaa	atg	gtg	agg	tca	gaa	cta	ttg	535
Gly	Gly	Gly	Cys	Asn	Ala	Val	Asp	Glu	Met	Val	Arg	Ser	Glu	Leu	Leu	
		150					155					160				
aat	gtt	gag	ttc	tgg	gcc	gtc	aat	act	gac	aaa	caa	gca	ttg	aac	aag	583
Asn	Val	Glu	Phe	Trp	Ala	Val	Asn	Thr	Asp	Lys	Gln	Ala	Leu	Asn	Lys	
	165				170					175						
tcg	ctg	gct	ccc	aat	aaa	att	caa	att	gga	cag	gac	acg	aca	gcc	ggc	631
Ser	Leu	Ala	Pro	Asn	Lys	Ile	Gln	Ile	Gly	Gln	Asp	Thr	Thr	Ala	Gly	
180				185					190					195		
cgc	ggg	gca	ggg	gga	aga	agt	gca	acc	ggg	gag	gaa	gca	gct	aca	gag	679
Arg	Gly	Ala	Gly	Gly	Arg	Ser	Ala	Thr	Gly	Glu	Glu	Ala	Ala	Thr	Glu	
			200						205					210		
tca	ttg	gcg	gag	ctt	tcg	atg	gca	ctt	gaa	ggg	gcc	gat	tta	gtc	ttc	727
Ser	Leu	Ala	Glu	Leu	Ser	Met	Ala	Leu	Glu	Gly	Ala	Asp	Leu	Val	Phe	
		215				220							225			
atc	gcc	tcc	ggg	atg	ggg	ggg	act	ggg	tca	gga	gca	gct	cct	gtg		775
Ile	Ala	Ser	Gly	Met	Gly	Gly	Thr	Gly	Ser	Gly	Ala	Ala	Pro	Val		
		230				235					240					
gtg	gct	cgg	ttg	gcg	aag	gct	atg	gga	gcg	tta	acg	att	ggc	ata	gta	823
Val	Ala	Arg	Leu	Ala	Lys	Ala	Met	Gly	Ala	Leu	Thr	Ile	Gly	Ile	Val	
	245				250				255							
act	gaa	cct	ttc	aca	ttt	gaa	ggg	ttc	acc	cga	gct	cga	caa	gct	agg	871
Thr	Glu	Pro	Phe	Thr	Phe	Glu	Gly	Phe	Thr	Arg	Ala	Arg	Gln	Ala	Arg	
260					265				270						275	
aaa	gcc	att	gag	gac	atg	cg	cat	gcg	gct	gac	act	gtg	gtt	gta	gtt	919
Lys	Ala	Ile	Glu	Asp	Met	Arg	His	Ala	Ala	Asp	Thr	Val	Val	Val	Val	
			280						285				290			
cca	aat	gat	cgg	ttg	ctc	cag	act	gta	gca	cct	gac	aca	tct	atg	ctg	967
Pro	Asn	Asp	Arg	Leu	Leu	Gln	Thr	Val	Ala	Pro	Asp	Thr	Ser	Met	Leu	
		295				300							305			
gag	gct	ttc	cat	ctt	gca	gat	gac	gtc	ttg	cgg	cag	gga	gtg	caa	gga	1015
Glu	Ala	Phe	His	Leu	Ala	Asp	Asp	Val	Leu	Arg	Gln	Gly	Val	Gln	Gly	
		310				315						320				
att	tca	gac	atc	atc	acg	ata	ccc	ggg	cta	gtc	aac	gtc	gac	ttt	gcg	1063
Ile	Ser	Asp	Ile	Ile	Thr	Ile	Pro	Gly	Leu	Val	Asn	Val	Asp	Phe	Ala	
	325				330						335					
gat	gtg	aaa	gct	atc	atg	tca	aat	gca	ggg	agt	gca	atg	ttg	gga	atc	1111
Asp	Val	Lys	Ala	Ile	Met	Ser	Asn	Ala	Gly	Ser	Ala	Met	Leu	Gly	Ile	
			345						350					355		
ggc	gct	ggg	ttt	ggg	aag	aac	cgt	gct	gag	gag	gtg	gca	cgg	tca	gcc	1159
Gly	Ala	Gly	Phe	Gly	Lys	Asn	Arg	Ala	Glu	Glu	Val	Ala	Arg	Ser	Ala	
			360					365						370		
atc	atg	tct	cct	cta	ctc	cg	tcc	gtc	tcg	aga	ccc	atg	ggg	att	gtg	1207
Ile	Met	Ser	Pro	Leu	Leu	Arg	Ser	Val	Ser	Arg	Pro	Met	Gly	Ile	Val	
		375				380							385			
tac	aat	gtg	aca	ggg	ggg	agc	gac	cta	act	ctt	cac	gag	gtc	aac	atc	1255
Tyr	Asn	Val	Thr	Gly	Gly	Ser	Asp	Leu	Thr	Leu	His	Glu	Val	Asn	Ile	
		390				395						400				
gct	gcc	gaa	att	gtt	cat	gac	atg	gct	gat	cca	aac	gca	aat	gtt	atc	1303
Ala	Ala	Glu	Ile	Val	His	Asp	Met	Ala	Asp	Pro	Asn	Ala	Asn	Val	Ile	
	405				410					415						
ttt	ggg	gcg	gtc	att	gat	gag	agc	ttt	aag	ggg	atg	ata	cgt	atg	act	1351
Phe	Gly	Ala	Val	Ile	Asp	Glu	Ser	Phe	Lys	Gly	Met	Ile	Arg	Met	Thr	
420				425					430					435		
gtc	att	gca	act	gga	ttt	aga	gag	cct	gga	gag	gag	aag	gtc	gtt	ggg	1399
Val	Ile	Ala	Thr	Gly	Phe	Arg	Glu	Pro	Gly	Glu	Glu	Lys	Val	Val	Gly	

PhoenixTemp18436.tmp.txt

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          440          445          450
agt gtt cga act gta gac gat gat ata ttc tac tgg gaa cag aat aag 1447
Ser Val Arg Thr Val Asp Asp Asp Ile Phe Tyr Trp Glu Gln Asn Lys
          455          460          465
aat agg tcc gac ctt ggc aaa gtg ccg gac gtt ttg cga aga aaa gat 1495
Asn Arg Ser Asp Leu Gly Lys Val Pro Asp Val Leu Arg Arg Lys Asp
          470          475          480
cga agg cgt ggc agt ggc agg taactgccgg gtttactctt tatgcgtatg 1546
Arg Arg Arg Gly Ser Gly Arg
          485          490
ggattttaaag agaagccgct gagcctgaga ttctacagga ggtttggtgga gttggttgga 1606
tcaagcacca tctttcaata gaatgaagat catggtttta aaaacagtga gcatttctca 1666
atcgatactc tgaaagcctg tactcaaagc tggagctgcg aaaacagtgt acgaagggca 1726
ctgatttgat gacacagcat ctttgtgaat agaaccagga tatcgc 1772

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<210> 10
 <211> 490
 <212> PRT
 <213> Physcomitrella patens

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<400> 10
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Arg Lys Ala Asp Trp Gly Leu Leu Ser Gln Val Gln Cys Gln Arg Phe
35     40     45
Arg Cys Leu Ser Ser Glu Tyr Lys Gly His Asn Leu Lys Leu Arg Arg
50     55     60
Arg Ser Arg Val Ser Ala Ser Asn Arg Glu Asn Gly Ser Leu Asn Gly
65     70     75     80
Arg Phe Gln Glu Ser Leu Ser Gln Glu Asn Gly Tyr Pro Ala Pro Thr
85     90     95
Glu Gly Thr Asp Pro His Thr Phe Ser Thr Ala Met Asp Ser Leu Ala
100    105    110
Ile Lys Ala Glu Glu Ala Tyr Asn Asp Val Gln Asp Ser Phe Ala Lys
115    120    125
Ser Ser Lys Gln Arg Ser Leu Ser Gly Cys Ala Ser Ile Lys Val Phe
130    135    140
Gly Val Gly Gly Gly Gly Cys Asn Ala Val Asp Glu Met Val Arg Ser
145    150    155    160
Glu Leu Leu Asn Val Glu Phe Trp Ala Val Asn Thr Asp Lys Gln Ala
165    170    175
Leu Asn Lys Ser Leu Ala Pro Asn Lys Ile Gln Ile Gly Gln Asp Thr
180    185    190
Thr Ala Gly Arg Gly Ala Gly Gly Arg Ser Ala Thr Gly Glu Glu Ala
195    200    205
Ala Thr Glu Ser Leu Ala Glu Leu Ser Met Ala Leu Glu Gly Ala Asp
210    215    220
Leu Val Phe Ile Ala Ser Gly Met Gly Gly Gly Thr Gly Ser Gly Ala
225    230    235    240
Ala Pro Val Val Ala Arg Leu Ala Lys Ala Met Gly Ala Leu Thr Ile
245    250    255
Gly Ile Val Thr Glu Pro Phe Thr Phe Glu Gly Phe Thr Arg Ala Arg
260    265    270
Gln Ala Arg Lys Ala Ile Glu Asp Met Arg His Ala Ala Asp Thr Val
275    280    285
Val Val Val Pro Asn Asp Arg Leu Leu Gln Thr Val Ala Pro Asp Thr
290    295    300
Ser Met Leu Glu Ala Phe His Leu Ala Asp Asp Val Leu Arg Gln Gly
305    310    315    320
Val Gln Gly Ile Ser Asp Ile Ile Thr Ile Pro Gly Leu Val Asn Val
325    330    335
Asp Phe Ala Asp Val Lys Ala Ile Met Ser Asn Ala Gly Ser Ala Met
340    345    350
Leu Gly Ile Gly Ala Gly Phe Gly Lys Asn Arg Ala Glu Glu Val Ala
355    360    365
Arg Ser Ala Ile Met Ser Pro Leu Leu Arg Ser Val Ser Arg Pro Met

```

PhoenixTemp18436.tmp.txt

370	Gly	Ile	Val	Tyr	Asn	Val	Thr	Gly	Gly	Ser	Asp	Leu	Thr	Leu	His	Glu
385	Val	Asn	Ile	Ala	Ala	Glu	Ile	Val	His	Asp	Met	Ala	Asp	Pro	Asn	Ala
				405						410					415	
	Asn	Val	Ile	Phe	Gly	Ala	Val	Ile	Asp	Glu	Ser	Phe	Lys	Gly	Met	Ile
				420					425					430		
	Arg	Met	Thr	Val	Ile	Ala	Thr	Gly	Phe	Arg	Glu	Pro	Gly	Glu	Glu	Lys
			435					440					445			
	Val	Val	Gly	Ser	Val	Arg	Thr	Val	Asp	Asp	Asp	Ile	Phe	Tyr	Trp	Glu
			450				455					460				
	Gln	Asn	Lys	Asn	Arg	Ser	Asp	Leu	Gly	Lys	Val	Pro	Asp	Val	Leu	Arg
465						470					475					480
	Arg	Lys	Asp	Arg	Arg	Arg	Gly	Ser	Gly	Arg						
				485						490						

<210> 11
 <211> 1446
 <212> DNA
 <213> Physcomitrella patens

<220>
 <221> CDS
 <222> (453)..(1343)

<400>	11																		
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	ggaagatttt	tttttgcgga	ggatgttttg	ggagggttg	ggttgaagtt	gtcttggtga													120
	ttgaggctgt	ggcggaggag	tattgatcga	agtttggtgt	tcaaggagggt	gttgcccttc													180
	atggtcagaa	acgatcttcg	tcgccgctct	gcgtgcagtc	ttgcagcagt	tgctggtttt													240
	cacgatcggg	aggttcgtgt	ggagcgcggg	gtggacttgc	tgctcgtttc	tggtgtgcgt													300
	ttgctgcacg	actgttgttc	cctttcctgg	gaattcaaca	ttgattgatt	gacgagcgac													360
	ttcgcgatcg	gcattgggat	ttgccgcgct	gtgagctttg	cgacgttttc	agatatggag													420
	tggaaggggt	ttgctgaggt	ggtttggcgt	cg atg atc	gcc ggg ttc	gct acg													473
				Met Ile	Ala Gly	Phe Ala													
				1		5													
	cac cct ctg gac ctt atc aag gtc cgc atg cag tta caa ggg gag gtt																		521
	His Pro Leu Asp Leu Ile Lys Val Arg Met Gln Leu Gln Gly Glu Val																		
				10		15													
	gct acg tcg ggt ttc gcc ctc gcg ctc gaa ggt agt cat gtt gct cct																		569
	Ala Thr Ser Gly Phe Ala Leu Ala Leu Glu Gly Ser His Val Ala Pro																		
				25		30													
	gct gta ctc ggt gtc ccg aaa ccg ggt ccc ttg gga gtc ggt ttg aat																		617
	Ala Val Leu Gly Val Pro Lys Pro Gly Pro Gly Val Gly Leu Asn																		
				40		45													
	gtg gct cgt gca gaa gga gtg tat gcc ctc tac tcc ggt gtc tcc gcc																		665
	Val Ala Arg Ala Glu Gly Val Tyr Ala Leu Tyr Ser Gly Val Ser Ala																		
				60		65													
	act ttg tta aga caa gcc atg tat tcg tct aca cgg atg ggt ctt tac																		713
	Thr Leu Leu Arg Gln Ala Met Tyr Ser Ser Thr Arg Met Gly Leu Tyr																		
				75		80													
	gag ttc ttg aag cat cag tgg aga gac gag aaa caa gaa ggc tct ggg																		761
	Glu Phe Leu Lys His Gln Trp Arg Asp Glu Lys Gln Glu Gly Ser Gly																		
				90		95													
	ctt cct ctg tac aaa aaa gtg acc gct gca ttg att gcc ggg gct tcc																		809
	Leu Pro Leu Tyr Lys Lys Val Thr Ala Ala Leu Ile Ala Gly Ala Ser																		
				105		110													
	ggc gcc gtt gtt gga aac cct gca gac ttg gcc atg gtc agg atg caa																		857
	Gly Ala Val Val Gly Asn Pro Ala Asp Leu Ala Met Val Arg Met Gln																		
				120		125													
	gcc gac ggt agg ctg cct atg cat gag agg agg aac tac acc ggg gtc																		905
	Ala Asp Gly Arg Leu Pro Met His Glu Arg Arg Asn Tyr Thr Gly Val																		
				140		145													
	ggc aat gct ctg tta ccg atg gtg aaa caa gac ggc gtg atg tca ttg																		953
	Gly Asn Ala Leu Leu Arg Met Val Lys Gln Asp Gly Val Met Ser Leu																		
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	tggt acg gga tcg gct ccg act gtg act cga gcc atg ctg gtg acc gcc																		1001
	Trp Thr Gly Ser Ala Pro Thr Val Thr Arg Ala Met Leu Val Thr Ala																		

PhoenixTemp18436.tmp.txt

	170		175		180															
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Ala	Gln	Leu	Ala	Thr	Tyr	Asp	Gln	Ile	Lys	Asp	Ser	Ile	Ala	Glu	Thr					1049
	185					190				195										
cac	atg	gtg	ccg	gaa	ggg	ctg	gcc	acg	cag	gtg	gtg	gca	agc	tgc	gga					1097
His	Met	Val	Pro	Glu	Gly	Leu	Ala	Thr	Gln	Val	Val	Ala	Ser	Cys	Gly					
200					205					210					215					
gcg	ggg	gtg	ctg	gca	tcc	gtc	gct	tca	aac	ccc	atc	gac	gtc	gtg	aag					1145
Ala	Gly	Val	Leu	Ala	Ser	Val	Ala	Ser	Asn	Pro	Ile	Asp	Val	Val	Lys					
				220					225					230						
acg	aga	gtg	atg	aac	atg	aaa	gtg	acg	cct	gga	gaa	gga	gct	cct	tat					1193
Thr	Arg	Val	Met	Asn	Met	Lys	Val	Thr	Pro	Gly	Glu	Gly	Ala	Pro	Tyr					
			235				240						245							
cga	ggt	gct	ttg	gat	tgt	gct	gtg	aag	acg	gtg	cga	gcg	gaa	ggt	ccc					1241
Arg	Gly	Ala	Leu	Asp	Cys	Ala	Val	Lys	Thr	Val	Arg	Ala	Glu	Gly	Pro					
			250				255						260							
atg	gct	ctg	tac	aag	gga	ttt	gtc	ccg	acg	gtg	act	cgt	caa	ggc	ccc					1289
Met	Ala	Leu	Tyr	Lys	Gly	Phe	Val	Pro	Thr	Val	Thr	Arg	Gln	Gly	Pro					
	265				270						275									
ttc	gcc	ata	gtt	ctg	ttc	ctg	tca	ttg	gag	cag	atc	aag	aag	ctg	atc					1337
Phe	Ala	Ile	Val	Leu	Phe	Leu	Ser	Leu	Glu	Gln	Ile	Lys	Lys	Leu	Ile					
280					285					290					295					
gag	ggc	tgaatcagat	aatgacgaaa	gatgtgtagt	taagcaatag	ttgaagtgga														1393
Glu	Gly																			
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<210> 12
 <211> 297
 <212> PRT
 <213> Physcomitrella patens

<400> 12

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Glu	Gly	Ser	His	Val	Ala	Pro	Ala	Val	Leu	Gly	Val	Pro	Lys	Pro	Gly
		35					40					45			
Pro	Leu	Gly	Val	Gly	Leu	Asn	Val	Ala	Arg	Ala	Glu	Gly	Val	Tyr	Ala
	50					55					60				
Leu	Tyr	Ser	Gly	Val	Ser	Ala	Thr	Leu	Leu	Arg	Gln	Ala	Met	Tyr	Ser
65					70					75				80	
Ser	Thr	Arg	Met	Gly	Leu	Tyr	Glu	Phe	Leu	Lys	His	Gln	Trp	Arg	Asp
			85					90					95		
Glu	Lys	Gln	Glu	Gly	Ser	Gly	Leu	Pro	Leu	Tyr	Lys	Lys	Val	Thr	Ala
			100					105					110		
Ala	Leu	Ile	Ala	Gly	Ala	Ser	Gly	Ala	Val	Val	Gly	Asn	Pro	Ala	Asp
		115					120					125			
Leu	Ala	Met	Val	Arg	Met	Gln	Ala	Asp	Gly	Arg	Leu	Pro	Met	His	Glu
	130					135					140				
Arg	Arg	Asn	Tyr	Thr	Gly	Val	Gly	Asn	Ala	Leu	Leu	Arg	Met	Val	Lys
145					150					155					160
Gln	Asp	Gly	Val	Met	Ser	Leu	Trp	Thr	Gly	Ser	Ala	Pro	Thr	Val	Thr
			165						170					175	
Arg	Ala	Met	Leu	Val	Thr	Ala	Ala	Gln	Leu	Ala	Thr	Tyr	Asp	Gln	Ile
			180					185					190		
Lys	Asp	Ser	Ile	Ala	Glu	Thr	His	Met	Val	Pro	Glu	Gly	Leu	Ala	Thr
		195					200					205			
Gln	Val	Val	Ala	Ser	Cys	Gly	Ala	Gly	Val	Leu	Ala	Ser	Val	Ala	Ser
	210					215					220				
Asn	Pro	Ile	Asp	Val	Val	Lys	Thr	Arg	Val	Met	Asn	Met	Lys	Val	Thr
225					230					235					240
Pro	Gly	Glu	Gly	Ala	Pro	Tyr	Arg	Gly	Ala	Leu	Asp	Cys	Ala	Val	Lys
				245					250					255	
Thr	Val	Arg	Ala	Glu	Gly	Pro	Met	Ala	Leu	Tyr	Lys	Gly	Phe	Val	Pro
			260					265					270		
Thr	Val	Thr	Arg	Gln	Gly	Pro	Phe	Ala	Ile	Val	Leu	Phe	Leu	Ser	Leu
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PhoenixTemp18436.tmp.txt
 Glu Gln Ile Lys Lys Leu Ile Glu Gly
 290 295

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 <211> 937
 <212> DNA
 <213> Physcomitrella patens

<220>
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 <222> (33)..(593)

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 1 5
 atc aag aag att gag aat aca acc agc agg cag gtg aca ttc tcc aag 101
 Ile Lys Lys Ile Glu Asn Thr Thr Ser Arg Gln Val Thr Phe Ser Lys
 10 15 20
 agg cgc ggt ggt ctt ttg aag aag gcg cac gag ctt gcg gtt ctg tgt 149
 Arg Arg Gly Gly Leu Leu Lys Lys Ala His Glu Leu Ala Val Leu Cys
 25 30 35
 gat gcc gag gtg gcg ctg gtt att ttc tcc agc act gga aag cac ttt 197
 Asp Ala Glu Val Ala Val Ile Phe Ser Thr Gly Lys His Phe
 40 45 50 55
 gag ttt gcc agt tca ggc agc atg cgg gac atc att gag cgg tac agg 245
 Glu Phe Ala Ser Ser Gly Ser Met Arg Asp Ile Ile Glu Arg Tyr Arg
 60 65 70
 aag agc tcg gat ggt gca gtg aag cgt ggc acc aat act gat tta ctt 293
 Lys Ser Ser Asp Gly Ala Val Lys Arg Gly Thr Asn Thr Asp Leu Leu
 75 80 85
 ggt cgg gag gtg att aag tta aaa cag caa gta gaa cga ttg gaa agc 341
 Gly Arg Glu Val Ile Lys Leu Lys Gln Gln Val Glu Arg Leu Glu Ser
 90 95 100
 tct caa agg cat atg ctt ggt gag gat ctt tca gct ttg aag gta tct 389
 Ser Gln Arg His Met Leu Gly Glu Asp Leu Ser Ala Leu Lys Val Ser
 105 110 115
 gac ctt ttg gag ctg gag cag cag ctt gat cag ggt gct tca cga gtg 437
 Asp Leu Leu Glu Leu Glu Gln Gln Leu Asp Gln Gly Ala Ser Arg Val
 120 125 130 135
 aga gca agg aag aat caa ctc att tta gaa gag atc gaa gac ttg cgg 485
 Arg Ala Arg Lys Asn Gln Leu Ile Leu Glu Glu Ile Glu Asp Leu Arg
 140 145 150
 aga aag gag cat gaa ctg atg att gca aac gag gct ctt cgc aag aag 533
 Arg Lys Glu His Glu Leu Met Ile Ala Asn Glu Ala Leu Arg Lys Lys
 155 160 165
 att gca gac gct gaa ggt gct gcg gaa gca gag ctc gag cta att tcc 581
 Ile Ala Asp Ala Glu Gly Ala Ala Glu Ala Glu Leu Glu Leu Ile Ser
 170 175 180
 cgg atg ctc ggc tagaaagccc caaacggttc gccagcgatt tctcacgaga 633
 Arg Met Leu Gly
 185
 tatgagtgtg agttcgcagc tggcagcatc agtctaccct catcccaacc ttctacaggc 693
 gcaaagatca cagacgtcat tacagcttgg atggctatct gagcaacaga tccccagcac 753
 ggaagaagggt tgtgcagggt aatctagctt gaaatgggat catccgcact ttcacattca 813
 gaatagactc catgcaaaca tatcaccaag tgtgagaatt tataagttac atgtcgatcg 873
 ataagccact tcgaacgaca gaaggctctt tgggagccca ggctatgggt cctagcggtta 933
 acgc 937

<210> 14
 <211> 187
 <212> PRT
 <213> Physcomitrella patens

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PhoenixTemp18436.tmp.txt

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 His Glu Leu Ala Val Leu Cys Asp Ala Glu Val Ala Leu Val Ile Phe
 35 40 45
 Ser Ser Thr Gly Lys His Phe Glu Phe Ala Ser Ser Gly Ser Met Arg
 50 55 60
 Asp Ile Ile Glu Arg Tyr Arg Lys Ser Ser Asp Gly Ala Val Lys Arg
 65 70 75 80
 Gly Thr Asn Thr Asp Leu Leu Gly Arg Glu Val Ile Lys Leu Lys Gln
 85 90 95
 Gln Val Glu Arg Leu Glu Ser Ser Gln Arg His Met Leu Gly Glu Asp
 100 105 110
 Leu Ser Ala Leu Lys Val Ser Asp Leu Leu Glu Leu Glu Gln Gln Leu
 115 120 125
 Asp Gln Gly Ala Ser Arg Val Arg Ala Arg Lys Asn Gln Leu Ile Leu
 130 135 140
 Glu Glu Ile Glu Asp Leu Arg Arg Lys Glu His Glu Leu Met Ile Ala
 145 150 155 160
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 Ala Glu Leu Glu Leu Ile Ser Arg Met Leu Gly
 180 185

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 Met Gly Asn Pro Leu Leu Asp Ile Ser Cys Val Val Asp Asp Ala Phe
 10 15 20 25
 ctc gag aag tac ggg ctg acg cta aac aac gct att ctt gct gag gac 147
 Leu Glu Lys Tyr Gly Leu Thr Leu Asn Asn Ala Ile Leu Ala Glu Asp
 30 35 40
 aag cac ctt ccc atg tac aag gaa ctg gct gcc aat ccc gat gta gag 195
 Lys His Leu Pro Met Tyr Lys Glu Ala Ala Asn Pro Asp Val Glu
 45 50 55
 tac att gca gga ggt gct act cag aac acc atc agg att gcc cag tgg 243
 Tyr Ile Ala Gly Gly Ala Thr Gln Asn Thr Ile Arg Ile Ala Gln Trp
 60 65 70
 atg cta ggt gaa tcg aac gca act agc tac ttt ggc tgt gtt ggc aag 291
 Met Leu Gly Glu Ser Asn Ala Thr Ser Tyr Phe Gly Cys Val Gly Lys
 75 80 85
 gat gag tat ggc gac cgt atg ttc aag ctc gcc tct gag gga ggt gtc 339
 Asp Glu Tyr Gly Asp Arg Met Phe Lys Leu Ala Ser Glu Gly Gly Val
 90 95 100 105
 aat atc cga tac gat gtg gac gag gat ctt ccc act gga aca tgc ggc 387
 Asn Ile Arg Tyr Asp Val Asp Glu Asp Leu Pro Thr Gly Thr Cys Gly
 110 115 120
 gtg ctc gtg gtg aag gga gag agg tcc ttg gta gcc aat ctt tca gcc 435
 Val Leu Val Val Lys Gly Glu Arg Ser Leu Val Ala Asn Leu Ser Ala
 125 130 135
 gcc aac aaa tac aag atc gac cac ttg aag aag cca gaa aac tgg gct 483
 Ala Asn Lys Tyr Lys Ile Asp His Leu Lys Lys Pro Glu Asn Trp Ala
 140 145 150
 ttc gtg gag aag gca aag tac atc tac agc gcc ggt ttc ctg act 531
 Phe Val Glu Lys Ala Lys Tyr Ile Tyr Ser Ala Gly Phe Phe Leu Thr
 155 160 165
 gtt tca ccg gaa tct atg atg acc gtg gcc aaa cat gct gcc gag acc 579
 Val Ser Pro Glu Ser Met Met Thr Val Ala Lys His Ala Ala Glu Thr

PhoenixTemp18436.tmp.txt

170		175		180		185	
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Gly	Lys	Tyr	Tyr	Met	Ile	Asn	Leu
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ttt	aag	gac	cct	ctt	atg	gag	ctt
Phe	Lys	Asp	Pro	Leu	Met	Glu	Leu
				205			
ggc	aac	gag	agc	gag	gcc	aga	gca
Gly	Asn	Glu	Ser	Glu	Ala	Arg	Ala
				220			
aca	gag	gac	acc	aag	gtg	ata	gcc
Thr	Glu	Asp	Thr	Lys	Val	Ile	Ala
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gct	ggc	ggc	acc	cac	aag	cgt	gtc
Ala	Gly	Gly	Thr	His	Lys	Arg	Val
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ccc	aca	att	gtt	gct	gaa	gat	gga
Pro	Thr	Ile	Val	Ala	Glu	Asp	Gly
				270			
cct	att	cct	aag	gag	aag	ttg	gtc
Pro	Ile	Pro	Lys	Glu	Lys	Leu	Val
				285			
ttt	gtc	gga	ggg	ttc	ttg	tct	cag
Phe	Val	Gly	Gly	Phe	Leu	Ser	Gln
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cag	tgc	gtc	aga	gca	gga	aac	tac
Gln	Cys	Val	Arg	Ala	Gly	Asn	Tyr
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tct	gga	tgc	act	ttc	cct	tcc	aaa
Ser	Gly	Cys	Thr	Phe	Pro	Ser	Lys
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 <212> PRT
 <213> Physcomitrella patens

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

225	PhoenixTemp18436.tmp.txt														240
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Val	Ala	Val	Ile	Thr	Gln	Gly	Thr	Asp	Pro	Thr	Ile	Val	Ala	Glu	Asp
Gly	Lys	Val	Thr	Glu	Phe	Pro	Val	Thr	Pro	Ile	Pro	Lys	Glu	Lys	Leu
Val	Asp	Thr	Asn	Ala	Ala	Gly	Asp	Ser	Phe	Val	Gly	Gly	Phe	Leu	Ser
Gln	Leu	Val	Leu	Gly	Lys	Asp	Ile	Ala	Gln	Cys	Val	Arg	Ala	Gly	Asn
Tyr	Ala	Ala	Ser	Val	Ile	Ile	Gln	Arg	Ser	Gly	Cys	Thr	Phe	Pro	Ser
Lys	Pro	Ser	Phe	Glu	Ser	Gln									

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<210> 17
<211> 2357
<212> DNA
<213> Physcomitrella patens
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Asn	Arg	Lys	Val	Lys	Trp	Cys	Pro	Ala	Pro	Gly	Cys	Glu	Tyr	Ala	Val	
gaa	ttt	caa	cct	ggc	gtt	ggt	tcc	tat	gac	ctt	gtc	tgc	aag	tgt	gga	890
Glu	Phe	Gln	Pro	Gly	Val	Gly	Ser	Tyr	Asp	Leu	Val	Cys	Lys	Cys	Gly	
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Phe	Asn	Phe	Cys	Trp	Asn	Cys	Arg	Glu	Ala	His	Arg	Pro	Val	Asp		
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Cys	Glu	Thr	Val	Asn	Lys	Trp	Ile	Leu	Lys	Asn	Cys	Ala	Glu	Ser	Glu	
				275				280						285		
aac	atg	aac	tgg	att	ctt	gcg	aac	agc	aaa	ccc	tgt	ccc	aaa	tgt	aaa	1034
Asn	Met	Asn	Trp	Ile	Leu	Ala	Asn	Ser	Lys	Pro	Cys	Pro	Lys	Cys	Lys	
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agg	cca	atc	gaa	aag	aat	caa	ggc	tgc	atg	cac	att	act	tgc	aca	cca	1082
Arg	Pro	Ile	Glu	Lys	Asn	Gln	Gly	Cys	Met	His	Ile	Thr	Cys	Thr	Pro	
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Pro	Cys	Lys	Phe	Glu	Phe	Cys	Trp	Leu	Cys	Leu	Gly	Ala	Trp	Thr	Asp	
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His	Gly	Glu	Arg	Thr	Gly	Gly	Phe	Tyr	Ala	Cys	Asn	Arg	Tyr	Glu	Thr	
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gcg	aag	caa	gaa	ggc	gtg	tat	gat	gaa	gca	gag	cgg	aga	agg	gaa	atg	1226
Ala	Lys	Gln	Glu	Gly	Val	Tyr	Asp	Glu	Ala	Glu	Arg	Arg	Arg	Glu	Met	
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gcg	aag	aac	tcc	ctt	gaa	cgt	tac	aca	cac	tat	tat	gag	cgt	tgg	gct	1274
Ala	Lys	Asn	Ser	Leu	Glu	Arg	Tyr	Thr	His	Tyr	Tyr	Glu	Arg	Trp	Ala	
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aca	aac	gaa	tct	tcc	agg	gca	aag	gcg	ctt	gca	gat	ctt	caa	gat	atg	1322
Thr	Asn	Glu	Ser	Ser	Arg	Ala	Lys	Ala	Leu	Ala	Asp	Leu	Gln	Asp	Met	
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Gln	Asn	Val	Gln	Ile	Glu	Lys	Leu	Ser	Val	Thr	Gln	Cys	Gln	Pro	Val	
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tcg	cag	ctg	aaa	ttt	gta	aca	gat	gca	tgg	ctc	cag	att	gta	gaa	tgc	1418
Ser	Gln	Leu	Lys	Phe	Val	Thr	Asp	Ala	Trp	Leu	Gln	Ile	Val	Glu	Cys	
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cgg	cgt	gta	ttg	aag	tgg	aca	tat	gct	tat	gga	tat	tac	tta	cct	gag	1466
Arg	Arg	Val	Leu	Lys	Trp	Thr	Tyr	Ala	Tyr	Gly	Tyr	Tyr	Leu	Pro	Glu	
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Asn	Glu	His	Thr	Lys	Arg	Gln	Phe	Phe	Glu	Tyr	Ser	Gln	Gly	Glu	Ala	
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gaa	gct	ggt	tta	gag	cgc	ctc	cac	cag	tgt	gcg	gag	aag	gat	ttg	cta	1562
Glu	Ala	Gly	Leu	Glu	Arg	Leu	His	Gln	Cys	Ala	Glu	Lys	Asp	Leu	Leu	
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Thr	Phe	Leu	Gly	Gly	Thr	Pro	Thr	Ser	Ser	Phe	Asn	Asp	Phe	Arg	Thr	
480					485					490					495	
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Lys	Leu	Ala	Gly	Leu	Thr	Ser	Val	Thr	Lys	Thr	Tyr	Phe	Glu	Asn	Leu	
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Val	Arg	Ala	Leu	Glu	Asn	Asn	Leu	Ser	Asp	Val	Asp	Ile	Pro	Lys	Ala	
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cga	ggg	ggc	agg	cct	aaa	gtg	gga	agt	tcc	aaa	agt	ggg	ggt	tct	agt	1802
Arg	Gly	Gly	Arg	Pro	Lys	Val	Gly	Ser	Ser	Lys	Ser	Gly	Gly	Ser	Ser	
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cgg	agc	gga	gag	gag	tca	act	cac	tgg	tct	tgt	gag	cat	tgc	acg	tac	1850
Arg	Ser	Gly	Glu	Glu	Ser	Thr	His	Trp	Ser	Cys	Glu	His	Cys	Thr	Tyr	
560					565					570					575	
gcc	aat	acc	aca	gcc	gcg	tct	tcc	att	gtg	tgc	gtc	ata	tgc	aat	cac	1898

PhoenixTemp18436.tmp.txt

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 580 585 590
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 Ala Arg Ser
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 ccaggatcaa agaccactgt attcagatat ggtgggttgaa ggcatttctg ctttgtttaa 2067
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 tattgttgat atcagttgtc catcccctaa attttttgtt gtatacaatc tagccaacaa 2187
 agtgggtgaa aatgaagaac ggagggattt tatgtatcga gaccttgtgg tgcacaattt 2247
 gcaacggcag tctatctagt tgcgatgtac cacatctgtc tctatctact gtaaatgtgg 2307
 tagttgtaaa agcgtactcc aaaacagaat tccccctcgt gcgagctcgc 2357

<210> 18
 <211> 594
 <212> PRT
 <213> Physcomitrella patens

<400> 18
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 Gly Glu Phe Val Asn Glu Glu Glu Asp Glu Glu Ser Asp Ala Leu Ala
 20 25 30
 Ser Asp Asp Asp Asn Asp Glu Ser Asp Tyr Gly Phe Asp Tyr Ser Asn
 35 40 45
 Val Asp Asp Leu His Pro Ser Arg Leu Pro Gln Thr Asn Phe Thr
 50 55 60
 Ile Leu Ser Glu Lys Asp Ile Arg Gln Arg Gln Asp Glu Ala Val Ser
 65 70 75 80
 Thr Ile Thr Asn Phe Leu Ser Ile Ser Pro Ala Asp Ala Gly Val Leu
 85 90 95
 Leu Arg His Phe Lys Trp Ser Val Ser Lys Val Asn Asp Glu Trp Phe
 100 105 110
 Ala Asp Glu Glu Arg Val Arg Ala Ser Val Gly Leu Leu Glu Lys Pro
 115 120 125
 Ala Thr Ser Lys Arg Gln Thr Gln Thr Glu Met Thr Cys Glu Ile Cys
 130 135 140
 Phe Glu Val His Pro Phe Glu Lys Met Arg Ala Pro Arg Cys Gly His
 145 150 155 160
 Tyr Phe Cys Glu Thr Cys Trp Thr Gly Tyr Ile His Thr Ala Ile Asn
 165 170 175
 Asp Gly Pro Gly Cys Leu Thr Leu Arg Cys Ala Asp Pro Ser Cys Gly
 180 185 190
 Ser Ala Ile Gly Glu Asp Met Val Leu Ser Leu Val Ser Thr Asp Asp
 195 200 205
 Gln Gln Lys Tyr Met Arg Tyr Leu Leu Arg Ser Tyr Val Glu Asp Asn
 210 215 220
 Arg Lys Val Lys Trp Cys Pro Ala Pro Gly Cys Glu Tyr Ala Val Glu
 225 230 235 240
 Phe Gln Pro Gly Val Gly Ser Tyr Asp Leu Val Cys Lys Cys Gly Phe
 245 250 255
 Asn Phe Cys Trp Asn Cys Arg Glu Glu Ala His Arg Pro Val Asp Cys
 260 265 270
 Glu Thr Val Asn Lys Trp Ile Leu Lys Asn Cys Ala Glu Ser Glu Asn
 275 280 285
 Met Asn Trp Ile Leu Ala Asn Ser Lys Pro Cys Pro Lys Cys Lys Arg
 290 295 300
 Pro Ile Glu Lys Asn Gln Gly Cys Met His Ile Thr Cys Thr Pro Pro
 305 310 315 320
 Cys Lys Phe Glu Phe Cys Trp Leu Cys Leu Gly Ala Trp Thr Asp His
 325 330 335
 Gly Glu Arg Thr Gly Gly Phe Tyr Ala Cys Asn Arg Tyr Glu Thr Ala
 340 345 350
 Lys Gln Glu Gly Val Tyr Asp Glu Ala Glu Arg Arg Arg Glu Met Ala
 355 360 365
 Lys Asn Ser Leu Glu Arg Tyr Thr His Tyr Tyr Glu Arg Trp Ala Thr
 370 375 380
 Asn Glu Ser Ser Arg Ala Lys Ala Leu Ala Asp Leu Gln Asp Met Gln
 385 390 395 400

PhoenixTemp18436.tmp.txt

<211> 91
 <212> PRT
 <213> Physcomitrella patens

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

<210> 21
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 <212> DNA
 <213> Physcomitrella patens

<220>
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 <222> (276)..(1316)

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 agaggaggtat ttcgtttttt tggtttttat tgtttgacgt aggccttggtg ttaggttttg 180
 acttatactt tctgttgagg aattgggaag aaaagaacag ggtgttctag catttagggg 240
 aattgaccag ggtaggaggt gaagccgaag cttcg atg tca tct gct gtg gac 293
 Met Ser Ser Ala Val Asp
 1 5
 ttt gta gag ggc ggt acc caa gac ccg tgc gaa gat gcg tgc agc atc 341
 Phe Val Glu Gly Gly Thr Gln Asp Pro Cys Glu Asp Ala Cys Ser Ile
 10 15 20
 tgc ctt gaa act ttt tgt gaa gat gat cct gcc acc gtc act agc tgc 389
 Cys Leu Glu Thr Phe Cys Glu Asp Asp Pro Ala Thr Val Thr Ser Cys
 25 30 35
 aag cac gag tat cat ctg caa tgc att ctt gaa tgg tcg cag cgg agt 437
 Lys His Asp Tyr His Leu Gln Cys Ile Leu Glu Trp Ser Gln Arg Ser
 40 45 50
 acg gag tgt cca atg tgc ttg caa cca ctt agt ttg aaa gat cct gac 485
 Thr Glu Cys Pro Met Cys Leu Gln Pro Leu Ser Leu Lys Asp Pro Asp
 55 60 65 70
 agc caa gag ctg ctg aaa gca gtt ggg caa gaa cgg aca tta cgc cgg 533
 Ser Gln Glu Leu Lys Ala Val Gly Gln Glu Arg Thr Leu Arg Arg
 75 80 85
 aat aag atg cag gcc tct cac att tac cgt cga tcc cca gct gag gag 581
 Asn Lys Met Gln Ala Ser His Ile Tyr Arg Arg Ser Pro Ala Glu Glu
 90 95 100
 tat gag ttc gaa cga ttt gca ccc tac ggg gac gaa ggt tgc att atg 629
 Tyr Glu Phe Glu Arg Phe Ala Pro Tyr Gly Asp Glu Gly Cys Ile Met
 105 110 115
 cag cat ttg gcg gcg gca gca atg ggc cgg aga gaa cat att cgc ttt 677
 Gln His Leu Ala Ala Ala Met Gly Arg Arg Glu His Ile Arg Phe
 120 125 130
 cgg cca tcc act act gcc caa ggt cat ccg cat ttt gtt gtt gtg tct 725
 Arg Pro Ser Thr Thr Ala Gln Gly His Pro His Phe Val Val Val Ser
 135 140 145 150
 ggt gca cct gca gga gca tcg tct tcc cct gca tcc agt tcg cca gtt 773
 Gly Ala Pro Ala Gly Ala Ser Ser Ser Pro Ala Ser Ser Ser Pro Val
 155 160 165
 gta tcc cct cct caa agt aca aat ggc gag gca tct cta gga gcc gtc 821
 Val Ser Pro Pro Gln Ser Thr Asn Gly Glu Ala Ser Leu Gly Ala Val
 170 175 180

PhoenixTemp18436.tmp.txt

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Phe	Ser	Phe	Pro	His	Tyr	Ser	Ala	Pro	Asn	Arg	Asp	Gly	Ser	Ser	Ala	
		185					190					195				
aac	tct	cca	acc	att	aga	tca	cgg	agc	ctt	gag	tcg	gag	gag	cat	gca	917
Asn	Ser	Pro	Thr	Ile	Arg	Ser	Arg	Ser	Leu	Glu	Ser	Glu	Glu	His	Ala	
	200					205					210					
act	tct	tca	tca	gag	tct	cta	gat	acc	ttt	gca	tct	cgt	ttg	gtc	gca	965
Thr	Ser	Ser	Ser	Glu	Ser	Leu	Asp	Thr	Phe	Ala	Ser	Arg	Leu	Val	Ala	
215					220					225					230	
gca	tct	tca	agg	tac	aag	gag	tcc	ctg	agt	aag	agt	acg	aag	gga	ttc	1013
Ala	Ser	Ser	Arg	Tyr	Lys	Glu	Ser	Leu	Ser	Lys	Ser	Thr	Lys	Gly	Phe	
				235					240					245		
cgt	gaa	agg	ttg	cga	act	cgt	ggt	ggt	atc	atg	caa	gac	ctt	ggt	gca	1061
Arg	Glu	Arg	Leu	Arg	Thr	Arg	Gly	Gly	Ile	Met	Gln	Asp	Leu	Gly	Ala	
			250				255						260			
cgg	gca	cga	gag	atg	agt	gca	ggg	atg	gca	cgg	gcg	tta	gaa	agg	atg	1109
Arg	Ala	Arg	Glu	Met	Ser	Ala	Gly	Met	Ala	Arg	Ala	Leu	Glu	Arg	Met	
		265					270					275				
tct	gta	gag	aca	gga	act	gat	cgg	tca	gat	gcg	gcc	agc	tct	ctt	cct	1157
Ser	Val	Glu	Thr	Gly	Thr	Asp	Arg	Ser	Asp	Ala	Ala	Ser	Ser	Leu	Pro	
	280					285					290					
ggg	cag	cct	tct	ggc	act	acc	cat	cac	cca	ccc	gat	cat	cct	cct	gat	1205
Gly	Gln	Pro	Ser	Gly	Thr	Thr	His	His	Pro	Pro	Asp	His	Pro	Pro	Asp	
295				300					305						310	
cgc	cct	gat	tct	ggc	cat	tct	tca	gga	ggg	tcg	ccg	agt	agc	cac	tct	1253
Arg	Pro	Asp	Ser	Gly	His	Ser	Ser	Gly	Gly	Ser	Pro	Ser	Ser	His	Ser	
				315					320					325		
gcc	gtc	act	cgc	aca	act	cca	agc	ccc	act	tca	gca	cct	gaa	cta	agt	1301
Ala	Val	Thr	Arg	Thr	Thr	Pro	Ser	Pro	Thr	Ser	Ala	Pro	Glu	Leu	Ser	
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aca	ggg	aca	gaa	cac	taggtttaaa	actacttagt	tcaaacatat	cacttttcgaa								1356
Thr	Gly	Thr	Glu	His												
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<210> 22
 <211> 347
 <212> PRT
 <213> Physcomitrella patens

<400> 22

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

PhoenixTemp18436.tmp.txt

210	Ala	Ser	Arg	Leu	Val	215	Ala	Ala	Ser	Ser	Arg	Tyr	220	Lys	Glu	Ser	Leu	Ser
225	Lys	Ser	Thr	Lys	Gly	230	Phe	Arg	Glu	Arg	Leu	235	Arg	Thr	Arg	Gly	Gly	Ile
				245							250					255		
	Met	Gln	Asp	Leu	Gly		Ala	Arg	Ala	Arg	Glu	Met	Ser	Ala	Gly	Met	Ala	
				260						265					270			
	Arg	Ala	Leu	Glu	Arg	Met	Ser	Val	Glu	Thr	Gly	Thr	Asp	Arg	Ser	Asp		
				275				280					285					
	Ala	Ala	Ser	Ser	Leu	Pro	Gly	Gln	Pro	Ser	Gly	Thr	Thr	His	His	Pro		
				290			295						300					
	Pro	Asp	His	Pro	Pro	Asp	Arg	Pro	Asp	Ser	Gly	His	Ser	Ser	Gly	Gly		
305						310					315					320		
	Ser	Pro	Ser	Ser	His	Ser	Ala	Val	Thr	Arg	Thr	Thr	Pro	Ser	Pro	Thr		
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	Ser	Ala	Pro	Glu	Leu	Ser	Thr	Gly	Thr	Glu	His							
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<210> 23
 <211> 2776
 <212> DNA
 <213> Physcomitrella patens

<220>
 <221> CDS
 <222> (127)..(2568)

<400> 23																		
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cgggcc	atg gct gtg tcc	cgt ctt ggt ccc	gct cca agt cca	tcg gcc														168
	Met Ala Val Ser Arg Leu Gly Pro Ala Pro Ser Pro Ser Ala																	
1	5	10																
ggt caa tgg agt ctc tcc agc agg cct ctc cct ctc gca acg agt agg																		216
Val Gln Trp Ser Leu Ser Arg Pro Leu Pro Leu Ala Thr Ser Arg																		
15	20	25																
ttc agt gtg gtt cca gtt cgc gct tcg aaa aat gta gaa gat gga gat																		264
Phe Ser Val Val Pro Val Arg Ala Ser Lys Asn Val Glu Asp Gly Asp																		
	35	40																
act agt ggt ggg tgc gcg gct cta tca cgt cga gct ttg att gct ttg																		312
Thr Ser Gly Gly Cys Ala Ala Leu Ser Arg Arg Ala Leu Ile Ala Leu																		
	50	55																
ata gct ctg tct act caa ttg ggt ggt gtt gcg tcg gcc cga gac att																		360
Ile Ala Leu Ser Thr Gln Leu Gly Val Ala Ser Ala Arg Asp Ile																		
	65	70																
agt ggt ctc ata gag tct tca gtg ggc gag gag gtg tcc tca tta tcc																		408
Ser Gly Leu Ile Glu Ser Ser Val Gly Glu Glu Val Ser Ser Leu Ser																		
	80	85																
ctg agt gca gtt gaa gta ccg aac acg cct aaa atc tct cca ata agc																		456
Leu Ser Ala Val Glu Val Pro Asn Thr Pro Lys Ile Ser Pro Ile Ser																		
	95	100																
act gac cta ggg att ata aat gaa gtg cca aga gct ctt gcg gac agt																		504
Thr Asp Leu Gly Ile Ile Asn Glu Val Pro Arg Ala Leu Ala Asp Ser																		
	115	120																
gga gtt ggt gca gtt gag gaa aag ata aac cag tca gca tct gag gtt																		552
Gly Val Gly Ala Val Glu Glu Lys Ile Asn Gln Ser Ala Ser Glu Val																		
	130	135																
tca tct ggt ggg agt aat ggg ttt gga cct tta agt ctt ggg ggt atc																		600
Ser Ser Gly Ser Asn Gly Phe Gly Pro Leu Ser Leu Gly Gly Ile																		
	145	150																
tta gga acc ggt gtg gcg ggg gcg ttg ttt tat agc gag cga caa tct																		648
Leu Gly Thr Gly Val Ala Gly Ala Leu Phe Tyr Ser Glu Arg Gln Ser																		
	160	165																
aaa gct cag gct gaa tct gca ctt gat gct gcg aaa aag cag ctc cag																		696
Lys Ala Gln Ala Glu Ser Ala Leu Asp Ala Ala Lys Lys Gln Leu Gln																		
	175	180																
gag ctt aga gag acc tca gaa ggg caa tta ctt gca gaa aag cag cta																		744
Glu Leu Arg Glu Thr Ser Glu Gly Gln Leu Leu Ala Glu Lys Gln Leu																		

PhoenixTemp18436.tmp.txt

Phoenix Temp.txt																
195																
gca Ala	caa Gln	aag Lys	gag Glu	gag Ala	agc Ser	aag Lys	gcc Ala	cag Gln	gag Glu	caa Gln	cgc Arg	aca Thr	acg Thr	ctt Leu	act Thr	792
210																
aat Asn	gag Glu	ctc Leu	atg Met	gct Ala	tca Ser	aga Arg	tcc Ser	tcg Ser	ggt Val	act Thr	gat Asp	ctg Leu	gaa Glu	ggg Gly	aag Lys	840
225																
ctt Leu	caa Gln	atg Met	gca Ala	aaa Lys	gct Ala	tca Ser	gtg Val	gtc Val	gat Asp	ctt Leu	cag Gln	gaa Glu	agg Arg	ggt Val	tca Ser	888
240																
agt Ser	ctg Leu	caa Gln	gtc Val	act Thr	ctc Leu	gag Ala	gac Asp	caa Gln	gag Glu	aag Lys	aat Asn	tac Tyr	agt Ser	tca Ser	ctg Leu	936
255																
aat Asn	gga Gly	aga Arg	ttt Phe	gta Val	gag Glu	gaa Glu	aaa Lys	gaa Glu	gta Val	agt Ser	gaa Glu	aag Lys	cta Leu	cgg Arg	aat Asn	984
270																
gaa Glu	att Ile	aca Thr	acg Thr	tta Leu	aaa Lys	tat Tyr	acg Thr	ctt Leu	tcg Ser	gac Asp	aaa Lys	gaa Glu	aag Lys	gat Asp	tac Tyr	1032
290																
aca Thr	tca Ser	ctc Leu	aat Asn	gag Glu	aga Arg	ttt Phe	gtg Val	gag Glu	gag Glu	aaa Lys	gca Ala	act Thr	gct Ala	gaa Glu	gag Glu	1080
305																
ctg Leu	cag Gln	gag Glu	aag Lys	att Ile	aaa Lys	gta Val	ttg Leu	aag Lys	atg Met	gac Asp	atc Ile	gag Glu	gct Ala	aag Lys	gaa Glu	1128
320																
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335																
gtt Val	gca Ala	tcg Ser	ttg Leu	caa Gln	aat Asn	gag Glu	ctt Leu	caa Gln	att Ile	gca Ala	gga Gly	aca Thr	caa Gln	ctt Leu	tct Ser	1224
350																
gaa Glu	gag Glu	cgc Arg	agt Ser	aga Arg	ctg Leu	act Thr	gaa Glu	gtg Val	agc Ser	agt Ser	aaa Lys	ctt Leu	gca Ala	act Thr	ctt Leu	1272
370																
gag Glu	ggg Gly	agt Ser	tat Tyr	gct Ala	gct Ala	tca Ser	cag Gln	gat Asp	tta Leu	aat Asn	aca Thr	cag Gln	ctg Leu	gat Asp	ctt Leu	1320
385																
tcg Ser	atc Ile	agt Ser	gat Asp	ttg Leu	aaa Lys	caa Gln	aaa Lys	cta Leu	cag Gln	act Thr	aca Thr	aac Asn	agt Ser	aga Arg	aag Lys	1368
400																
gag Glu	gag Ala	ctc Leu	gag Glu	aaa Lys	gag Glu	gtg Val	aca Thr	agc Ser	ttg Leu	aat Asn	gaa Glu	gtg Val	ata Ile	aac Asn	tcg Ser	1416
415																
ctg Leu	aaa Lys	gga Gly	acc Thr	ttg Leu	gca Ala	gaa Glu	gag Glu	aat Asn	gac Asp	aag Lys	aag Lys	gac Asp	acc Thr	ctg Leu	tat Tyr	1464
430																
ggc Gly	cag Gln	ctc Leu	aag Lys	gta Val	act Thr	tca Ser	ggg Gly	gct Ala	tta Leu	gag Glu	aag Lys	gca Ala	aca Thr	tcg Ser	gag Glu	1512
445																
gtg Val	cag Gln	ttg Leu	ctg Leu	gag Glu	caa Gln	cgg Arg	gtt Val	acg Thr	aat Asn	atg Met	tct Ser	gca Ala	gct Ala	gta Val	aaa Lys	1560
460																
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475																
ctc Leu	caa Gln	gag Glu	aga Arg	att Ile	aag Lys	tca Ser	ctt Leu	gat Asp	gtg Val	gcc Ala	cag Gln	caa Gln	aaa Lys	tgt Cys	caa Gln	1656
490																
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505																
aat Asn	gaa Glu	gag Glu	ttg Leu	gac Asp	aac Asn	aca Thr	aac Asn	aaa Lys	gaa Glu	ttg Leu	gag Glu	gca Ala	tca Ser	acc Thr	gat Asp	1752
520																
gaa Glu	ttt Phe	aaa Lys	acc Thr	ata Ile	agt Ser	gag Glu	cag Gln	cta Leu	aca Thr	gtc Val	gct Ala	gtt Val	aac Asn	tta Leu	agt Ser	1800
535																
ttg Leu	aag Lys	ctg Glu	gaa Glu	acc Thr	caa Gln	tta Leu	aac Asn	gag Glu	acg Thr	aga Arg	gca Ala	tat Tyr	caa Gln	agc Ser		1848

PhoenixTemp18436.tmp.txt

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Ala Asn Val Ala Leu Ala Glu Glu Arg Lys Val Thr Ala Ala Ala Lys	Glu Glu Arg Lys Val Thr Ala Ala Ala Lys	Glu Glu Arg Lys Val Thr Ala Ala Ala Lys	
575	580	585	590
aat cag tta gct aca caa agg tct ctc ata gcg gaa aag aac agt	caa agg tct ctc ata gcg gaa aag aac agt	caa agg tct ctc ata gcg gaa aag aac agt	1944
Asn Gln Leu Ala Thr Gln Arg Ser Leu Ile Ala Glu Lys Asn Ser	Gln Arg Ser Leu Ile Ala Glu Lys Asn Ser	Gln Arg Ser Leu Ile Ala Glu Lys Asn Ser	
595	600	605	
gta aaa gct ctg cga gga agt gtg gac caa gct ctc cag gca ctt cag	aaa gct ctg cga gga agt gtg gac caa gct ctc cag gca ctt cag	aaa gct ctg cga gga agt gtg gac caa gct ctc cag gca ctt cag	1992
Val Lys Ala Leu Arg Gly Ser Val Asp Gln Ala Leu Gln Ala Leu Gln	Lys Ala Leu Arg Gly Ser Val Asp Gln Ala Leu Gln Ala Leu Gln	Lys Ala Leu Arg Gly Ser Val Asp Gln Ala Leu Gln Ala Leu Gln	
610	615	620	
gag ctc aac caa gat tca gtc gcc tta gca gat gag ctc gac aaa gca	ctc aac caa gat tca gtc gcc tta gca gat gag ctc gac aaa gca	ctc aac caa gat tca gtc gcc tta gca gat gag ctc gac aaa gca	2040
Glu Leu Asn Gln Asp Ser Val Ala Leu Ala Asp Glu Leu Asp Lys Ala	Leu Asn Gln Asp Ser Val Ala Leu Ala Asp Glu Leu Asp Lys Ala	Leu Asn Gln Asp Ser Val Ala Leu Ala Asp Glu Leu Asp Lys Ala	
625	630	635	
aaa aag aaa atc gcc aac ttg gag gca gag agt gca tca gta cgt caa	aag aaa atc gcc aac ttg gag gca gag agt gca tca gta cgt caa	aag aaa atc gcc aac ttg gag gca gag agt gca tca gta cgt caa	2088
Lys Lys Lys Ile Ala Asn Leu Glu Ala Glu Ser Ala Ser Val Arg Gln	Lys Lys Lys Ile Ala Asn Leu Glu Ala Glu Ser Ala Ser Val Arg Gln	Lys Lys Lys Ile Ala Asn Leu Glu Ala Glu Ser Ala Ser Val Arg Gln	
640	645	650	
aag ctt ggt aag gag aaa gaa atg tct gct aat tta aga tca ggg gct	ctt ggt aag gag aaa gaa atg tct gct aat tta aga tca ggg gct	ctt ggt aag gag aaa gaa atg tct gct aat tta aga tca ggg gct	2136
Lys Leu Gly Lys Glu Lys Glu Met Ser Ala Asn Leu Arg Ser Gly Ala	Leu Gly Lys Glu Met Ser Ala Asn Leu Arg Ser Gly Ala	Leu Gly Lys Glu Met Ser Ala Asn Leu Arg Ser Gly Ala	
655	660	665	670
gca gaa gct gaa ggt act ata gct agg ctc ctt aag gag aat gac gcc	gaa gct gaa ggt act ata gct agg ctc ctt aag gag aat gac gcc	gaa gct gaa ggt act ata gct agg ctc ctt aag gag aat gac gcc	2184
Ala Glu Ala Glu Gly Thr Ile Ala Arg Leu Lys Glu Asn Asp Ala	Glu Ala Glu Gly Thr Ile Ala Arg Leu Lys Glu Asn Asp Ala	Glu Ala Glu Gly Thr Ile Ala Arg Leu Lys Glu Asn Asp Ala	
675	680	685	
ggc aat aaa aag gtg aag cag ttg gaa ggt gag gta ctg aag agc aaa	aat aaa aag gtg aag cag ttg gaa ggt gag gta ctg aag agc aaa	aat aaa aag gtg aag cag ttg gaa ggt gag gta ctg aag agc aaa	2232
Gly Asn Lys Lys Val Lys Gln Leu Glu Gly Glu Val Leu Lys Ser Lys	Asn Lys Lys Val Lys Gln Leu Glu Gly Glu Val Leu Lys Ser Lys	Asn Lys Lys Val Lys Gln Leu Glu Gly Glu Val Leu Lys Ser Lys	
690	695	700	
ggg gag acg gcc aaa cag aag gga aag ctt ttg gaa caa aaa cgt gca	gag acg gcc aaa cag aag gga aag ctt ttg gaa caa aaa cgt gca	gag acg gcc aaa cag aag gga aag ctt ttg gaa caa aaa cgt gca	2280
Gly Glu Thr Ala Lys Gln Lys Gly Lys Leu Leu Glu Gln Lys Arg Ala	Glu Thr Ala Lys Gln Lys Gly Lys Leu Leu Glu Gln Lys Arg Ala	Glu Thr Ala Lys Gln Lys Gly Lys Leu Leu Glu Gln Lys Arg Ala	
705	710	715	
ttg caa caa gct gag aca cgt ctg aaa atg atc cct cag gtt cgt gcg	caa caa gct gag aca cgt ctg aaa atg atc cct cag gtt cgt gcg	caa caa gct gag aca cgt ctg aaa atg atc cct cag gtt cgt gcg	2328
Leu Gln Gln Ala Glu Thr Arg Leu Lys Met Ile Pro Gln Val Arg Ala	Gln Gln Ala Glu Thr Arg Leu Lys Met Ile Pro Gln Val Arg Ala	Gln Gln Ala Glu Thr Arg Leu Lys Met Ile Pro Gln Val Arg Ala	
720	725	730	
gag gct gca tta ttg gtt gag aag tac gag gat cta gct tat caa gaa	gct gca tta ttg gtt gag aag tac gag gat cta gct tat caa gaa	gct gca tta ttg gtt gag aag tac gag gat cta gct tat caa gaa	2376
Glu Ala Ala Leu Leu Val Glu Lys Tyr Glu Asp Leu Ala Tyr Gln Glu	Ala Ala Leu Leu Val Glu Lys Tyr Glu Asp Leu Ala Tyr Gln Glu	Ala Ala Leu Leu Val Glu Lys Tyr Glu Asp Leu Ala Tyr Gln Glu	
735	740	745	750
aaa gag caa aag gaa gct ata atg cgt gag aat gaa cag ctg aat aag	gag caa aag gaa gct ata atg cgt gag aat gaa cag ctg aat aag	gag caa aag gaa gct ata atg cgt gag aat gaa cag ctg aat aag	2424
Lys Glu Gln Lys Glu Ala Ile Met Arg Glu Asn Glu Gln Leu Asn Lys	Glu Gln Lys Glu Ala Ile Met Arg Glu Asn Glu Gln Leu Asn Lys	Glu Gln Lys Glu Ala Ile Met Arg Glu Asn Glu Gln Leu Asn Lys	
755	760	765	
tct ggc aag acg gtc ggt gca gac ctc agt gag gtt aaa cag agc tta	gcg aag acg gtc ggt gca gac ctc agt gag gtt aaa cag agc tta	gcg aag acg gtc ggt gca gac ctc agt gag gtt aaa cag agc tta	2472
Ser Gly Lys Thr Val Gly Ala Asp Leu Ser Glu Val Lys Gln Ser Leu	Gly Lys Thr Val Gly Ala Asp Leu Ser Glu Val Lys Gln Ser Leu	Gly Lys Thr Val Gly Ala Asp Leu Ser Glu Val Lys Gln Ser Leu	
770	775	780	
gag gac ggt caa ggc agc acg atc gat atc gaa ggg cga att cca gca	gac ggt caa ggc agc acg atc gat atc gaa ggg cga att cca gca	gac ggt caa ggc agc acg atc gat atc gaa ggg cga att cca gca	2520
Glu Asp Gly Gln Gly Ser Thr Ile Asp Ile Glu Gly Arg Ile Pro Ala	ggt caa ggc agc acg atc gat atc gaa ggg cga att cca gca	ggt caa ggc agc acg atc gat atc gaa ggg cga att cca gca	
785	790	795	
cac tgg cgg ccg tta cta gtg gat ccg agc tcg gta cca agc ttg gcg	tgg cgg ccg tta cta gtg gat ccg agc tcg gta cca agc ttg gcg	tgg cgg ccg tta cta gtg gat ccg agc tcg gta cca agc ttg gcg	2568
His Trp Arg Pro Leu Leu Val Asp Pro Ser Ser Val Pro Ser Leu Ala	Trp Arg Pro Leu Leu Val Asp Pro Ser Ser Val Pro Ser Leu Ala	Trp Arg Pro Leu Leu Val Asp Pro Ser Ser Val Pro Ser Leu Ala	
800	805	810	
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atacgagccg gaagcataaa gtgtaaagcc tggggtgcct aatgagtgag ctaactcaca	gaagcataaa gtgtaaagcc tggggtgcct aatgagtgag ctaactcaca	gaagcataaa gtgtaaagcc tggggtgcct aatgagtgag ctaactcaca	2688
ttaattgcgt tgcgctcact gcccgctttc cagtcgggaa acctgtcgtg ccagctgcat	tgcgctcact gcccgctttc cagtcgggaa acctgtcgtg ccagctgcat	tgcgctcact gcccgctttc cagtcgggaa acctgtcgtg ccagctgcat	2748
taatgaatcg gccaacgcgc ggggagaa	gccaacgcgc ggggagaa	gccaacgcgc ggggagaa	2776

<210> 24
 <211> 814
 <212> PRT
 <213> Physcomitrella patens

<400> 24
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 Trp Ser Leu Ser Ser Arg Pro Leu Pro Leu Ala Thr Ser Arg Phe Ser
 20 25 30
 Val Val Pro Val Arg Ala Ser Lys Asn Val Glu Asp Gly Asp Thr Ser
 35 40 45
 Gly Gly Cys Ala Ala Leu Ser Arg Arg Ala Leu Ile Ala Leu Ile Ala
 50 55 60
 Leu Ser Thr Gln Leu Gly Gly Val Ala Ser Ala Arg Asp Ile Ser Gly
 65 70 75 80
 Leu Ile Glu Ser Ser Val Gly Glu Glu Val Ser Ser Leu Ser Leu Ser

PhoenixTemp18436.tmp.txt

ProteinXTemp184306.tmp.txt															
85															
Ala	Val	Glu	Val	Pro	Asn	Thr	Pro	Lys	Ile	Ser	Pro	Ile	Ser	Thr	Asp
Leu	Gly	Ile	Ile	Asn	Glu	Val	Pro	Arg	Ala	Leu	Ala	Asp	Ser	Gly	Val
Gly	Ala	Val	Glu	Glu	Lys	Ile	Asn	Gln	Ser	Ala	Ser	Glu	Val	Ser	Ser
Gly	Gly	Ser	Asn	Gly	Phe	Gly	Pro	Leu	Ser	Leu	Gly	Gly	Ile	Leu	Gly
Thr	Gly	Val	Ala	Gly	Ala	Leu	Phe	Tyr	Ser	Glu	Arg	Gln	Ser	Lys	Ala
Gln	Ala	Glu	Ser	Ala	Leu	Asp	Ala	Ala	Lys	Lys	Gln	Leu	Gln	Glu	Leu
Arg	Glu	Thr	Ser	Glu	Gly	Gln	Leu	Leu	Ala	Glu	Lys	Gln	Leu	Ala	Gln
Lys	Glu	Ala	Ser	Lys	Ala	Gln	Glu	Gln	Arg	Thr	Thr	Leu	Thr	Asn	Glu
Leu	Met	Ala	Ser	Arg	Ser	Ser	Val	Thr	Asp	Leu	Glu	Gly	Lys	Leu	Gln
Met	Ala	Lys	Ala	Ser	Val	Val	Asp	Leu	Gln	Glu	Arg	Val	Ser	Ser	Leu
Gln	Val	Thr	Leu	Ala	Asp	Gln	Glu	Lys	Asn	Tyr	Ser	Ser	Leu	Asn	Gly
Arg	Phe	Val	Glu	Glu	Lys	Glu	Val	Ser	Glu	Lys	Leu	Arg	Asn	Glu	Ile
Thr	Thr	Leu	Lys	Tyr	Thr	Leu	Ser	Asp	Lys	Glu	Lys	Asp	Tyr	Thr	Ser
Leu	Asn	Glu	Arg	Phe	Val	Glu	Glu	Lys	Ala	Thr	Ala	Glu	Glu	Leu	Gln
Glu	Lys	Ile	Lys	Val	Leu	Lys	Met	Asp	Ile	Glu	Ala	Lys	Glu	Asn	Glu
Ile	Asn	Val	Gln	Thr	Ala	Arg	Ile	Lys	Glu	Glu	Gln	Asp	Ser	Val	Ala
Ser	Leu	Gln	Asn	Glu	Leu	Gln	Ile	Ala	Gly	Thr	Gln	Leu	Ser	Glu	Glu
Arg	Ser	Arg	Leu	Thr	Glu	Val	Ser	Ser	Lys	Leu	Ala	Thr	Leu	Glu	Gly
Ser	Tyr	Ala	Ala	Ser	Gln	Asp	Leu	Asn	Thr	Gln	Leu	Asp	Leu	Ser	Ile
Ser	Asp	Leu	Lys	Gln	Lys	Leu	Gln	Thr	Thr	Asn	Ser	Arg	Lys	Glu	Ala
Leu	Glu	Lys	Glu	Val	Thr	Ser	Leu	Asn	Glu	Val	Ile	Asn	Ser	Leu	Lys
Gly	Thr	Leu	Ala	Glu	Glu	Asn	Asp	Lys	Lys	Asp	Thr	Leu	Tyr	Gly	Gln
Leu	Lys	Val	Thr	Ser	Gly	Ala	Leu	Glu	Lys	Ala	Thr	Ser	Glu	Val	Gln
Leu	Leu	Glu	Gln	Arg	Val	Thr	Asn	Met	Ser	Ala	Ala	Val	Lys	Ala	Leu
Glu	Lys	Glu	Lys	Asn	Gly	Glu	Ile	Asn	Gln	Leu	Thr	Lys	Glu	Leu	Gln
Glu	Arg	Ile	Lys	Ser	Leu	Asp	Val	Ala	Gln	Gln	Lys	Cys	Gln	Ala	Phe
Ser	Asn	Glu	Ile	Ser	Thr	Leu	Lys	Arg	Gln	Gln	Ala	Ala	Leu	Asn	Glu
Glu	Leu	Asp	Asn	Thr	Asn	Lys	Glu	Leu	Glu	Ala	Ser	Thr	Asp	Glu	Phe
Lys	Thr	Ile	Ser	Glu	Gln	Leu	Thr	Val	Ala	Val	Asn	Leu	Ser	Leu	Lys
Leu	Glu	Thr	Gln	Leu	Asn	Glu	Thr	Arg	Ala	Ala	Tyr	Gln	Ser	Ala	Asn
Val	Ala	Leu	Ala	Glu	Glu	Arg	Lys	Val	Thr	Ala	Ala	Ala	Lys	Asn	Gln
Leu	Ala	Thr	Gln	Gln	Arg	Ser	Leu	Ile	Ala	Glu	Lys	Asn	Ser	Val	Lys
Ala	Leu	Arg	Gly	Ser	Val	Asp	Gln	Ala	Leu	Gln	Ala	Leu	Gln	Glu	Leu
Asn	Gln	Asp	Ser	Val	Ala	Leu	Ala	Asp	Glu	Leu	Asp	Lys	Ala	Lys	Lys

PhoenixTemp18436.tmp.txt

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

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 ttatcgctga tgaagaagtg aggagcttct gagaggcaga gttgcatcag gttgtaacaa 180
 aacgcgattc cttcagtgtc gaatcaccag caggaggctt aaaa atg gta ggg aat 236
 Met Val Gly Asn
 1
 ggc aga aga atg aac cgc ttg gtg gcg ttc tta gtg gtg gtc tgt tca 284
 Gly Arg Arg Met Asn Arg Leu Val Ala Phe Leu Val Val Val Cys Ser
 5 10 15 20
 gcc gtc tca gga tgc aga gca tgg gac tgc tcg gca gcg gat aaa cag 332
 Ala Val Ser Gly Cys Arg Ala Trp Asp Cys Ser Ala Ala Asp Lys Gln
 25 30 35
 aca ctg cta gac ttc aag aat ggg ttc gtg gac acg aac gga gtg ttc 380
 Thr Leu Leu Asp Phe Lys Asn Gly Phe Val Asp Thr Asn Gly Val Phe
 40 45 50
 aac acc tgg agt gat agc act gtg aac tgc tgc gca tgg aag ggc atc 428
 Asn Thr Trp Ser Asp Ser Thr Val Asn Cys Cys Ala Trp Lys Gly Ile
 55 60 65
 aca tgt cgc gag tca gat ggc gca att ttg gag atc aac atc gtg gga 476
 Thr Cys Arg Glu Ser Asp Gly Ala Ile Leu Glu Ile Asn Ile Val Gly
 70 75 80
 tcc tct ggc aca aac cag cag cca tac cgc agc ccg agc tac caa ggc 524
 Ser Ser Gly Thr Asn Gln Gln Pro Tyr Arg Ser Pro Ser Tyr Gln Gly
 85 90 95 100
 aca gtt ggc gca ggg ctg gtg gcg ctc acc caa ttg cag aaa ctc aag 572
 Thr Val Gly Ala Gly Leu Val Ala Leu Thr Gln Leu Gln Lys Leu Lys
 105 110 115
 atc gag tgg gtg ctc ttc aac ggc ccc atc cct cag cag tgg gga gat 620
 Ile Glu Trp Val Leu Phe Asn Gly Pro Ile Pro Gln Gln Trp Gly Asp
 120 125 130
 ttc tcc acc act ctc gtg ttg atc acc atc aac aac gcc aac ctc cgc 668
 Phe Ser Thr Thr Leu Val Leu Ile Thr Ile Asn Asn Ala Asn Leu Arg
 135 140 145
 aac gac ata ccc tcc acc ctg gtt aac atc cag aac cta cgg cac ctg 716
 Asn Asp Ile Pro Ser Thr Leu Val Asn Ile Gln Asn Leu Arg His Leu

PhoenixTemp18436.tmp.txt

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150                               155                               160
gac ctc aag aac aac cac ctt acg ggc tcc atc ccc tcc acc ttc tgc      764
Asp Leu Lys Asn Asn His Leu Thr Gly Ser Ile Pro Ser Thr Phe Cys
165                               170                               175                               180
acg cac aag aag atc aac tac atc gat gtc tcc tac aac gac atg acc      812
Thr His Lys Lys Ile Asn Tyr Ile Asp Val Ser Tyr Asn Asp Met Thr
185                               190                               195
tac ctt ctt gtc cct ccg tgc tta gta aac caa aat aac ctc acc gtc      860
Tyr Leu Leu Val Pro Pro Cys Leu Val Asn Gln Asn Asn Leu Thr Val
200                               205                               210
atc ttt gat cac cag ggt aac agt act agc ccc ggc tat cct gcg gca      908
Ile Phe Asp His Gln Gly Asn Ser Thr Ser Pro Gly Tyr Pro Ala Ala
215                               220                               225
ggc tcc acc ctc aca gtc tcg tcg ttg ctc ctc gca atc gga gct ctc      956
Gly Ser Thr Leu Thr Val Ser Ser Leu Leu Leu Ala Ile Gly Ala Leu
230                               235                               240
acc act gct ctc ctc ttc ctc tgaggaaatc caccctttt cctcgtggtc      1007
Thr Thr Ala Leu Leu Phe Leu
245                               250
aggcaaaccc taactcatta ctgcaatacc cagaacacag ttcttgagaa gggaattttg      1067
atgccgtctc catccctaac tctctcgctc tcactcgtgc gcgcgcacgc gggatctctt      1127
cgttatgaaa aaattaataa gtgccccgga gagattttgt ctgtgatgtc ggaatttgca      1187
gaggaatgaa gcagtcaggt gcacgtaatg tccaaaaggt aacaatcgaa tcacaaggat      1247
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ttgatccttg ggatgtatgc tgtattagtg aaaacctttg tcaaggacag cgctactctg      1367
ttgaatgttt aagcttaagc tgggctgtaa catccagtta aggaataaag ccttaactat      1427
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<210> 26
 <211> 251
 <212> PRT
 <213> Physcomitrella patens

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

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PhoenixTemp18436.tmp.txt

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 <212> DNA
 <213> Physcomitrella patens

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 ctgtgggggtt gtgtccttgt agac atg gca ggc att tcg agg gat atc cgc 171
 Met Ala Gly Ile Ser Arg Asp Ile Arg
 1 5
 gga aca gta gag aat ttg gtc cgt ctg acc tcc gat agc aac agc acc 219
 Gly Thr Val Glu Asn Leu Val Arg Leu Thr Ser Asp Ser Asn Ser Thr
 10 15 20 25
 gat cca ctc aaa ctc aac gtt cta caa tgt cag ttg gtt gct aag aaa 267
 Asp Pro Leu Lys Leu Asn Val Leu Gln Cys Gln Leu Val Ala Lys Lys
 30 35 40
 gcg gcc gac agt tcg tac acc ttg aac gac ctt gag gct tat cag cgc 315
 Ala Ala Asp Ser Ser Tyr Thr Leu Asn Asp Leu Glu Ala Tyr Gln Arg
 45 50 55
 agg cat gag aaa agc tcc gat gga cgc atc gct ggt acc gga ttt cga 363
 Arg His Glu Lys Ser Ser Asp Gly Arg Ile Ala Gly Thr Gly Phe Arg
 60 65 70
 gcc gct aag gaa ctt ctc cga gtg ctg aag gac gcc gag att ctt atc 411
 Ala Ala Lys Glu Leu Leu Arg Val Leu Lys Asp Ala Glu Ile Leu Ile
 75 80 85
 aga gag tgc tgc tct gaa aag tgg aag aaa gtg gtg ttc aaa cgc gga 459
 Arg Glu Cys Cys Ser Glu Lys Trp Lys Lys Val Val Phe Lys Arg Gly
 90 95 100 105
 aaa ttg caa gag act ttt gcg aag ata gcg tat gag att gag tgg cac 507
 Lys Leu Gln Glu Thr Phe Ala Lys Ile Ala Tyr Glu Ile Glu Trp His
 110 115 120
 tcg ttg gtg ttg tac agc gtc ttg gtg gca cag agc gac atc tat gac 555
 Ser Leu Val Leu Tyr Ser Val Leu Val Ala Gln Ser Asp Ile Tyr Asp
 125 130 135
 aag agg acg tgc gat ggt aag ctg agg tcc atc gac cat gcc agg ttg 603
 Lys Arg Thr Cys Asp Gly Lys Leu Arg Ser Ile Asp His Ala Arg Leu
 140 145 150
 ata ctt gcg gca agg caa gac cta gat tct ttg agg gcc ctt ctc caa 651
 Ile Leu Ala Ala Arg Gln Asp Leu Asp Ser Leu Arg Ala Leu Leu Gln
 155 160 165
 ggc cca cac gtt tgt gat gaa ata tgt aaa cca gac ttt tgt tcc gaa 699
 Gly Pro His Val Cys Asp Glu Ile Cys Lys Pro Asp Phe Cys Ser Glu
 170 175 180 185
 tgc ctc aag gat aaa gta ctt cag cag tgg gat aca gaa gaa aaa gaa 747
 Cys Leu Lys Asp Lys Val Leu Gln Gln Trp Asp Thr Glu Glu Lys Glu
 190 195 200
 ttg gag gac agg agc tct ctg tcg caa att atg tca tct atc ttc tca 795
 Leu Glu Asp Arg Ser Ser Leu Ser Gln Ile Met Ser Ser Ile Phe Ser
 205 210 215
 tgg gtt caa ccg cag ttt gat tct aaa aga caa cag aat gga aaa gta 843
 Trp Val Gln Pro Gln Phe Asp Ser Lys Arg Gln Gln Asn Gly Lys Val
 220 225 230
 ggc gtt gct gaa gtg aaa gag ata aaa tgg ctt ggg caa atg tat gca 891
 Gly Val Ala Glu Val Lys Glu Ile Lys Trp Leu Gly Gln Met Tyr Ala
 235 240 245
 atg aag act ttc aac aaa gat gcg act cac gag gca cac ttc agg gag 939
 Met Lys Thr Phe Asn Lys Asp Ala Thr His Glu Ala His Phe Arg Glu
 250 255 260 265
 gag gtt tct gat atg gct gcc ctt gac cat ccg aat gta gtc cgt atc 987
 Glu Val Ser Asp Met Ala Ala Leu Asp His Pro Asn Val Val Arg Ile
 270 275 280
 atc tgt tgt tgg gaa gac aaa aac tac gta agt atc ttg atg gaa ccg 1035
 Ile Cys Cys Trp Glu Asp Lys Asn Tyr Val Ser Ile Leu Met Glu Pro
 285 290 295

PhoenixTemp18436.tmp.txt

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cat	gct	ccg	tct	gca	cct	acc	cca	ttt	aca	atc	tta	aat	tca	gtc	gat	1131
His	Ala	Pro	Ser	Ala	Pro	Thr	Pro	Phe	Thr	Ile	Leu	Asn	Ser	Val	Asp	
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Ile	Met	Leu	Gln	Ile	Ala	Glu	Gly	Val	Arg	Tyr	Val	His	Ser	Lys	Asn	
330					335					340					345	
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Phe	Thr	His	Leu	Asp	Ile	Met	Ser	Leu	Asn	Val	Leu	Val	Gln	Phe	Ala	
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gat	cct	atc	acc	tca	aca	gat	gtg	aag	gat	tct	gat	aca	gtg	acc	att	1275
Asp	Pro	Ile	Thr	Ser	Thr	Asp	Val	Lys	Asp	Ser	Asp	Thr	Val	Thr	Ile	
			365					370					375			
tcc	agc	aga	tct	aca	tct	ttc	acg	gtc	aaa	ctt	gca	gac	ttc	ggg	ttg	1323
Ser	Ser	Arg	Ser	Thr	Ser	Phe	Thr	Val	Lys	Leu	Ala	Asp	Phe	Gly	Leu	
		380					385					390				
aag	agg	ata	atc	aat	gaa	aaa	ggg	cgt	cgg	aca	tca	aac	tct	gtc	aag	1371
Lys	Arg	Ile	Ile	Asn	Glu	Lys	Gly	Arg	Arg	Thr	Ser	Asn	Ser	Val	Lys	
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aca	gca	tgg	aca	gct	cca	gag	gct	tac	aag	ctc	aga	aaa	ggc	gaa	gat	1419
Thr	Ala	Trp	Thr	Ala	Pro	Glu	Ala	Tyr	Lys	Leu	Arg	Lys	Gly	Glu	Asp	
410					415					420					425	
tca	gcc	tgg	ttc	cac	ccc	agg	aaa	gca	gac	gtt	tat	agc	ttt	gcg	ata	1467
Ser	Ala	Trp	Phe	His	Pro	Arg	Lys	Ala	Asp	Val	Tyr	Ser	Phe	Ala	Ile	
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acg	tgc	tcc	gag	ata	ctt	aca	gga	gat	cac	cct	ttc	gca	cat	ttc	aat	1515
Thr	Cys	Ser	Glu	Ile	Leu	Thr	Gly	Asp	His	Pro	Phe	Ala	His	Phe	Asn	
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gcg	gac	tac	aat	ttc	gat	gct	gta	aag	gat	ggg	gac	cgg	ccg	agg	ttg	1563
Ala	Asp	Tyr	Asn	Phe	Asp	Ala	Val	Lys	Asp	Gly	Asp	Arg	Pro	Arg	Leu	
		460					465					470				
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Pro	Gly	Glu	Thr	Pro	Arg	Arg	Leu	Ala	Ala	Leu	Ile	His	Arg	Cys	Trp	
	475					480					485					
cac	cga	aac	cct	caa	cta	cgc	cct	gat	ttt	acc	gca	att	tgc	acg	gag	1659
His	Arg	Asn	Pro	Gln	Leu	Arg	Pro	Asp	Phe	Thr	Ala	Ile	Cys	Thr	Glu	
490					495					500					505	
ctt	cga	ttc	atc	aag	ggg	ctt	gcc	ttg	cga	ggg	gat	atc	aaa	tca	ctg	1707
Leu	Arg	Phe	Ile	Lys	Gly	Leu	Ala	Leu	Arg	Gly	Asp	Ile	Lys	Ser	Leu	
				510					515					520		
cac	caa	aca	gat	gtt	ggc	aat	gaa	gcc	aat	ttt	cat	atg	gag	aca	gga	1755
His	Gln	Thr	Asp	Val	Gly	Asn	Glu	Ala	Asn	Phe	His	Met	Glu	Thr	Gly	
			525					530					535			
gtt	aag	gta	caa	ggg	cca	tgg	gga	ggc	aat	ggg	gga	ggg	caa	ttc	ttt	1803
Val	Lys	Val	Gln	Gly	Pro	Trp	Gly	Gly	Asn	Gly	Gly	Gly	Gln	Phe	Phe	
		540					545					550				
gat	gga	ata	gtc	aca	tcc	ata	aag	cag	ata	acc	atg	aag	tat	agc	aca	1851
Asp	Gly	Ile	Val	Thr	Ser	Ile	Lys	Gln	Ile	Thr	Met	Lys	Tyr	Ser	Thr	
	555					560					565					
gac	cca	tcc	cct	tgc	ata	ttc	tac	atg	gag	atg	gag	tac	aac	atg	aat	1899
Asp	Pro	Ser	Pro	Cys	Ile	Phe	Tyr	Met	Glu	Met	Glu	Tyr	Asn	Met	Asn	
570					575					580					585	
gga	aca	tca	ttt	ttt	att	ggg	cat	gga	gat	gcc	aat	cat	ggg	tcg	aac	1947
Gly	Thr	Ser	Phe	Phe	Ile	Gly	His	Gly	Asp	Ala	Asn	His	Gly	Ser	Asn	
				590					595					600		
tct	tca	act	atc	aag	ata	gac	gag	cct	agt	gaa	tac	atc	aca	aaa	gtt	1995
Ser	Ser	Thr	Ile	Lys	Ile	Asp	Glu	Pro	Ser	Glu	Tyr	Ile	Thr	Lys	Val	
			605					610					615			
gaa	ggg	tca	tat	ggc	agc	acc	cca	atg	tgg	tgt	gga	ggc	aag	caa	gtg	2043
Glu	Gly	Ser	Tyr	Gly	Ser	Thr	Pro	Met	Trp	Cys	Gly	Gly	Lys	Gln	Val	
		620					625					630				
gag	agt	tta	aca	tcc	tta	acc	ata	cac	acc	aat	gtg	aaa	gca	cat	gga	2091
Glu	Ser	Leu	Thr	Ser	Leu	Thr	Ile	His	Thr	Asn	Val	Lys	Ala	His	Gly	
	635					640					645					
ccc	ttt	gga	ggg	aag	tgc	aca	tcc	aag	ttc	aaa	agt	gaa	tat	ggc	aga	2139
Pro	Phe	Gly	Gly	Lys	Cys	Thr	Ser	Lys	Phe	Lys	Ser	Glu	Tyr	Gly	Arg	
650					655					660					665	

PhoenixTemp18436.tmp.txt

```

gtt gtg ggt ttc cat gga aga agt ggt ttg ggg ctt gat tct att ggt      2187
Val Val Gly Phe His Gly Arg Ser Gly Leu Gly Leu Asp Ser Ile Gly
                               670                               675                               680

tgt ttt aca gta ccc att gaa gtt tgatgtatcc aaaatgaata ccttgggaga      2241
Cys Phe Thr Val Pro Ile Glu Val
                               685

tgattgtcat gtgcatcaat ctttacagta actgtgtaat aatattgtca taggcttcta      2301
gaaagttact taccaaaaagt aggtatacag tagaaaatgga tgtgattcta ttggctaagt      2361
agcaatgtag taaattgggtg aggtgtagca cttcaatatt tcatcatgaa tactcgtggc      2421
agaagaaaac attaaaaaaa actaaaagca ttatcttaca ggaatgttat gagtgcagg      2481
cgtaaacc                                                                2489

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<210> 28
 <211> 689
 <212> PRT
 <213> Physcomitrella patens

<400> 28

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Met Ala Gly Ile Ser Arg Asp Ile Arg Gly Thr Val Glu Asn Leu Val
1      5      10      15
Arg Leu Thr Ser Asp Ser Asn Ser Thr Asp Pro Leu Lys Leu Asn Val
      20      25      30
Leu Gln Cys Gln Leu Val Ala Lys Ala Ala Asp Ser Tyr Thr
      35      40      45
Leu Asn Asp Leu Glu Ala Tyr Gln Arg Arg His Glu Lys Ser Ser Asp
      50      55      60
Gly Arg Ile Ala Gly Thr Gly Phe Arg Ala Ala Lys Glu Leu Leu Arg
      65      70      75      80
Val Leu Lys Asp Ala Glu Ile Leu Ile Arg Glu Cys Cys Ser Glu Lys
      85      90      95
Trp Lys Lys Val Val Phe Lys Arg Gly Lys Leu Gln Glu Thr Phe Ala
      100      105      110
Lys Ile Ala Tyr Glu Ile Glu Trp His Ser Leu Val Leu Tyr Ser Val
      115      120      125
Leu Val Ala Gln Ser Asp Ile Tyr Asp Lys Arg Thr Cys Asp Gly Lys
      130      135      140
Leu Arg Ser Ile Asp His Ala Arg Leu Ile Leu Ala Ala Arg Gln Asp
      145      150      155      160
Leu Asp Ser Leu Arg Ala Leu Leu Gln Gly Pro His Val Cys Asp Glu
      165      170      175
Ile Cys Lys Pro Asp Phe Cys Ser Glu Cys Leu Lys Asp Lys Val Leu
      180      185      190
Gln Gln Trp Asp Thr Glu Glu Lys Glu Leu Glu Asp Arg Ser Ser Leu
      195      200      205
Ser Gln Ile Met Ser Ser Ile Phe Ser Trp Val Gln Pro Gln Phe Asp
      210      215      220
Ser Lys Arg Gln Gln Asn Gly Lys Val Gly Val Ala Glu Val Lys Glu
      225      230      235      240
Ile Lys Trp Leu Gly Gln Met Tyr Ala Met Lys Thr Phe Asn Lys Asp
      245      250      255
Ala Thr His Glu Ala His Phe Arg Glu Glu Val Ser Asp Met Ala Ala
      260      265      270
Leu Asp His Pro Asn Val Val Arg Ile Ile Cys Cys Trp Glu Asp Lys
      275      280      285
Asn Tyr Val Ser Ile Leu Met Glu Pro Leu Arg Lys Ser Leu His Asn
      290      295      300
Leu Leu Leu Asn Tyr Lys Asp Gly Thr His Ala Pro Ser Ala Pro Thr
      305      310      315      320
Pro Phe Thr Ile Leu Asn Ser Val Asp Ile Met Leu Gln Ile Ala Glu
      325      330      335
Gly Val Arg Tyr Val His Ser Lys Asn Phe Thr His Leu Asp Ile Met
      340      345      350
Ser Leu Asn Val Leu Val Gln Phe Ala Asp Pro Ile Thr Ser Thr Asp
      355      360      365
Val Lys Asp Ser Asp Thr Val Thr Ile Ser Ser Arg Ser Thr Ser Phe
      370      375      380
Thr Val Lys Leu Ala Asp Phe Gly Leu Lys Arg Ile Ile Asn Glu Lys
      385      390      395      400

```

PhoenixTemp18436.tmp.txt

Gly Arg Arg Thr Ser Asn Ser Val Lys Thr Ala Trp Thr Ala Pro Glu
 405 410 415
 Ala Tyr Lys Leu Arg Lys Gly Glu Asp Ser Ala Trp Phe His Pro Arg
 420 425 430
 Lys Ala Asp Val Tyr Ser Phe Ala Ile Thr Cys Ser Glu Ile Leu Thr
 435 440 445
 Gly Asp His Pro Phe Ala His Phe Asn Ala Asp Tyr Asn Phe Asp Ala
 450 455 460
 Val Lys Asp Gly Asp Arg Pro Arg Leu Pro Gly Glu Thr Pro Arg Arg
 465 470 475 480
 Leu Ala Ala Leu Ile His Arg Cys Trp His Arg Asn Pro Gln Leu Arg
 485 490 495
 Pro Asp Phe Thr Ala Ile Cys Thr Glu Leu Arg Phe Ile Lys Gly Leu
 500 505 510
 Ala Leu Arg Gly Asp Ile Lys Ser Leu His Gln Thr Asp Val Gly Asn
 515 520 525
 Glu Ala Asn Phe His Met Glu Thr Gly Val Lys Val Gln Gly Pro Trp
 530 535 540
 Gly Gly Asn Gly Gly Gly Gln Phe Phe Asp Gly Ile Val Thr Ser Ile
 545 550 555 560
 Lys Gln Ile Thr Met Lys Tyr Ser Thr Asp Pro Ser Pro Cys Ile Phe
 565 570 575
 Tyr Met Glu Met Glu Tyr Asn Met Asn Gly Thr Ser Phe Phe Ile Gly
 580 585 590
 His Gly Asp Ala Asn His Gly Ser Asn Ser Ser Thr Ile Lys Ile Asp
 595 600 605
 Glu Pro Ser Glu Tyr Ile Thr Lys Val Glu Gly Ser Tyr Gly Ser Thr
 610 615 620
 Pro Met Trp Cys Gly Gly Lys Gln Val Glu Ser Leu Thr Ser Leu Thr
 625 630 635 640
 Ile His Thr Asn Val Lys Ala His Gly Pro Phe Gly Gly Lys Cys Thr
 645 650 655
 Ser Lys Phe Lys Ser Glu Tyr Gly Arg Val Val Gly Phe His Gly Arg
 660 665 670
 Ser Gly Leu Gly Leu Asp Ser Ile Gly Cys Phe Thr Val Pro Ile Glu
 675 680 685
 Val

<210> 29
 <211> 831
 <212> DNA
 <213> Physcomitrella patens

<220>
 <221> CDS
 <222> (20)..(685)

<400> 29
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 Met Gly Thr Gln Ser Leu Ile Tyr Ser Phe Val
 1 5 10
 gcc aga ggc tca acg gtg ctg gcc gag tac act gcc ttt tct ggc aac 100
 Ala Arg Gly Ser Thr Val Leu Ala Glu Tyr Thr Ala Phe Ser Gly Asn
 15 20 25
 ttc agc acc att gca gtg caa tgt ctt cag aag ctt cca cca aac aac 148
 Phe Ser Thr Ile Ala Val Gln Cys Leu Gln Lys Leu Pro Pro Asn Asn
 30 35 40
 aat aaa ttc act tac acc tgt gat cga cac acc ttc aac tac ctt gtt 196
 Asn Lys Phe Thr Tyr Thr Cys Asp Arg His Thr Phe Asn Tyr Leu Val
 45 50 55
 gag gaa ggc tac aca tat ttg gtt gtg gct gat gag gaa ttt ggg agg 244
 Glu Glu Gly Tyr Thr Tyr Leu Val Val Ala Asp Glu Glu Phe Gly Arg
 60 65 70 75
 caa att ccg ttt gct ttc ctt gag cga gtg aag gag gac ttt aag cgg 292
 Gln Ile Pro Phe Ala Phe Leu Glu Arg Val Lys Glu Asp Phe Lys Arg
 80 85 90
 cgt tat gca gga gga aag gcc gac tcg gcc atc gcc aac agt tta gat 340
 Arg Tyr Ala Gly Gly Lys Ala Asp Ser Ala Ile Ala Asn Ser Leu Asp

PhoenixTemp18436.tmp.txt

```

          95              100              105
aaa gaa ttc ggt ccg aaa ctg aag gac cac atg cag tac tgc gtc gat 388
Lys Glu Phe Gly Pro Lys Leu Lys Asp His Met Gln Tyr Cys Val Asp
110              115              120
cac cct gat gaa atg aac aaa att tcg aag att aag tcc caa gtt gcg 436
His Pro Asp Glu Met Asn Lys Ile Ser Lys Ile Lys Ser Gln Val Ala
125              130              135
gaa gtc aag gga atc atg atg gac aat atc gag aag gtg ctt gat cgt 484
Glu Val Lys Gly Ile Met Met Asp Asn Ile Glu Lys Val Leu Asp Arg
140              145              150
gga gag aag att gag ctt ctt gtt gat aag aca gag aac ttg cgt ttc 532
Gly Glu Lys Ile Glu Leu Leu Val Asp Lys Thr Glu Asn Leu Arg Phe
160              165              170
cag gct gac aac ttt cag cga caa ggc aag caa ctg cgt cgc aag atg 580
Gln Ala Asp Asn Phe Gln Arg Gln Gly Lys Gln Leu Arg Arg Lys Met
175              180              185
tgg ttc cag aac atg aaa gtg aag ctt ata gtt ctt gcc atc att atc 628
Trp Phe Gln Asn Met Lys Val Lys Leu Ile Val Leu Ala Ile Ile Ile
190              195              200
gtc atc atc atc att tgg ctt tcc att tgc cgt gga ttc act tgc 676
Val Ile Ile Ile Ile Trp Leu Ser Ile Cys Arg Gly Phe Thr Cys
205              210              215
agc aat cgc taagtgtata tactgactgg aggtggaaag cagaagcctg 725
Ser Asn Arg
220
cactaatttt tcattgtttt tgtttttcgc tttctgccca aatcttcagg tagtgaatca 785
tgaaatttga gtctgtggcc tctgtcaggg agttgtgtga gctcgc 831

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<210> 30
 <211> 222
 <212> PRT
 <213> Physcomitrella patens

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

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<210> 31
 <211> 1342
 <212> DNA
 <213> Physcomitrella patens

PhoenixTemp18436.tmp.txt

<220>
<221> CDS
<222> (43)..(588)

[illegible]

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<210> 32
<211> 182
<212> PRT
<213> Physcomitrella patens
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Tyr	Met	Val	Glu	Leu	Gly	Arg	Val	Glu	Lys	Val	Leu	Gly	Leu	Arg	Ala	
			20					25					30			
Gly	Ala	Val	Lys	Ile	Phe	Leu	Glu	Lys	Phe	Ala	Ala	Met	Asn	Pro	Thr	

PhoenixTemp18436.tmp.txt

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

<210> 33
 <211> 804
 <212> DNA
 <213> Physcomitrella patens

<220>
 <221> CDS
 <222> (16)..(732)

<400> 33
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 Met Thr Glu Thr Thr Gly Ser Gly Ala Leu Ser Gln
 1 5 10
 gcg gcg gat tgt tta ccg ttg act tat caa agg cca gta cgg gat gac 99
 Ala Ala Asp Cys Leu Pro Leu Thr Tyr Gln Arg Pro Val Arg Asp Asp
 15 20 25
 ttg gaa act cat ctt cca aaa cct tac cta gcg aga gca ttg gta gct 147
 Leu Glu Thr His Leu Pro Lys Pro Tyr Leu Ala Arg Ala Leu Val Ala
 30 35 40
 cca gat aca gaa cat cca aac ggg acg tta ggg cac agg cat aat ggc 195
 Pro Asp Thr Glu His Pro Asn Gly Thr Leu Gly His Arg His Asn Gly
 45 50 55 60
 atg act gtt ctt cag cat att gct ttc gat caa aat ggt gac 243
 Met Thr Val Leu Gln His Ile Ala Phe Asp Gln Asn Gly Asp
 65 70 75
 gga atc att tac cca tgg gag acc tat gct gga ctg cgt gaa ata gga 291
 Gly Ile Ile Tyr Pro Trp Glu Thr Tyr Ala Gly Leu Arg Glu Ile Gly
 80 85 90
 ttc aat gtc ata tgg tcc gca atg gtt gcc ttt ata atc aat gtg gtg 339
 Phe Asn Val Ile Trp Ser Ala Met Val Ala Phe Ile Ile Asn Val Val
 95 100 105
 atg agc tat gca tcc ctc cct ggg tgg ttg cct tcg ccc ttt ttg ccc 387
 Met Ser Tyr Ala Ser Leu Pro Gly Trp Leu Pro Ser Pro Phe Leu Pro
 110 115 120
 ata tat atc tac aat ata cac aag gca aaa cat gga agc gac tcg ggg 435
 Ile Tyr Ile Tyr Asn Ile His Lys Ala Lys His Gly Ser Asp Ser Gly
 125 130 135 140
 gct tat gat acc gag gga aga tat gtg ccg gtg tac ttt gag aac gtg 483
 Ala Tyr Asp Thr Glu Gly Arg Tyr Val Pro Val Tyr Phe Glu Asn Val
 145 150 155
 ttt agc aag tat gct aga aca gtg cct gat aag ctc aca ctc gga gag 531
 Phe Ser Lys Tyr Ala Arg Thr Val Pro Asp Lys Leu Thr Leu Gly Glu
 160 165 170
 att tgg agc atg acc gaa ggg aat cga gta gct tat gat ttc ttt gga 579
 Ile Trp Ser Met Thr Glu Gly Asn Arg Val Ala Tyr Asp Phe Phe Gly
 175 180 185
 tgg gct gcg gct aag gga gaa tgg ata ctt ttg tat atg ctt gct aag 627
 Trp Ala Ala Ala Lys Gly Glu Trp Ile Leu Leu Tyr Met Leu Ala Lys

PhoenixTemp18436.tmp.txt

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190          195          200
gac gag gaa ggc atg ctg tca aag gag gcg tgt agg cgt tgt ttt gac 675
Asp Glu Glu Gly Met Leu Ser Lys Glu Ala Cys Arg Arg Cys Phe Asp
205          210          215          220
ggt agc ttg ttt gag tat tgc gcc aag atg aac agg atg caa cac gag 723
Gly Ser Leu Phe Glu Tyr Cys Ala Lys Met Asn Arg Met Gln His Glu
          225          230          235
aag gcg tat tgagcattat tagattttta gaaaccgttt gtgttgataa 772
Lys Ala Tyr
tgtagagtat gttgtttaga tcgggagctc gc 804

```

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<210> 34
<211> 239
<212> PRT
<213> Physcomitrella patens

```

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<400> 34
Met Thr Glu Thr Thr Gly Ser Gly Ala Leu Ser Gln Ala Ala Asp Cys
1          5          10          15
Leu Pro Leu Thr Tyr Gln Arg Pro Val Arg Asp Asp Leu Glu Thr His
          20          25          30
Leu Pro Lys Pro Tyr Leu Ala Arg Ala Leu Val Ala Pro Asp Thr Glu
          35          40          45
His Pro Asn Gly Thr Leu Gly His Arg His Asn Gly Met Thr Val Leu
          50          55          60
Gln Gln His Ile Ala Phe Phe Asp Gln Asn Gly Asp Gly Ile Ile Tyr
65          70          75          80
Pro Trp Glu Thr Tyr Ala Gly Leu Arg Glu Ile Gly Phe Asn Val Ile
          85          90          95
Trp Ser Ala Met Val Ala Phe Ile Ile Asn Val Val Met Ser Tyr Ala
          100          105          110
Ser Leu Pro Gly Trp Leu Pro Ser Pro Phe Leu Pro Ile Tyr Ile Tyr
          115          120          125
Asn Ile His Lys Ala Lys His Gly Ser Asp Ser Gly Ala Tyr Asp Thr
130          135          140
Glu Gly Arg Tyr Val Pro Val Tyr Phe Glu Asn Val Phe Ser Lys Tyr
145          150          155          160
Ala Arg Thr Val Pro Asp Lys Leu Thr Leu Gly Glu Ile Trp Ser Met
          165          170          175
Thr Glu Gly Asn Arg Val Ala Tyr Asp Phe Phe Gly Trp Ala Ala Ala
          180          185          190
Lys Gly Glu Trp Ile Leu Leu Tyr Met Leu Ala Lys Asp Glu Glu Gly
195          200          205
Met Leu Ser Lys Glu Ala Cys Arg Arg Cys Phe Asp Gly Ser Leu Phe
210          215          220
Glu Tyr Cys Ala Lys Met Asn Arg Met Gln His Glu Lys Ala Tyr
225          230          235

```

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<210> 35
<211> 1562
<212> DNA
<213> Physcomitrella patens

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<220>
<221> CDS
<222> (166)..(1458)

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cccgtgggt cgcacccgga tgctgcagt gctggagaat gtatacgtaa cgaggatcat 120
tgccacttt cgtccggagc gctttgctga gcctcgtcgt ccact atg cct gtt aag 177
          Met Pro Val Lys
          1
gat cgc att tcg tac ttt tac gat ggg gac gtg ggt agt gtg tac tat 225
Asp Arg Ile Ser Tyr Phe Tyr Asp Gly Asp Val Gly Ser Val Tyr Tyr
5          10          15          20
ggg cca aac cat cca atg aag ccc cat cgg ttg tgt atg aca aac agt 273
          Page 36

```

PhoenixTemp18436.tmp.txt

Gly	Pro	Asn	His	Pro	Met	Lys	Pro	His	Arg	Leu	Cys	Met	Thr	Asn	Ser	
				25					30					35		
ctc	gtc	ctt	gct	tat	gga	ctt	cac	aac	aag	atg	gag	att	tat	cga	ccc	321
Leu	Val	Leu	Ala	Tyr	Gly	Leu	His	Asn	Lys	Met	Glu	Ile	Tyr	Arg	Pro	
			40					45					50			
cac	aaa	gcc	tac	ccg	gtg	gaa	ctc	gcg	cag	ttt	cac	tct	ggt	gac	tat	369
His	Lys	Ala	Tyr	Pro	Val	Glu	Leu	Ala	Gln	Phe	His	Ser	Val	Asp	Tyr	
		55				60						65				
gtt	gag	ttt	ctc	ggc	cga	att	act	cct	gaa	tct	cag	gaa	aag	tat	gca	417
Val	Glu	Phe	Leu	Gly	Arg	Ile	Thr	Pro	Glu	Ser	Gln	Glu	Lys	Tyr	Ala	
	70					75					80					
gcg	gag	ttg	ata	aga	tat	aac	atg	ggg	gag	gat	tgc	cct	ggt	ttt	gac	465
Ala	Glu	Leu	Ile	Arg	Tyr	Asn	Met	Gly	Glu	Asp	Cys	Pro	Val	Phe	Asp	
85				90				95						100		
aac	ctt	ttt	gaa	ttt	tgt	caa	att	tat	gct	ggg	ggt	act	att	gat	gcc	513
Asn	Leu	Phe	Glu	Phe	Cys	Gln	Ile	Tyr	Ala	Gly	Gly	Thr	Ile	Asp	Ala	
			105					110						115		
gcg	cat	cgt	ctg	aac	cat	ggc	tta	tgt	gac	ata	gcc	atc	aac	tggt	gct	561
Ala	His	Arg	Leu	Asn	His	Gly	Leu	Cys	Asp	Ile	Ala	Ile	Asn	Trp	Ala	
			120					125					130			
gga	ggt	tta	cat	cat	gca	aag	aag	tgt	gaa	gcc	tct	gga	ttt	tgt	tac	609
Gly	Gly	Leu	His	His	Ala	Lys	Lys	Cys	Glu	Ala	Ser	Gly	Phe	Cys	Tyr	
		135					140					145				
gtg	aat	gac	cta	ggt	ttg	ggc	att	tta	gaa	ctt	ttg	aag	tat	cac	gct	657
Val	Asn	Asp	Leu	Val	Leu	Gly	Ile	Leu	Glu	Leu	Leu	Lys	Tyr	His	Ala	
	150					155					160					
cgc	gtg	cta	tat	att	gac	ata	gat	att	cac	cat	gga	gac	gga	gta	gaa	705
Arg	Val	Leu	Tyr	Ile	Asp	Ile	Asp	Ile	His	His	Gly	Asp	Gly	Val	Glu	
165				170				175						180		
gaa	gcg	ttt	tat	ctt	act	gac	aga	gta	atg	acc	ggt	agt	ttt	cat	aaa	753
Glu	Ala	Phe	Tyr	Leu	Thr	Asp	Arg	Val	Met	Thr	Val	Ser	Phe	His	Lys	
			185					190						195		
ttt	gga	gac	tac	ttc	ttc	cca	ggc	act	ggg	gat	gta	aag	gac	ggt	gga	801
Phe	Gly	Asp	Tyr	Phe	Phe	Pro	Gly	Thr	Gly	Asp	Val	Lys	Asp	Val	Gly	
		200						205					210			
gag	aga	gaa	gga	aaa	tat	tat	gca	atc	aac	gtg	ccg	cta	aaa	gat	ggc	849
Glu	Arg	Glu	Gly	Lys	Tyr	Tyr	Ala	Ile	Asn	Val	Pro	Leu	Lys	Asp	Gly	
	215						220				225					
att	gat	gac	gca	aat	ttc	ata	cgg	atg	ttt	cgc	gtg	gta	atc	caa	aag	897
Ile	Asp	Asp	Ala	Asn	Phe	Ile	Arg	Met	Phe	Arg	Val	Val	Ile	Gln	Lys	
	230				235						240					
gtt	gtg	gaa	ggt	tat	caa	cct	ggt	gcc	att	gtt	ctg	caa	tgt	gga	gct	945
Val	Val	Glu	Val	Tyr	Gln	Pro	Gly	Ala	Ile	Val	Leu	Gln	Cys	Gly	Ala	
245				250				255						260		
gac	tca	ctt	gca	ggg	gat	cgt	tta	ggc	tgc	ttc	aat	ctt	tcc	att	gat	993
Asp	Ser	Leu	Ala	Gly	Asp	Arg	Leu	Gly	Cys	Phe	Asn	Leu	Ser	Ile	Asp	
			265					270						275		
gga	cac	tcg	gaa	tgt	gtg	aag	ttt	gtg	aag	aag	ttc	aac	ata	ccc	ctt	1041
Gly	His	Ser	Glu	Cys	Val	Lys	Phe	Val	Lys	Lys	Phe	Asn	Ile	Pro	Leu	
		280						285					290			
ctg	gtg	aca	ggt	ggg	gga	gga	tac	acc	aag	gag	aat	gtc	gca	cgc	tgt	1089
Leu	Val	Thr	Gly	Gly	Gly	Gly	Tyr	Thr	Lys	Glu	Asn	Val	Ala	Arg	Cys	
	295						300					305				
tgg	aca	gtg	gag	act	ggt	gtt	ctt	gtg	gat	act	gag	ctg	ccg	aat	gaa	1137
Trp	Thr	Val	Glu	Thr	Gly	Val	Leu	Val	Asp	Thr	Glu	Leu	Pro	Asn	Glu	
	310				315						320					
att	cct	gac	aat	gac	tac	ctg	aag	tat	ttc	aaa	cca	gat	tgc	act	ttg	1185
Ile	Pro	Asp	Asn	Asp	Tyr	Leu	Lys	Tyr	Phe	Lys	Pro	Asp	Cys	Thr	Leu	
325				330						335					340	
aag	acc	aca	tca	gga	aat	cac	atg	gaa	aac	ttg	aac	ggt	aag	acc	tac	1233
Lys	Thr	Thr	Ser	Gly	Asn	His	Met	Glu	Asn	Leu	Asn	Gly	Lys	Thr	Tyr	
			345					350						355		
ctg	agc	act	atc	aag	cag	cag	gtt	atg	gag	aac	tta	cgg	aga	att	gct	1281
Leu	Ser	Thr	Ile	Lys	Gln	Gln	Val	Met	Glu	Asn	Leu	Arg	Arg	Ile	Ala	
		360						365					370			
cat	gca	cct	agt	gtt	caa	atg	cac	gag	gta	cct	ccg	gac	act	tat	ata	1329
His	Ala	Pro	Ser	Val	Gln	Met	His	Glu	Val	Pro	Pro	Asp	Thr	Tyr	Ile	
		375					380					385				
cca	gag	ttt	gat	gat	gat	gaa	ttg	aat	cct	gac	gag	cgc	atg	gac	caa	1377

PhoenixTemp18436.tmp.txt

Pro Glu Phe Asp Glu Asp Glu Leu Asn Pro Asp Glu Arg Met Asp Gln
 390 395 400
 cac aca cag gac aag cac atc caa agg gag gag gag tat tat gaa gat 1425
 His Thr Gln Asp Lys His Ile Gln Arg Glu Glu Glu Tyr Tyr Glu Asp
 405 410 415 420
 gac aac gac aac gac cat gac atg gat gac tca tgactgttta ttagatgttt 1478
 Asp Asn Asp Asn Asp His Asp Met Asp Asp Ser
 425 430
 ttagaagata actgaaaaca tgtcctcatt tgtacactag attttacccc tactaacaca 1538
 ttgaatgaaa gagttggagc tcgc 1562

<210> 36
 <211> 431
 <212> PRT
 <213> Physcomitrella patens

<400> 36
 Met Pro Val Lys Asp Arg Ile Ser Tyr Phe Tyr Asp Gly Asp Val Gly
 1 5 10 15
 Ser Val Tyr Tyr Gly Pro Asn His Pro Met Lys Pro His Arg Leu Cys
 20 25 30
 Met Thr Asn Ser Leu Val Leu Ala Tyr Gly Leu His Asn Lys Met Glu
 35 40 45
 Ile Tyr Arg Pro His Lys Ala Tyr Pro Val Glu Leu Ala Gln Phe His
 50 55 60
 Ser Val Asp Tyr Val Glu Phe Leu Gly Arg Ile Thr Pro Glu Ser Gln
 65 70 75 80
 Glu Lys Tyr Ala Ala Glu Leu Ile Arg Tyr Asn Met Gly Glu Asp Cys
 85 90 95
 Pro Val Phe Asp Asn Leu Phe Glu Phe Cys Gln Ile Tyr Ala Gly Gly
 100 105 110
 Thr Ile Asp Ala Ala His Arg Leu Asn His Gly Leu Cys Asp Ile Ala
 115 120 125
 Ile Asn Trp Ala Gly Gly Leu His His Ala Lys Lys Cys Glu Ala Ser
 130 135 140
 Gly Phe Cys Tyr Val Asn Asp Leu Val Leu Gly Ile Leu Glu Leu Leu
 145 150 155 160
 Lys Tyr His Ala Arg Val Leu Tyr Ile Asp Ile Asp Ile His His Gly
 165 170 175
 Asp Gly Val Glu Glu Ala Phe Tyr Leu Thr Asp Arg Val Met Thr Val
 180 185 190
 Ser Phe His Lys Phe Gly Asp Tyr Phe Phe Pro Gly Thr Gly Asp Val
 195 200 205
 Lys Asp Val Gly Glu Arg Glu Gly Lys Tyr Tyr Ala Ile Asn Val Pro
 210 215 220
 Leu Lys Asp Gly Ile Asp Asp Ala Asn Phe Ile Arg Met Phe Arg Val
 225 230 235 240
 Val Ile Gln Lys Val Glu Val Tyr Gln Pro Gly Ala Ile Val Leu
 245 250 255
 Gln Cys Gly Ala Asp Ser Leu Ala Gly Asp Arg Leu Gly Cys Phe Asn
 260 265 270
 Leu Ser Ile Asp Gly His Ser Glu Cys Val Lys Phe Val Lys Lys Phe
 275 280 285
 Asn Ile Pro Leu Leu Val Thr Gly Gly Gly Tyr Thr Lys Glu Asn
 290 295 300
 Val Ala Arg Cys Trp Thr Val Glu Thr Gly Val Leu Val Asp Thr Glu
 305 310 315 320
 Leu Pro Asn Glu Ile Pro Asp Asn Asp Tyr Leu Lys Tyr Phe Lys Pro
 325 330 335
 Asp Cys Thr Leu Lys Thr Thr Ser Gly Asn His Met Glu Asn Leu Asn
 340 345 350
 Gly Lys Thr Tyr Leu Ser Thr Ile Lys Gln Gln Val Met Glu Asn Leu
 355 360 365
 Arg Arg Ile Ala His Ala Pro Ser Val Gln Met His Glu Val Pro Pro
 370 375 380
 Asp Thr Tyr Ile Pro Glu Phe Asp Glu Asp Glu Leu Asn Pro Asp Glu
 385 390 395 400
 Arg Met Asp Gln His Thr Gln Asp Lys His Ile Gln Arg Glu Glu Glu

PhoenixTemp18436.tmp.txt

Tyr Tyr Glu Asp 405
 420 Asp Asn Asp Asn Asp 410
 425 His Asp Met Asp 415
 430 Ser

<210> 37
 <211> 1544
 <212> DNA
 <213> Brassica napus

<220>
 <221> CDS
 <222> (84)..(1361)

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 gttttttttt tttcttagaa gag atg cgg tcc aag gac aaa atc tcc tac ttt 113
 Met Arg Ser Lys Asp Lys Ile Ser Tyr Phe
 1 5 10
 tac gat gga gat gta ggg agc gtt tat ttt ggt ccg aat cac cca atg 161
 Tyr Asp Gly Asp Val Gly Ser Val Tyr Phe Gly Pro Asn His Pro Met
 15 20 25
 aaa cct cac agg ctt tgt atg acc cat cat ctt atc ctt gca tat ggc 209
 Lys Pro His Arg Leu Cys Met Thr His His Leu Ile Leu Ala Tyr Gly
 30 35 40
 ctc cat agc aag atg gaa gtt tat cgt cca cac aag gca tac cct atc 257
 Leu His Ser Lys Met Glu Val Tyr Arg Pro His Lys Ala Tyr Pro Ile
 45 50 55
 gag atg gcc cag ttc cat tct cca gac tat gtc gag ttc ctg caa cga 305
 Glu Met Ala Gln Phe His Ser Pro Asp Tyr Val Glu Phe Leu Gln Arg
 60 65 70
 atc aac cca gaa aat aag gat ttg ttt ccc aac gaa atg gct aga tat 353
 Ile Asn Pro Glu Asn Lys Asp Leu Phe Pro Asn Glu Met Ala Arg Tyr
 75 80 85 90
 aat tta gga gag gat tgt cct gtc ttt gag gat atg ttc gag ttt tgt 401
 Asn Leu Gly Glu Asp Cys Pro Val Phe Glu Asp Met Phe Glu Phe Cys
 95 100 105
 caa att tat gcg ggt gca acc ata gat gct gca cgc aga tta aac aac 449
 Gln Ile Tyr Ala Gly Ala Thr Ile Asp Ala Ala Arg Arg Leu Asn Asn
 110 115 120
 aaa ctc tgt gac att gcg ata aac tgg gcg ggc ggg ttg cac cat gct 497
 Lys Leu Cys Asp Ile Ala Ile Asn Trp Ala Gly Gly Leu His His Ala
 125 130 135
 aaa aaa tgc gat gca tct ggt ttt tgt tac atc aac gat ctc gta cta 545
 Lys Lys Cys Asp Ala Ser Gly Phe Cys Tyr Ile Asn Asp Leu Val Leu
 140 145 150
 gga atc ctc gag ctg ttg aaa cac cat cct cgt gtg ctc tac att gat 593
 Gly Ile Leu Glu Leu Leu Lys His His Pro Arg Val Leu Tyr Ile Asp
 155 160 165 170
 ata gac gtt cac cac ggt gat gga gtt gaa gag gct ttt tac ttt act 641
 Ile Asp Val His His Gly Asp Gly Val Glu Glu Ala Phe Tyr Phe Thr
 175 180 185
 gac aga gtg atg act gtt agt ttt cac aag ttt ggg gat aag ttc ttt 689
 Asp Arg Val Met Thr Val Ser Phe His Lys Phe Gly Asp Lys Phe Phe
 190 195 200
 cca ggg acc ggc gat gtt aag gaa ata gga gaa agg gaa ggg aag ttt 737
 Pro Gly Thr Gly Asp Val Lys Glu Ile Gly Glu Arg Glu Gly Lys Phe
 205 210 215
 tac gcc ata aat gtt ccg ctc agg gat ggg att gat gac agt agt ttc 785
 Tyr Ala Ile Asn Val Pro Leu Arg Asp Gly Ile Asp Asp Ser Ser Phe
 220 225 230
 aac cgt ctg ttc agg gca ata att tca aag gtg gtt gag ata tat cag 833
 Asn Arg Leu Phe Arg Ala Ile Ile Ser Lys Val Val Glu Ile Tyr Gln
 235 240 245 250
 cca ggt gca ata gta ctt cag tgt gga gca gat tca cta gca agg gat 881
 Pro Gly Ala Ile Val Leu Gln Cys Gly Ala Asp Ser Leu Ala Arg Asp
 255 260 265
 cga cta gga tgc ttt aat ctc tct att gat gga cat gct gaa tgt gtt 929
 Arg Leu Gly Cys Phe Asn Leu Ser Ile Asp Gly His Ala Glu Cys Val

PhoenixTemp18436.tmp.txt

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270
aaa ttc gtc aag aaa ttc aat att cct ttg ctg gtg act gga ggt gga 977
Lys Phe Val Lys Lys Phe Asn Ile Pro Leu Leu Val Thr Gly Gly Gly
285
ggg tac aca aag gag aac gta gct cgg tgt tgg acc gtt gag act ggc 1025
Gly Tyr Thr Lys Glu Asn Val Ala Arg Cys Trp Thr Val Glu Thr Gly
300
att ctt ttg gac aca gaa ctt cct aat gag att cct gat aat gat tat 1073
Ile Leu Leu Asp Thr Glu Leu Pro Asn Glu Ile Pro Asp Asn Asp Tyr
315
ata aag tat ttt ggg ccg gat tat tca ttg aag att cct ggt ggt cac 1121
Ile Lys Tyr Phe Gly Pro Asp Tyr Ser Leu Lys Ile Pro Gly Gly His
335
att gag aat cta aat acg aaa tcg tat atc agt acg ata aaa gca cag 1169
Ile Glu Asn Leu Asn Thr Lys Ser Tyr Ile Ser Thr Ile Lys Ala Gln
350
att ttg gat aat ttg aga tac atc cag cac gct cca agc gtg cag atg 1217
Ile Leu Asp Asn Leu Arg Tyr Ile Gln His Ala Pro Ser Val Gln Met
365
cag gag gtt cca ccg gat ttc tac ata ccg gat ttt gat gaa gac gaa 1265
Gln Glu Val Pro Pro Asp Phe Tyr Ile Pro Asp Phe Asp Glu Asp Glu
380
cga aat cca gat gtg cgt gtg gac cag cgt tcg cgg gat aag cag att 1313
Arg Asn Pro Asp Val Arg Val Asp Gln Arg Ser Arg Asp Lys Gln Ile
395
cag agg gac gat gaa tat ttc gat ggt gac aag gat aac gat gcg tcg 1361
Gln Arg Asp Asp Glu Tyr Phe Asp Gly Asp Lys Asp Asn Asp Ala Ser
415
tagcatagat tattattagc gcagaagact taagacaaaa ccaaagttgt gtttgggaga 1421
tttgttataa acttataatg ataacatttt aacggcttgt agaaaattct atttatctgg 1481
gcacaaaac ccactcatga ttcttaaadc gttcgtcttt tctccaaaaa aaaaaaaaaa 1541
aaa 1544

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<210> 38
 <211> 426
 <212> PRT
 <213> Brassica napus

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

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PhoenixTemp18436.tmp.txt

225 Ile Ile Ser Lys Val Val Glu Ile Tyr Gln Pro Gly Ala Ile Val Leu
 230 235 240
 245 Ser Leu Ala Arg Asp Arg Leu Gly Cys Phe Asn
 250 255
 260 Leu Ser Ile Asp Gly His Ala Glu Cys Val Lys Phe Val Lys Lys Phe
 270 275
 280 Asn Ile Pro Leu Leu Val Thr Gly Gly Gly Gly Tyr Thr Lys Glu Asn
 290 295
 300 Val Ala Arg Cys Trp Thr Val Glu Thr Gly Ile Leu Leu Asp Thr Glu
 305 310
 315 Leu Pro Asn Glu Ile Pro Asp Asn Asp Tyr Ile Lys Tyr Phe Gly Pro
 325 330
 335 Asp Tyr Ser Leu Lys Ile Pro Gly Gly His Ile Glu Asn Leu Asn Thr
 340 345
 350 Lys Ser Tyr Ile Ser Thr Ile Lys Ala Gln Ile Leu Asp Asn Leu Arg
 355 360
 365 Tyr Ile Gln His Ala Pro Ser Val Gln Met Gln Glu Val Pro Pro Asp
 370 375
 380 Phe Tyr Ile Pro Asp Phe Asp Glu Asp Glu Arg Asn Pro Asp Val Arg
 385 390
 395 Val Asp Gln Arg Ser Arg Asp Lys Gln Ile Gln Arg Asp Asp Glu Tyr
 400 405
 410 Phe Asp Gly Asp Lys Asp Asn Asp Ala Ser
 415 420
 425

<210> 39
 <211> 1594
 <212> DNA
 <213> Brassica napus

<220>
 <221> CDS
 <222> (18)..(1427)

<400> 39
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 1 5 10
 tca ggg ccc gac ggt cgt aag cga cga gtc agc tac ttc tac gag cca 98
 Ser Gly Pro Asp Gly Arg Lys Arg Arg Val Ser Tyr Phe Tyr Glu Pro 15 20 25
 acg atc ggt aac tac tac tac ggt caa ggc cac ccc atg aag cct cac 146
 Thr Ile Gly Asn Tyr Tyr Tyr Gln Gln His Pro Met Lys Pro His 30 35 40
 cgg atc cgt atg gct cat agt cta atc gtc cac tac aac ctc cac cgc 194
 Arg Ile Arg Met Ala His Ser Leu Ile Val His Tyr Asn Leu His Arg 45 50 55
 cgc ctc gag atc agc cgc cct tac ctc gcc gag gct gcc gac atc ggt 242
 Arg Leu Glu Ile Ser Arg Pro Tyr Leu Ala Asp Ala Ala Asp Ile Gly 60 65 70 75
 cgc ttc cac tct ccc gag tac gtc gat ttc ctc cgc tcc gtt tcg ccg 290
 Arg Phe His Ser Pro Glu Tyr Val Asp Phe Leu Arg Ser Val Ser Pro 80 85 90
 gag tcc gtc ggc gat tgc tcc gcg cgt aac cta agg cga ttc aat gtc 338
 Glu Ser Val Gly Asp Ser Ser Ala Arg Asn Leu Arg Arg Phe Asn Val 95 100 105
 ggc gag gat tgt ccc gtc ttc gac ggt ctt ttc gag ttt tgc cgc gct 386
 Gly Glu Asp Cys Pro Val Phe Asp Gly Leu Phe Glu Phe Cys Arg Ala 110 115 120
 tcc gcc gga ggt tgc atc ggc gcc gcc gtt aaa ttg aac cgg cag gac 434
 Ser Ala Gly Gly Ser Ile Gly Ala Ala Val Lys Leu Asn Arg Gln Asp 125 130 135
 gcg gat atc gcc atc aat tgg ggc ggt ggg ctt cac gct aag aag 482
 Ala Asp Ile Ala Ile Asn Trp Gly Gly Gly Leu His His Ala Lys Lys 140 145 150 155
 agc gag gcg tct ggg ttt tgc tac gta aac gac atc gtt ttg ggg att 530
 Ser Glu Ala Ser Gly Phe Cys Tyr Val Asn Asp Ile Val Leu Gly Ile 160 165 170 175

PhoenixTemp18436.tmp.txt

				160					165				170				
ctc	gag	ttg	ctt	aag	atg	ttt	agg	cgg	gtt	ctc	tac	att	gat	atc	gat		578
Leu	Glu	Leu	Leu	Lys	Met	Phe	Arg	Arg	Val	Leu	Tyr	Ile	Asp	Ile	Asp		
			175					180					185				
gtt	cac	cat	gga	gat	gga	gta	gag	gaa	gcg	ttt	tac	acc	act	gat	aga		626
Val	His	His	Gly	Asp	Gly	Val	Glu	Glu	Ala	Phe	Tyr	Thr	Thr	Asp	Arg		
		190					195					200					
gtt	atg	acc	gtt	tct	ttt	cac	aag	ttt	ggg	gac	ttc	ttc	cct	gga	act		674
Val	Met	Thr	Val	Ser	Phe	His	Lys	Phe	Gly	Asp	Phe	Phe	Pro	Gly	Thr		
	205					210					215						
ggt	cac	atc	aga	gac	gtt	ggc	gct	gag	aaa	ggg	aag	tac	tat	gct	ctc		722
Gly	His	Ile	Arg	Asp	Val	Gly	Ala	Glu	Lys	Gly	Lys	Tyr	Tyr	Ala	Leu		
220					225					230				235			
aat	gtc	ccg	ttg	aac	gat	ggt	atg	gac	gat	gag	agt	ttc	cgc	agc	ttg		770
Asn	Val	Pro	Leu	Asn	Asp	Gly	Met	Asp	Asp	Glu	Ser	Phe	Arg	Ser	Leu		
				240				245						250			
ttt	aga	cct	ctt	atc	cag	aag	gtt	atg	gag	gtt	tat	cgg	cca	gaa	gca		818
Phe	Arg	Pro	Leu	Ile	Gln	Lys	Val	Met	Glu	Val	Tyr	Arg	Pro	Glu	Ala		
			255				260						265				
gtt	gtt	ctt	cag	tgc	ggg	gct	gac	tcc	ttg	agc	ggt	gat	cgg	ctg	ggt		866
Val	Val	Leu	Gln	Cys	Gly	Ala	Asp	Ser	Leu	Ser	Gly	Asp	Arg	Leu	Gly		
		270					275					280					
tgc	ttc	aac	ttg	tca	gtc	aag	ggc	cat	gct	gat	tgc	ctc	cgg	ttc	ttg		914
Cys	Phe	Asn	Leu	Ser	Val	Lys	Gly	His	Ala	Asp	Cys	Leu	Arg	Phe	Leu		
	285					290					295						
aga	tct	tat	aat	gtt	cct	ctc	atg	gtc	ttg	ggt	ggt	gga	ggg	tat	act		962
Arg	Ser	Tyr	Asn	Val	Pro	Leu	Met	Val	Leu	Gly	Gly	Gly	Gly	Tyr	Thr		
300					305					310					315		
att	cgg	aat	gtt	gct	cgt	tgc	tgg	tgt	tat	gag	act	gca	ggt	gcg	gtt		1010
Ile	Arg	Asn	Val	Ala	Arg	Cys	Trp	Cys	Tyr	Glu	Thr	Ala	Val	Ala	Val		
				320				325						330			
gga	gta	gag	ccg	gac	aac	aag	cta	ccg	tac	aat	gag	tac	ttt	gag	tat		1058
Gly	Val	Glu	Pro	Asp	Asn	Lys	Leu	Pro	Tyr	Asn	Glu	Tyr	Phe	Glu	Tyr		
			335				340						345				
ttc	ggt	cca	gac	tat	acg	ctt	cat	gtc	gag	cca	ggc	cca	atg	gag	aat		1106
Phe	Gly	Pro	Asp	Tyr	Thr	Leu	His	Val	Glu	Pro	Gly	Pro	Met	Glu	Asn		
		350					355				360						
ttg	aac	aca	cca	aaa	gat	atg	gag	agg	ata	agg	aac	aca	ttg	cta	gaa		1154
Leu	Asn	Thr	Pro	Lys	Asp	Met	Glu	Arg	Ile	Arg	Asn	Thr	Leu	Leu	Glu		
	365				370						375						
caa	ctt	tct	gga	cta	ata	cac	gca	cct	agt	gtg	ccg	ttt	cag	cac	aca		1202
Gln	Leu	Ser	Gly	Leu	Ile	His	Ala	Pro	Ser	Val	Pro	Phe	Gln	His	Thr		
380					385					390					395		
cct	cca	gtt	aat	cga	gtc	tta	gat	gag	ccg	gaa	gaa	gac	ttg	gag	aag		1250
Pro	Pro	Val	Asn	Arg	Val	Leu	Asp	Glu	Pro	Glu	Glu	Asp	Leu	Glu	Lys		
				400				405						410			
aga	cca	aag	cct	cga	att	tgg	agt	gga	act	gcg	aat	tat	gaa	tca	gac		1298
Arg	Pro	Lys	Pro	Arg	Ile	Trp	Ser	Gly	Thr	Ala	Asn	Tyr	Glu	Ser	Asp		
			415				420						425				
agt	gac	gat	gat	gag	aaa	cct	ctt	ggt	gtt	ttc	tca	ggt	att	aat	ggc		1346
Ser	Asp	Asp	Asp	Glu	Lys	Pro	Leu	Gly	Gly	Phe	Ser	Gly	Ile	Asn	Gly		
		430				435						440					
cca	act	atg	gac	agg	gac	tct	aca	ggg	gaa	gat	gaa	atg	gaa	gat	gat		1394
Pro	Thr	Met	Asp	Arg	Asp	Ser	Thr	Gly	Glu	Asp	Glu	Met	Glu	Asp	Asp		
	445				450						455						
agc	gca	gag	ccg	gag	gtg	gat	cca	cca	tcg	tct	tgaaaccagc	ttgatgtagt					1447
Ser	Ala	Glu	Pro	Glu	Val	Asp	Pro	Pro	Ser	Ser							
460					465					470							
gtcaaaagt	aaggaattga	ttcttgggtga	tgcttttctt	cagtatgtga	tttttttttt												1507
gtttgcaaag	aaaccttttt	gttttggcct	cagacgtatt	taataggaat	gtatttccat												1567
taccattcga	aaaaaaaaa	aaaaaaaaa															1594

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 <211> 470
 <212> PRT
 <213> Brassica napus

<400> 40

PhoenixTemp18436.tmp.txt

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 Tyr Tyr Gly Gln Gly His Pro Met Lys Pro His Arg Ile Arg Met Ala
 His Ser Leu Ile Val His Tyr Asn Leu His Arg Arg Leu Glu Ile Ser
 Arg Pro Tyr Leu Ala Asp Ala Ala Asp Ile Gly Arg Phe His Ser Pro
 65 Glu Tyr Val Asp Phe Leu Arg Ser Val Ser Pro Glu Ser Val Gly Asp
 Ser Ser Ala Arg Asn Leu Arg Arg Phe Asn Val Gly Glu Asp Cys Pro
 Val Phe Asp Gly Leu Phe Glu Phe Cys Arg Ala Ser Ala Gly Gly Ser
 Ile Gly Ala Ala Val Lys Leu Asn Arg Gln Asp Ala Asp Ile Ala Ile
 Asn Trp Gly Gly Gly Leu His His Ala Lys Lys Ser Glu Ala Ser Gly
 145 Phe Cys Tyr Val Asn Asp Ile Val Leu Gly Ile Leu Glu Leu Leu Lys
 Met Phe Arg Arg Val Leu Tyr Ile Asp Ile Asp Val His His Gly Asp
 Gly Val Glu Glu Ala Phe Tyr Thr Thr Asp Arg Val Met Thr Val Ser
 Phe His Lys Phe Gly Asp Phe Phe Pro Gly Thr Gly His Ile Arg Asp
 Val Gly Ala Glu Lys Gly Lys Tyr Tyr Ala Leu Asn Val Pro Leu Asn
 225 Asp Gly Met Asp Asp Glu Ser Phe Arg Ser Leu Phe Arg Pro Leu Ile
 Gln Lys Val Met Glu Val Tyr Arg Pro Glu Ala Val Val Leu Gln Cys
 Gly Ala Asp Ser Leu Ser Gly Asp Arg Leu Gly Cys Phe Asn Leu Ser
 Val Lys Gly His Ala Asp Cys Leu Arg Phe Leu Arg Ser Tyr Asn Val
 Pro Leu Met Val Leu Gly Gly Gly Tyr Thr Ile Arg Asn Val Ala
 305 Arg Cys Trp Cys Tyr Glu Thr Ala Val Ala Val Gly Val Glu Pro Asp
 Asn Lys Leu Pro Tyr Asn Glu Tyr Phe Glu Tyr Phe Gly Pro Asp Tyr
 Thr Leu His Val Glu Pro Gly Pro Met Glu Asn Leu Asn Thr Pro Lys
 Asp Met Glu Arg Ile Arg Asn Thr Leu Leu Glu Gln Leu Ser Gly Leu
 Ile His Ala Pro Ser Val Pro Phe Gln His Thr Pro Pro Val Asn Arg
 385 Val Leu Asp Glu Pro Glu Glu Asp Leu Glu Lys Arg Pro Lys Pro Arg
 Ile Trp Ser Gly Thr Ala Asn Tyr Glu Ser Asp Ser Asp Asp Asp Glu
 Lys Pro Leu Gly Gly Phe Ser Gly Ile Asn Gly Pro Thr Met Asp Arg
 Asp Ser Thr Gly Glu Asp Glu Met Glu Asp Asp Ser Ala Glu Pro Glu
 Val Asp Pro Pro Ser Ser
 465 470

<210> 41
 <211> 1367
 <212> DNA
 <213> Zea mays

<220>
 <221> CDS

<222> (12)..(1100)

<400> 41

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	Met	Leu	Ala	His	Asp	Ala	Gly	Arg	Gly	Val	Phe	Asp	Ser		
ggc	cgc	gac	ccc	gga	ttc	ctg	gat	gtg	ctc	gac	caa	cac	ccg	gag	aac
Gly	Arg	Asp	Pro	Gly	Phe	Leu	Asp	Val	Leu	Asp	Gln	His	Pro	Glu	Asn
15						20					25				
gcc	gac	cgc	gtc	cgc	aac	atg	gtc	tcc	atc	ctc	cgc	cgc	ggg	ccc	atc
Ala	Asp	Arg	Val	Arg	Asn	Met	Val	Ser	Ile	Leu	Arg	Arg	Gly	Pro	Ile
30					35					40					45
gcg	cac	ttc	ctc	tcc	tgg	cac	tcg	ggc	cgc	cct	gcc	cac	gcc	tcc	gag
Ala	His	Phe	Leu	Ser	Trp	His	Ser	Gly	Arg	Pro	Ala	His	Ala	Ser	Glu
				50				55						60	
ctc	ctc	tcc	ttc	cac	tcc	tca	gaa	tac	ata	gag	gag	ctc	gtc	cag	acg
Leu	Leu	Ser	Phe	His	Ser	Ser	Glu	Tyr	Ile	Glu	Glu	Leu	Val	Gln	Thr
			65				70						75		
aac	gcc	acc	gga	gcc	aag	aag	ctc	tgt	gag	ggc	acg	ttc	ttg	aac	
Asn	Ala	Thr	Gly	Ala	Lys	Lys	Leu	Cys	Glu	Gly	Thr	Phe	Leu	Asn	
		80				85					90				
ccg	ggc	tcc	tgg	ggt	gcg	gcg	ctt	cta	gcg	gcc	ggg	acc	acg	ctc	tcc
Pro	Gly	Ser	Trp	Gly	Ala	Ala	Leu	Leu	Ala	Ala	Gly	Thr	Thr	Leu	Ser
	95				100					105					
tcc	gcg	aag	cac	ata	cta	gac	ggg	cag	ggg	aac	ctg	gcc	tac	gcg	ttg
Ser	Ala	Lys	His	Ile	Leu	Asp	Gly	Gln	Gly	Asn	Leu	Ala	Tyr	Ala	Leu
110					115					120					125
gtt	cgc	ccc	cct	ggc	cac	cac	gcg	cag	ccc	gac	cac	gcc	gat	ggc	tac
Val	Arg	Pro	Pro	Gly	His	His	Ala	Gln	Pro	Asp	His	Ala	Asp	Gly	Tyr
				130					135					140	
tgc	ttt	ctg	aac	aat	gcc	gga	ctt	gct	gtg	caa	ctg	gct	ctg	gat	tcc
Cys	Phe	Leu	Asn	Asn	Ala	Gly	Leu	Ala	Val	Gln	Leu	Ala	Leu	Asp	Ser
			145				150					155			
ggg	cgc	gca	aag	gtc	gcc	gtt	gtg	gat	att	gat	gtg	cac	tac	ggg	aat
Gly	Arg	Ala	Lys	Val	Ala	Val	Val	Asp	Ile	Asp	Val	His	Tyr	Gly	Asn
		160				165						170			
ggc	acc	gcg	gag	ggc	ttc	tat	cgg	aca	gac	acc	gtg	ttg	acg	atg	tct
Gly	Thr	Ala	Glu	Gly	Phe	Tyr	Arg	Thr	Asp	Thr	Val	Leu	Thr	Met	Ser
	175					180					185				
ctt	cac	atg	atg	cat	ggt	tct	tgg	ggg	cca	tcg	cat	ccg	cag	agt	ggc
Leu	His	Met	Met	His	Gly	Ser	Trp	Gly	Pro	Ser	His	Pro	Gln	Ser	Gly
190					195					200					205
tcc	gtc	gat	gag	att	ggt	gag	ggc	aag	ggg	ctt	ggg	tac	aat	ctc	aat
Ser	Val	Asp	Glu	Ile	Gly	Glu	Gly	Lys	Gly	Leu	Gly	Tyr	Asn	Leu	Asn
				210					215					220	
ata	cct	ttg	cct	aat	gga	agt	gga	gat	gct	ggg	tat	gaa	tat	gcg	atg
Ile	Pro	Leu	Pro	Asn	Gly	Ser	Gly	Asp	Ala	Gly	Tyr	Glu	Tyr	Ala	Met
			225				230					235			
aac	gag	ttg	ggt	ggt	cca	tcg	att	gat	aag	ttt	cag	cct	caa	ctg	ttg
Asn	Glu	Leu	Val	Val	Pro	Ser	Ile	Asp	Lys	Phe	Gln	Pro	Gln	Leu	Leu
		240					245					250			
ttt	ctt	gtg	gtc	ggc	caa	gat	tcc	agt	gcg	ttt	gat	ccc	aat	gga	aga
Phe	Leu	Val	Val	Gly	Gln	Asp	Ser	Ser	Ala	Phe	Asp	Pro	Asn	Gly	Arg
	255					260					265				
cag	tgc	ttg	acc	atg	gaa	ggc	tac	agg	aaa	att	gga	caa	ata	atg	agg
Gln	Cys	Leu	Thr	Met	Glu	Gly	Tyr	Arg	Lys	Ile	Gly	Gln	Ile	Met	Arg
				275						280					285
cgc	ctg	gct	gat	cgc	cat	tgc	aat	ggg	caa	ata	ctg	ggt	gtc	cag	gaa
Arg	Leu	Ala	Asp	Arg	His	Cys	Asn	Gly	Gln	Ile	Leu	Val	Val	Gln	Glu
				290					295					300	
ggg	ggt	tac	cac	atc	act	tat	tcg	gca	tat	tgt	ctg	cat	gct	aca	ctg
Gly	Gly	Tyr	His	Ile	Thr	Tyr	Ser	Ala	Tyr	Cys	Leu	His	Ala	Thr	Leu
			305					310					315		
gaa	gga	ggt	ttg	gat	ctg	gaa	gcc	ccg	ctg	ctt	gat	gac	cca	atc	gct
Glu	Gly	Val	Leu	Asp	Leu	Glu	Ala	Pro	Leu	Leu	Asp	Asp	Pro	Ile	Ala
		320					325					330			
tat	tat	ccg	gag	gat	gat	aaa	tac	act	atg	aaa	gtc	ggt	gac	atg	ata
Tyr	Tyr	Pro	Glu	Asp	Asp	Lys	Tyr	Thr	Met	Lys	Val	Val	Asp	Met	Ile
		335				340					345				

PhoenixTemp18436.tmp.txt

aag agc tac tgg aag gaa tcg gtt cct ttc cta aag gaa att	1100
Lys Ser Tyr Trp Lys Glu Ser Val Pro Phe Leu Lys Glu Ile	
350 355 360	
tagaggaaat aatgttcgcg ccctcaatgt tcaaattgca ggaaactcca cattcctgga	1160
catcttcaat tgaattggga agaacattgc acgtctacgt tttcaggccg ttttaagatta	1220
tctgattgac agtttcacgc ctaacattgt acaggataga ttaagaacat tgtttgctgc	1280
tgctcttgaa tttctgcaat caggatctcg tcagcctatt tttgataaac agtcgatcct	1340
ttttttttca aaaaaaaaaa aaaaaaa	1367

<210> 42
 <211> 363
 <212> PRT
 <213> Zea mays

<400> 42

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Pro Gly Phe Leu Asp Val Leu Asp Gln His Pro Glu Asn Ala Asp Arg	
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Val Arg Asn Met Val Ser Ile Leu Arg Arg Gly Pro Ile Ala His Phe	
35 40 45	
Leu Ser Trp His Ser Gly Arg Pro Ala His Ala Ser Glu Leu Leu Ser	
50 55 60	
Phe His Ser Ser Glu Tyr Ile Glu Glu Leu Val Gln Thr Asn Ala Thr	
65 70 75 80	
Gly Ala Lys Lys Lys Leu Cys Glu Gly Thr Phe Leu Asn Pro Gly Ser	
85 90 95	
Trp Gly Ala Ala Leu Leu Ala Ala Gly Thr Thr Leu Ser Ser Ala Lys	
100 105 110	
His Ile Leu Asp Gly Gln Gly Asn Leu Ala Tyr Ala Leu Val Arg Pro	
115 120 125	
Pro Gly His His Ala Gln Pro Asp His Ala Asp Gly Tyr Cys Phe Leu	
130 135 140	
Asn Asn Ala Gly Leu Ala Val Gln Leu Ala Leu Asp Ser Gly Arg Ala	
145 150 155 160	
Lys Val Ala Val Val Asp Ile Asp Val His Tyr Gly Asn Gly Thr Ala	
165 170 175	
Glu Gly Phe Tyr Arg Thr Asp Thr Val Leu Thr Met Ser Leu His Met	
180 185 190	
Met His Gly Ser Trp Gly Pro Ser His Pro Gln Ser Gly Ser Val Asp	
195 200 205	
Glu Ile Gly Glu Gly Lys Gly Leu Gly Tyr Asn Leu Asn Ile Pro Leu	
210 215 220	
Pro Asn Gly Ser Gly Asp Ala Gly Tyr Glu Tyr Ala Met Asn Glu Leu	
225 230 235 240	
Val Val Pro Ser Ile Asp Lys Phe Gln Pro Gln Leu Leu Phe Leu Val	
245 250 255	
Val Gly Gln Asp Ser Ser Ala Phe Asp Pro Asn Gly Arg Gln Cys Leu	
260 265 270	
Thr Met Glu Gly Tyr Arg Lys Ile Gly Gln Ile Met Arg Arg Leu Ala	
275 280 285	
Asp Arg His Cys Asn Gly Gln Ile Leu Val Val Gln Glu Gly Gly Tyr	
290 295 300	
His Ile Thr Tyr Ser Ala Tyr Cys Leu His Ala Thr Leu Glu Gly Val	
305 310 315 320	
Leu Asp Leu Glu Ala Pro Leu Leu Asp Asp Pro Ile Ala Tyr Tyr Pro	
325 330 335	
Glu Asp Asp Lys Tyr Thr Met Lys Val Val Asp Met Ile Lys Ser Tyr	
340 345 350	
Trp Lys Glu Ser Val Pro Phe Leu Lys Glu Ile	
355 360	

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 <211> 1598
 <212> DNA
 <213> Linum usitatissimum

PhoenixTemp18436.tmp.txt

<220>

<221> CDS

<222> (101)..(1387)

<400> 43

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				Met Lys Ser Lys Asp		
				1	5	
aaa atc tcc tac ttt tac gat ggg gat gtt ggc agt gtt tac ttc ggt						163
Lys Ile Ser Tyr Phe Tyr Asp Gly Asp Val Gly Ser Val Tyr Phe Gly						
ccg aat cac ccg atg aaa cca cac agg ctc tgt atg acc cac cat ctt						211
Pro Asn His Pro Met Lys Pro His Arg Leu Cys Met Thr His His Leu						
gtt ctt tct tat gac ctt cac aag aag atg gag att tat cgg cca cac						259
Val Leu Ser Tyr Asp Leu His Lys Lys Met Glu Ile Tyr Arg Pro His						
aag gca tac cct gtt gag cta gct cag ttc cat tct gct gat tac gtt						307
Lys Ala Tyr Pro Val Glu Leu Ala Gln Phe His Ser Ala Asp Tyr Val						
gag ttc ttg cac ccg att aca cct gat act cag cac ttg tac aga act						355
Glu Phe Leu His Arg Ile Thr Pro Asp Thr Gln His Leu Tyr Arg Thr						
gat tta gca aga tat aat ctt gga gaa gat tgc ccc gtg ttc gag aat						403
Asp Leu Ala Arg Tyr Asn Leu Gly Glu Asp Cys Pro Val Phe Glu Asn						
ctg ttt gaa ttt tgt caa atc tat gct ggg ggg aca ata gac gcc gct						451
Leu Phe Glu Phe Cys Gln Ile Tyr Ala Gly Gly Thr Ile Asp Ala Ala						
cga aga ttg aac aat caa ctg tgt gat att gct ata aat tgg gct ggt						499
Arg Arg Leu Asn Asn Gln Leu Cys Asp Ile Ala Ile Asn Trp Ala Gly						
gga tta cat cat gcc aaa aag tgc gag gct tct gga ttt tgt tac atc						547
Gly Leu His His Ala Lys Lys Cys Glu Ala Ser Gly Phe Cys Tyr Ile						
aac gac ttg gtt ctc ggg atc ttg gag ctt cta aaa tac cat gct cgt						595
Asn Asp Leu Val Leu Gly Ile Leu Glu Leu Leu Lys Tyr His Ala Arg						
gtt ctg tac ata gac ata gat gtc cat cat ggt gat ggc gta gag gag						643
Val Leu Tyr Ile Asp Ile Asp Val His His Gly Asp Gly Val Glu Glu						
gcc ttc tat ttt act gac agg gtg atg act gta agt ttt cac aag ttt						691
Ala Phe Tyr Phe Thr Asp Arg Val Met Thr Val Ser Phe His Lys Phe						
gga gat ttg ttc ttc ccg gga acc ggt gat gtt aag gaa ata gga gaa						739
Gly Asp Leu Phe Phe Pro Gly Thr Gly Asp Val Lys Glu Ile Gly Glu						
aga gaa ggg aag ttc tac gcc ata aat gtt cct ctt agg gac ggg ata						787
Arg Glu Gly Lys Phe Tyr Ala Ile Asn Val Pro Leu Arg Asp Gly Ile						
gat gac tcg agc ttc aac cgt ctc ttt aaa acc atc ata tct aag gtt						835
Asp Asp Ser Ser Phe Asn Arg Leu Phe Lys Thr Ile Ile Ser Lys Val						
gta gaa atc tac caa cct ggc gct ata gtt ctc caa tgc gga gca gat						883
Val Glu Ile Tyr Gln Pro Gly Ala Ile Val Leu Gln Cys Gly Ala Asp						
tcg ctg gct ggg gac cgt ttg ggc tgt ttc aat ctc tcg att gat gga						931
Ser Leu Ala Gly Asp Arg Leu Gly Cys Phe Asn Leu Ser Ile Asp Gly						
cat gcg gaa tgt gtt aag ttt gtg aag aag ttc aac att cct tta ctg						979
His Ala Glu Cys Val Lys Phe Val Lys Lys Phe Asn Ile Pro Leu Leu						
gtt act gga ggt gga gga tat acg aag gag aat gta gct cga tgc tgg						1027
Val Thr Gly Gly Gly Gly Tyr Thr Lys Glu Asn Val Ala Arg Cys Trp						
aca gtt gaa aca gga gta ctg ctg gat act gaa ctg ccc aat gag atc						1075
Thr Val Glu Thr Gly Val Leu Leu Asp Thr Glu Leu Pro Asn Glu Ile						

PhoenixTemp18436.tmp.txt

ccc gaa aac gag tac ata aag	tat ttc gga cct gac tat act ttg aag	1123
Pro Glu Asn Glu Tyr Ile Lys	Tyr Phe Gly Pro Asp Tyr Thr Leu Lys	
	330 335 340	
att ccg agc aga tac att gag aat ttg aac agt aaa tct tat ctc agc	1171	
Ile Pro Ser Arg Tyr Ile Glu Asn Leu Asn Ser Lys Ser Tyr Leu Ser		
	345 350 355	
tcc ctc aaa gtt caa gta atg gag aat ttg cgg tac att cag cac gct	1219	
Ser Leu Lys Val Gln Val Met Glu Asn Leu Arg Tyr Ile Gln His Ala		
	360 365 370	
cca agt gtg cag atg caa gag gtt cca ccg gat ttt tac atc cca gac	1267	
Pro Ser Val Gln Met Gln Glu Val Pro Pro Asp Phe Tyr Ile Pro Asp		
	375 380 385	
ttc gac gaa gat gag cag aac cca gat gaa cga atg gat cag cat act	1315	
Phe Asp Glu Asp Glu Gln Asn Pro Asp Glu Arg Met Asp Gln His Thr		
	390 395 400 405	
cga gac aag caa gtc cag cgg gac gat gaa tac tac gat ggg gac aat	1363	
Arg Asp Lys Gln Val Gln Arg Asp Asp Glu Tyr Tyr Asp Gly Asp Asn		
	410 415 420	
gac aac gac ccc aca gat cga tca tgatgggtgcg gtagtggagc tttagtgttc	1417	
Asp Asn Asp Pro Thr Asp Arg Ser		
	425	
atgctagttc agatgttttg tacatgctat actgatataa gcttgactct gtgatatcag	1477	
gatttcaatt ggtcaaaatc ccttgtgtaa accattccat tccataggga tatatcgctt	1537	
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 <211> 429
 <212> PRT
 <213> Linum usitatissimum

<400> 44

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

PhoenixTemp18436.tmp.txt

Asn Ile Pro Leu Leu Val Thr Gly Gly Gly Gly Tyr Thr Lys Glu Asn
 290 300
 Val Ala Arg Cys Trp Thr Val Glu Thr Gly Val Leu Leu Asp Thr Glu
 305 310 315 320
 Leu Pro Asn Glu Ile Pro Glu Asn Glu Tyr Ile Lys Tyr Phe Gly Pro
 325 330 335
 Asp Tyr Thr Leu Lys Ile Pro Ser Arg Tyr Ile Glu Asn Leu Asn Ser
 340 345 350
 Lys Ser Tyr Leu Ser Ser Leu Lys Val Gln Val Met Glu Asn Leu Arg
 355 360 365
 Tyr Ile Gln His Ala Pro Ser Val Gln Met Gln Glu Val Pro Pro Asp
 370 375 380
 Phe Tyr Ile Pro Asp Phe Asp Glu Asp Glu Gln Asn Pro Asp Glu Arg
 385 390 395 400
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 405 410 415
 Tyr Asp Gly Asp Asn Asp Asn Asp Pro Thr Asp Arg Ser
 420 425

<210> 45
 <211> 1854
 <212> DNA
 <213> Oryza sativa

<220>
 <221> CDS
 <222> (64)..(1617)

<400> 45
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 Met Asp Ala Ser Ala Gly Gly Gly Gly Asn Ser Leu Pro Thr Ala
 1 5 10 15
 ggg gcc gac ggg gcc aag cgg cgg gtg tgc tac ttc tac gac gcg gag 156
 Gly Ala Asp Gly Ala Lys Arg Arg Val Cys Tyr Phe Tyr Asp Ala Glu
 20 25 30
 gtg ggg aac tac tac tac ggg cag ggg cac ccg atg aag ccg cac cgc 204
 Val Gly Asn Tyr Tyr Tyr Gly Gln Gly His Pro Met Lys Pro His Arg
 35 40 45
 atc cgg atg acc cac gcg ctg ctc gcc cac tac ggc ctc ctc gac cag 252
 Ile Arg Met Thr His Ala Leu Leu Ala His Tyr Gly Leu Leu Asp Gln
 50 55 60
 atg cag gtg ctc aag ccc cac ccg gcg cgc gac cgc gac ctc tgc cgc 300
 Met Gln Val Leu Lys Pro His Pro Ala Arg Asp Arg Asp Leu Cys Arg
 65 70 75
 ttc cac gcc gac gac tac gtc gcc ttc ctc cgc tcc gtc acg ccg gag 348
 Phe His Ala Asp Asp Tyr Val Ala Phe Leu Arg Ser Val Thr Pro Glu
 80 85 90 95
 acc cag cag gac cag atc cgg gcg ctc aag cgc ttc aac gtc ggc gag 396
 Thr Gln Gln Asp Gln Ile Arg Ala Leu Lys Arg Phe Asn Val Gly Glu
 100 105 110
 gac tgc ccc gtc ttc gac ggc ctc tac agc ttc tgc cag acc tac gcc 444
 Asp Cys Pro Val Phe Asp Gly Leu Tyr Ser Phe Cys Gln Thr Tyr Ala
 115 120 125
 ggg gga tcc gtc ggc ggc gcc gtc aag ctc aac cac ggc cac gac atc 492
 Gly Gly Ser Val Gly Gly Ala Val Lys Leu Asn His Gly His Asp Ile
 130 135 140
 gcc atc aac tgg gcc ggc ggc ctc cac cac gcc aag aag tgc gag gcc 540
 Ala Ile Asn Trp Ala Gly Leu His His Ala Lys Lys Cys Glu Ala
 145 150 155
 tcg gga ttc tgc tac gtc aac gac atc gtc ctc gcc atc ctc gag ctc 588
 Ser Gly Phe Cys Tyr Val Asn Asp Ile Val Leu Ala Ile Leu Glu Leu
 160 165 170 175
 ctc aaa tac cac cag cgt gtt ctc tat gtg gat atc gat atc cac cat 636
 Leu Lys Tyr His Gln Arg Val Leu Tyr Val Asp Ile Asp Ile His His
 180 185 190
 ggg gat ggt gtg gag gag gcg ttc tac acg acg gac agg gtg atg acg 684
 Gly Asp Gly Val Glu Glu Ala Phe Tyr Thr Thr Asp Arg Val Met Thr

PhoenixTemp18436.tmp.txt

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Val	Ser	Phe	His	Lys	Phe	Gly	Asp	Tyr	Phe	Pro	Gly	Thr	Gly	Asp	Ile	
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cgc	gat	att	ggg	cac	tca	aag	ggg	aag	tat	tac	tct	ctg	aat	gtc	ccg	780
Arg	Asp	Ile	Gly	His	Ser	Lys	Gly	Lys	Tyr	Tyr	Ser	Leu	Asn	Val	Pro	
	225					230					235					
ttg	gac	gac	ggt	atc	gac	gac	gag	agc	tac	cag	tcg	ttg	ttc	aag	ccg	828
Leu	Asp	Asp	Gly	Ile	Asp	Asp	Glu	Ser	Tyr	Gln	Ser	Leu	Phe	Lys	Pro	
	240				245					250					255	
atc	atg	ggg	aag	gtg	atg	gag	gtt	ttt	cgc	cct	ggc	gcg	gtg	gtg	ctc	876
Ile	Met	Gly	Lys	Val	Met	Glu	Val	Phe	Arg	Pro	Gly	Ala	Val	Val	Leu	
			260					265						270		
cag	tgc	ggt	gcg	gac	tct	ctg	tcg	ggt	gat	agg	ttg	ggt	tgc	ttc	aac	924
Gln	Cys	Gly	Ala	Asp	Ser	Leu	Ser	Gly	Asp	Arg	Leu	Gly	Cys	Phe	Asn	
		275						280					285			
ctg	tca	atc	agg	ggc	cac	gcg	gaa	tgc	gtg	aga	ttc	atg	agg	tcc	ttc	972
Leu	Ser	Ile	Arg	Gly	His	Ala	Glu	Cys	Val	Arg	Phe	Met	Arg	Ser	Phe	
		290					295					300				
aat	gtc	ccg	ctg	ttg	ctg	ctt	ggt	ggt	ggg	tat	acc	ata	aga	aat		1020
Asn	Val	Pro	Leu	Leu	Leu	Leu	Gly	Gly	Gly	Tyr	Thr	Ile	Arg	Asn		
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gtt	gcg	cgg	tgt	tgg	tgc	tat	gag	aca	gga	gtt	gca	ctt	ggt	cat	gag	1068
Val	Ala	Arg	Cys	Trp	Cys	Tyr	Glu	Thr	Gly	Val	Ala	Leu	Gly	His	Glu	
	320				325					330					335	
ctc	act	gac	aag	atg	cct	cca	aat	gag	tat	ttt	gag	tac	ttt	ggt	cca	1116
Leu	Thr	Asp	Lys	Met	Pro	Pro	Asn	Glu	Tyr	Phe	Glu	Tyr	Phe	Gly	Pro	
			340					345					350			
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Asp	Tyr	Thr	Leu	His	Val	Ala	Pro	Ser	Asn	Met	Glu	Asn	Lys	Asn	Thr	
		355						360					365			
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Arg	Gln	Gln	Leu	Asp	Asp	Ile	Arg	Ser	Arg	Leu	Leu	Asp	Asn	Leu	Ser	
		370					375					380				
aaa	ctt	cga	cat	gct	cct	agc	gtc	caa	ttt	caa	gag	cga	ccc	cct	gag	1260
Lys	Leu	Arg	His	Ala	Pro	Ser	Val	Gln	Phe	Gln	Glu	Arg	Pro	Pro	Glu	
	385					390					395					
gct	gag	cta	cct	gag	caa	gat	gaa	gac	caa	gag	gat	cct	gat	gaa	agg	1308
Ala	Glu	Leu	Pro	Glu	Gln	Asp	Glu	Asp	Gln	Glu	Asp	Pro	Asp	Glu	Arg	
	400				405					410					415	
cac	cat	gct	gat	tct	gat	gtg	gaa	atg	gat	gat	gtc	aaa	cct	ttg	gat	1356
His	His	Ala	Asp	Ser	Asp	Val	Glu	Met	Asp	Asp	Val	Lys	Pro	Leu	Asp	
			420					425					430			
gac	tca	gga	agg	agg	agc	agt	att	cag	aat	gtg	aga	gtt	aag	aga	gag	1404
Asp	Ser	Gly	Arg	Arg	Ser	Ser	Ile	Gln	Asn	Val	Arg	Val	Lys	Arg	Glu	
		435					440						445			
tct	gct	gaa	aca	gat	gcc	gca	gat	cag	gat	ggt	aat	agg	gtc	gct	gca	1452
Ser	Ala	Glu	Thr	Asp	Ala	Ala	Asp	Gln	Asp	Gly	Asn	Arg	Val	Ala	Ala	
		450					455					460				
gag	aac	acc	aag	ggc	aca	gaa	cct	gcg	gct	gat	gga	ggt	ggt	tcc	tcg	1500
Glu	Asn	Thr	Lys	Gly	Thr	Glu	Pro	Ala	Ala	Asp	Gly	Val	Gly	Ser	Ser	
	465					470					475					
aaa	caa	act	gtt	cct	acc	gat	gca	agt	gcg	atg	gcc	ata	gac	gaa	cca	1548
Lys	Gln	Thr	Val	Pro	Thr	Asp	Ala	Ser	Ala	Met	Ala	Ile	Asp	Glu	Pro	
	480				485					490					495	
ggc	tcc	ctg	aaa	gtc	gag	cca	gat	aac	tca	aac	aaa	ttg	caa	gat	caa	1596
Gly	Ser	Leu	Lys	Val	Glu	Pro	Asp	Asn	Ser	Asn	Lys	Leu	Gln	Asp	Gln	
		500						505					510			
cca	tcg	gtg	cac	cag	aag	aca	taatagttct	ctctacctta	aaacttagta							1647
Pro	Ser	Val	His	Gln	Lys	Thr										
		515														
actgatgcc	tctatcatcc	attgattata	ttggagaaac	tcccaacttt	gaagcagaga											1707
gttcatgcc	tacaaaagt	tatatacca	atttcgaatg	gtatgtacac	ctttcgaact											1767
ggtggtgtt	tgtgcaatac	atttatgcc	ggctgactat	tatgtggtat	ctattattag											1827
cttagtata	aaaaaaaaa	aaaaaaaaa														1854

<210> 46
<211> 518

<212> PRT

<213> Oryza sativa

<400> 46

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Ala Asp Gly Ala Lys Arg Arg Val Cys Tyr Phe Tyr Asp Ala Glu Val
      20      25      30
Gly Asn Tyr Tyr Tyr Gly Gln Gly His Pro Met Lys Pro His Arg Ile
      35      40      45
Arg Met Thr His Ala Leu Leu Ala His Tyr Gly Leu Leu Asp Gln Met
      50      55      60
Gln Val Leu Lys Pro His Pro Ala Arg Asp Arg Asp Leu Cys Arg Phe
      65      70      75
His Ala Asp Asp Tyr Val Ala Phe Leu Arg Ser Val Thr Pro Glu Thr
      85      90      95
Gln Gln Asp Gln Ile Arg Ala Leu Lys Arg Phe Asn Val Gly Glu Asp
      100      105      110
Cys Pro Val Phe Asp Gly Leu Tyr Ser Phe Cys Gln Thr Tyr Ala Gly
      115      120      125
Gly Ser Val Gly Gly Ala Val Lys Leu Asn His Gly His Asp Ile Ala
      130      135      140
Ile Asn Trp Ala Gly Gly Leu His His Ala Lys Lys Cys Glu Ala Ser
      145      150      155
Gly Phe Cys Tyr Val Asn Asp Ile Val Leu Ala Ile Leu Glu Leu Leu
      165      170      175
Lys Tyr His Gln Arg Val Leu Tyr Val Asp Ile Asp Ile His His Gly
      180      185      190
Asp Gly Val Glu Glu Ala Phe Tyr Thr Thr Asp Arg Val Met Thr Val
      195      200      205
Ser Phe His Lys Phe Gly Asp Tyr Phe Pro Gly Thr Gly Asp Ile Arg
      210      215      220
Asp Ile Gly His Ser Lys Gly Lys Tyr Tyr Ser Leu Asn Val Pro Leu
      225      230      235
Asp Asp Gly Ile Asp Asp Glu Ser Tyr Gln Ser Leu Phe Lys Pro Ile
      245      250      255
Met Gly Lys Val Met Glu Val Phe Arg Pro Gly Ala Val Val Leu Gln
      260      265      270
Cys Gly Ala Asp Ser Leu Ser Gly Asp Arg Leu Gly Cys Phe Asn Leu
      275      280      285
Ser Ile Arg Gly His Ala Glu Cys Val Arg Phe Met Arg Ser Phe Asn
      290      295      300
Val Pro Leu Leu Leu Leu Gly Gly Gly Gly Tyr Thr Ile Arg Asn Val
      305      310      315
Ala Arg Cys Trp Cys Tyr Glu Thr Gly Val Ala Leu Gly His Glu Leu
      325      330      335
Thr Asp Lys Met Pro Pro Asn Glu Tyr Phe Glu Tyr Phe Gly Pro Asp
      340      345      350
Tyr Thr Leu His Val Ala Pro Ser Asn Met Glu Asn Lys Asn Thr Arg
      355      360      365
Gln Gln Leu Asp Asp Ile Arg Ser Arg Leu Leu Asp Asn Leu Ser Lys
      370      375      380
Leu Arg His Ala Pro Ser Val Gln Phe Gln Glu Arg Pro Pro Glu Ala
      385      390      395
Glu Leu Pro Glu Gln Asp Glu Asp Gln Glu Asp Pro Asp Glu Arg His
      405      410      415
His Ala Asp Ser Asp Val Glu Met Asp Asp Val Lys Pro Leu Asp Asp
      420      425      430
Ser Gly Arg Arg Ser Ser Ile Gln Asn Val Arg Val Lys Arg Glu Ser
      435      440      445
Ala Glu Thr Asp Ala Ala Asp Gln Asp Gly Asn Arg Val Ala Ala Glu
      450      455      460
Asn Thr Lys Gly Thr Glu Pro Ala Ala Asp Gly Val Gly Ser Ser Lys
      465      470      475
Gln Thr Val Pro Thr Asp Ala Ser Ala Met Ala Ile Asp Glu Pro Gly
      485      490      495
Ser Leu Lys Val Glu Pro Asp Asn Ser Asn Lys Leu Gln Asp Gln Pro
      500      505      510
Ser Val His Gln Lys Thr

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515

<210> 47
 <211> 1252
 <212> DNA
 <213> Glycine max

<220>
 <221> CDS
 <222> (4)..(1005)

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 Met Leu Lys His Asp Thr Gly Asn Gly Val Phe Asp Thr Gly Met 15
 gat cca ggc ttc tta gag gtg ttg gag aag cac cct gaa aac tca gac 96
 Asp Pro Gly Phe Leu Glu Val Leu Glu Lys His Pro Glu Asn Ser Asp 30
 aga gtg aaa aac cta gtg tct att ctc aaa agg ggt cct atc tcc cct 144
 Arg Val Lys Asn Leu Val Ser Ile Leu Lys Arg Gly Pro Ile Ser Pro 45
 tac att tct tgg cac ctt ggt aca cct gca aaa atc cct gag ctt ttt 192
 Tyr Ile Ser Trp His Leu Gly Thr Pro Ala Lys Ile Pro Glu Leu Phe 60
 tct ttt cac act cct gaa tac ata aat gaa ctg gta gaa gtt gat aaa 240
 Ser Phe His Thr Pro Glu Tyr Ile Asn Glu Leu Val Glu Val Asp Lys 75
 gaa ggg ggg aag cag ctt tgt ggt ggg aca ttt ttg aac cct gga tca 288
 Glu Gly Gly Lys Gln Leu Cys Gly Gly Thr Phe Leu Asn Pro Gly Ser 95
 tgg gat gct gca ctt ctt gct gct ggg act aca cta tct gcg atg aag 336
 Trp Asp Ala Ala Leu Leu Ala Ala Gly Thr Thr Leu Ser Ala Met Lys 110
 cat tta ctg aat ggg gat gga aaa gtt tcc tat gca ttg gtt agg ccc 384
 His Leu Leu Asn Gly Asp Gly Lys Val Ser Tyr Ala Leu Val Arg Pro 125
 cct ggt cac cat gct cag cct tct ctg gcc gat ggc tac tgt ttc ctt 432
 Pro Gly His His Ala Gln Pro Ser Leu Ala Asp Gly Tyr Cys Phe Leu 140
 aac aat gca ggt cta gct gtg caa ttg gct tta gat tcc ggc tgc aag 480
 Asn Asn Ala Gly Leu Ala Val Gln Leu Ala Leu Asp Ser Gly Cys Lys 155
 aag gtt gcg gtc ata gat att gat gtg cat tat gga aat gga acg gca 528
 Lys Val Ala Val Ile Asp Ile Asp Val His Tyr Gly Asn Gly Thr Ala 175
 gag ggg ttt tat cga tct aat aag gtt ctt acc atc tct ctt cat atg 576
 Glu Gly Phe Tyr Arg Ser Asn Lys Val Leu Thr Ile Ser Leu His Met 190
 aac cat gga tca tgg ggt cca tct cat ccg caa agt ggc tct gtt gat 624
 Asn His Gly Ser Trp Gly Pro Ser His Pro Gln Ser Gly Ser Val Asp 205
 gag cta ggt gaa gga gaa ggt tat ggc ttt aac ttg aac ata cct cta 672
 Glu Leu Gly Glu Gly Glu Gly Tyr Gly Phe Asn Leu Asn Ile Pro Leu 220
 cca aat gga act ggg gac aag gga tat gta cat gcc ttc aat gag ttg 720
 Pro Asn Gly Thr Gly Asp Lys Gly Tyr Val His Ala Phe Asn Glu Leu 235
 gtt gtt cca tcc atc caa aag ttt ggg cct gat atg ata gtt ttg gtt 768
 Val Val Pro Ser Ile Gln Lys Phe Gly Pro Asp Met Ile Val Leu Val 255
 ctt gga caa gac tct aat gca ttt gat ccc aat gga agg caa tgc tta 816
 Leu Gly Gln Asp Ser Asn Ala Phe Asp Pro Asn Gly Arg Gln Cys Leu 270
 aca atg gag ggc tat aga gaa ata ggg cga att gtc cat ctt ctt gcg 864
 Thr Met Glu Gly Tyr Arg Glu Ile Gly Arg Ile Val His Leu Leu Ala 285
 aaa agg cac agt gca gga cgc ctt cta att gtc cag gaa ggt gga tat 912
 Lys Arg His Ser Ala Gly Arg Leu Leu Ile Val Gln Glu Gly Gly Tyr

PhoenixTemp18436.tmp.txt

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290                               295                               300
cat gtc aca tat tct gca tat tgt tta cat gca aca ctt gag ggg att      960
His Val Thr Tyr Ser Ala Tyr Cys Leu His Ala Thr Leu Glu Gly Ile
305                               310                               315
ctc aac cta cca atg cct cta cta gcg gat cct att gct ttt acc      1005
Leu Asn Leu Pro Met Pro Leu Leu Ala Asp Pro Ile Ala Phe Thr
320                               325                               330
tagacgacga gacattttct gtccaagtta tagaagccat taagaattat caaaaagata 1065
aagtgtgcta gtggagaaac tcactagaca cttccttctg tgcgtgtgaa ataaatcttg 1125
atacttttca agaaggggta atatttatcg tgtaactatt gagggatttt caaggttatt 1185
ttaaataaat ttaatcttgt ccagttgatc ttttgattaa aaaaaaaaaa aaagagaacc 1245
gaacgca                                1252

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<210> 48
 <211> 334
 <212> PRT
 <213> Glycine max

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<400> 48
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Pro Gly Phe Leu Glu Val Leu Glu Lys His Pro Glu Asn Ser Asp Arg
20                               25                               30
Val Lys Asn Leu Val Ser Ile Leu Lys Arg Gly Pro Ile Ser Pro Tyr
35                               40                               45
Ile Ser Trp His Leu Gly Thr Pro Ala Lys Ile Pro Glu Leu Phe Ser
50                               55                               60
Phe His Thr Pro Glu Tyr Ile Asn Glu Leu Val Glu Val Asp Lys Glu
65                               70                               75                               80
Gly Gly Lys Gln Leu Cys Gly Gly Thr Phe Leu Asn Pro Gly Ser Trp
85                               90                               95
Asp Ala Ala Leu Leu Ala Ala Gly Thr Thr Leu Ser Ala Met Lys His
100                               105                               110
Leu Leu Asn Gly Asp Gly Lys Val Ser Tyr Ala Leu Val Arg Pro Pro
115                               120                               125
Gly His His Ala Gln Pro Ser Leu Ala Asp Gly Tyr Cys Phe Leu Asn
130                               135                               140
Asn Ala Gly Leu Ala Val Gln Leu Ala Leu Asp Ser Gly Cys Lys Lys
145                               150                               155                               160
Val Ala Val Ile Asp Ile Asp Val His Tyr Gly Asn Gly Thr Ala Glu
165                               170                               175
Gly Phe Tyr Arg Ser Asn Lys Val Leu Thr Ile Ser Leu His Met Asn
180                               185                               190
His Gly Ser Trp Gly Pro Ser His Pro Gln Ser Gly Ser Val Asp Glu
195                               200                               205
Leu Gly Glu Gly Glu Gly Tyr Gly Phe Asn Leu Asn Ile Pro Leu Pro
210                               215                               220
Asn Gly Thr Gly Asp Lys Gly Tyr Val His Ala Phe Asn Glu Leu Val
225                               230                               235                               240
Val Pro Ser Ile Gln Lys Phe Gly Pro Asp Met Ile Val Leu Val Leu
245                               250                               255
Gly Gln Asp Ser Asn Ala Phe Asp Pro Asn Gly Arg Gln Cys Leu Thr
260                               265                               270
Met Glu Gly Tyr Arg Glu Ile Gly Arg Ile Val His Leu Leu Ala Lys
275                               280                               285
Arg His Ser Ala Gly Arg Leu Leu Ile Val Gln Glu Gly Gly Tyr His
290                               295                               300
Val Thr Tyr Ser Ala Tyr Cys Leu His Ala Thr Leu Glu Gly Ile Leu
305                               310                               315                               320
Asn Leu Pro Met Pro Leu Leu Ala Asp Pro Ile Ala Phe Thr
325                               330

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<210> 49
 <211> 1723
 <212> DNA
 <213> Glycine max

<220>

PhoenixTemp18436.tmp.txt

<221> CDS

<222> (143)..(1429)

<400> 49

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ttcaacgctc	tctctgcaaa	ag atg cgc	tcc aag gac	aga atc gct	tac ttc	172
		Met Arg Ser Lys Asp Arg Ile Ala Tyr Phe				
		1	5	10		
tac gac ggt gat gtc ggt agt gtt tac ttt ggg gcg aag cat ccg atg	220					
Tyr Asp Gly Asp Val Gly Ser Val Tyr Phe Gly Ala Lys His Pro Met						
		15	20	25		
aag ccc cac cgg ctt tgc atg act cat cat ctt gtt ctc tca tac gat	268					
Lys Pro His Arg Leu Cys Met Thr His His Leu Val Leu Ser Tyr Asp						
		30	35	40		
ctt cat aag aag atg gag att tat cgt cca cac aag gct tat cct gtt	316					
Leu His Lys Lys Met Glu Ile Tyr Arg Pro His Lys Ala Tyr Pro Val						
		45	50	55		
gag ctt gcc cag ttt cat tca gct gat tat gtt gag ttt ttg aac agg	364					
Glu Leu Ala Gln Phe His Ser Ala Asp Tyr Val Glu Phe Leu Asn Arg						
		60	65	70		
att aca cct gac act cag cac ttg ttc ttg aat gaa ctg aca aaa tat	412					
Ile Thr Pro Asp Thr Gln His Leu Phe Leu Asn Glu Leu Thr Lys Tyr						
		75	80	85		
aat ctt gga gaa gac tgc cct gta ttt gac aac tta ttt gaa ttt tgt	460					
Asn Leu Gly Glu Asp Cys Pro Val Phe Asp Asn Leu Phe Glu Phe Cys						
		95	100	105		
cag att tat gct ggt gga act ata gat gct gca cgt cga tta aac aat	508					
Gln Ile Tyr Ala Gly Gly Thr Ile Asp Ala Ala Arg Arg Leu Asn Asn						
		110	115	120		
caa ctg tgt gat att gct atc aac tgg gcc ggt gga cta cat gcc	556					
Gln Leu Cys Asp Ile Ala Ile Asn Trp Ala Gly Gly Leu His His Ala						
		125	130	135		
aag aaa tgc gag gca tct gga ttt tgt tac atc aat gac ttg gtt tta	604					
Lys Lys Cys Glu Ala Ser Gly Phe Cys Tyr Ile Asn Asp Leu Val Leu						
		140	145	150		
gga atc ttg gag ctt ctt aaa tat cat gct cgt gtt ttg tat att gat	652					
Gly Ile Leu Glu Leu Leu Lys Tyr His Ala Arg Val Leu Tyr Ile Asp						
		155	160	165		
ata gat gtg cac cat ggt gat ggt gta gaa gcc ttc tac ttc act	700					
Ile Asp Val His His Gly Asp Gly Val Glu Glu Ala Phe Tyr Phe Thr						
		175	180	185		
gac agg gtg atg act gtc agt ttt cac aag tat gga gat tcg ttc ttc	748					
Asp Arg Val Met Thr Val Ser Phe His Lys Tyr Gly Asp Ser Phe Phe						
		190	195	200		
ccg ggt act ggc gat gct aag gaa ata gga gaa aga gaa gga aag ttt	796					
Pro Gly Thr Gly Asp Ala Lys Glu Ile Gly Glu Arg Glu Gly Lys Phe						
		205	210	215		
tat gcc ata aat gtc cca ttg aag gat gga ata gat gac agt agc ttc	844					
Tyr Ala Ile Asn Val Pro Leu Lys Asp Gly Ile Asp Asp Ser Ser Phe						
		220	225	230		
act cga ctt ttc aag act att att tcc aaa gta gtt gaa aca tat caa	892					
Thr Arg Leu Phe Lys Thr Ile Ile Ser Lys Val Val Glu Thr Tyr Gln						
		235	240	245		
cct ggt gca ata gtt ctg cag tgt gga gca gat tcg ctt gct gga gat	940					
Pro Gly Ala Ile Val Leu Gln Cys Gly Ala Asp Ser Leu Ala Gly Asp						
		255	260	265		
cgc ttg ggt tgc ttc aat ctc tct att gat ggt cat gct gaa tgt gtt	988					
Arg Leu Gly Cys Phe Asn Leu Ser Ile Asp Gly His Ala Glu Cys Val						
		270	275	280		
agc ttc gta aag aga ttc aat ttg cca ttg ctg gtc act gga ggt ggg	1036					
Ser Phe Val Lys Arg Phe Asn Leu Pro Leu Leu Val Thr Gly Gly Gly						
		285	290	295		
gga tac aca aaa gaa aat gtt gct cga tgt tgg act gtt gaa aca gga	1084					
Gly Tyr Thr Lys Glu Asn Val Ala Arg Cys Trp Thr Val Glu Thr Gly						
		300	305	310		
gtt ctt cta gat aca gag ctt cca aat gag att ccg caa aat gat tat	1132					
Val Leu Leu Asp Thr Glu Leu Pro Asn Glu Ile Pro Gln Asn Asp Tyr						
		315	320	325	330	

PhoenixTemp18436.tmp.txt

att	aaa	tac	ttt	gca	cca	gaa	ttt	tct	ttg	aag	gtt	cca	aat	ggg	ccg	1180
Ile	Lys	Tyr	Phe	Ala	Pro	Glu	Phe	Ser	Leu	Lys	Val	Pro	Asn	Gly	Pro	
				335					340					345		
ata	gaa	aat	ttg	aat	agt	aaa	tca	tat	ctt	agc	acc	att	aaa	atg	caa	1228
Ile	Glu	Asn	Leu	Asn	Ser	Lys	Ser	Tyr	Leu	Ser	Thr	Ile	Lys	Met	Gln	
			350						355					360		
gtc	ttg	gaa	aat	ctt	cgt	tgc	atc	cag	cat	gct	cca	agc	gta	cag	atg	1276
Val	Leu	Glu	Asn	Leu	Arg	Cys	Ile	Gln	His	Ala	Pro	Ser	Val	Gln	Met	
			365						370					375		
cag	gag	gtc	cct	cct	gac	ttc	tac	att	cca	gaa	ttc	gat	gaa	gat	gag	1324
Gln	Glu	Val	Pro	Pro	Asp	Phe	Tyr	Ile	Pro	Glu	Phe	Asp	Glu	Asp	Glu	
			380											390		
cag	aac	cct	gat	gaa	cgc	att	gat	cag	cac	act	caa	gac	aag	cac	atc	1372
Gln	Asn	Pro	Asp	Glu	Arg	Ile	Asp	Gln	His	Thr	Gln	Asp	Lys	His	Ile	
					400					405					410	
cag	cgc	gat	gat	gaa	tat	tat	gat	ggg	gac	aat	gac	aat	gat	caa	atg	1420
Gln	Arg	Asp	Asp	Glu	Tyr	Tyr	Asp	Gly	Asp	Asn	Asp	Asn	Asp	Gln	Met	
				415					420					425		
aat	att	tca	tga	agt	gcag	ttg	ccg	tttg	cct	ttt	ggcg	gggg	att	gcag		1469
Asn	Ile	Ser														
cg	ttt	taaga	gaga	agg	gaaa	atg	tta	atta	gaca	aac	acc	tag	atg	tatc	aaca	1529
tag	tact	agc	cca	agaa	act	tgt	atatt	ta	agatt	tttt	attg	tttt	ca	gtt	gcta	1589
tatt	tgct	ca	aag	tta	catt	atta	atgat	gtt	cttc	cct	gtc	att	tttt	tga	atg	1649
tgga	cggt	gt	tag	agca	act	ctg	aca	caa	gag	ctt	gc	at	tt	ct	tt	1709
aaaa	aaaa	aaaa	aaaa	aaaa	aaaa	aaaa	aaaa	aaaa	aaaa	aaaa	aaaa	aaaa	aaaa	aaaa	aaaa	1723

<210> 50
 <211> 429
 <212> PRT
 <213> Glycine max

<400> 50

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

PhoenixTemp18436.tmp.txt

Asn	Leu	Pro	Leu	Leu	Val	Thr	Gly	Gly	Gly	Gly	Tyr	Thr	Lys	Glu	Asn
290						295					300				
Val	Ala	Arg	Cys	Trp	Thr	Val	Glu	Thr	Gly	Val	Leu	Leu	Asp	Thr	Glu
305					310					315					320
Leu	Pro	Asn	Glu	Ile	Pro	Gln	Asn	Asp	Tyr	Ile	Lys	Tyr	Phe	Ala	Pro
				325					330					335	
Glu	Phe	Ser	Leu	Lys	Val	Pro	Asn	Gly	Pro	Ile	Glu	Asn	Leu	Asn	Ser
			340					345					350		
Lys	Ser	Tyr	Leu	Ser	Thr	Ile	Lys	Met	Gln	Val	Leu	Glu	Asn	Leu	Arg
		355					360					365			
Cys	Ile	Gln	His	Ala	Pro	Ser	Val	Gln	Met	Gln	Glu	Val	Pro	Pro	Asp
	370					375					380				
Phe	Tyr	Ile	Pro	Glu	Phe	Asp	Glu	Asp	Glu	Gln	Asn	Pro	Asp	Glu	Arg
385					390					395					400
Ile	Asp	Gln	His	Thr	Gln	Asp	Lys	His	Ile	Gln	Arg	Asp	Asp	Glu	Tyr
			405						410					415	
Tyr	Asp	Gly	Asp	Asn	Asp	Asn	Asp	Gln	Met	Asn	Ile	Ser			
			420					425							

<210> 51
 <211> 1498
 <212> DNA
 <213> Glycine max

<220>
 <221> CDS
 <222> (10)..(1260)

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 1 5 10

aat gcg ttc ttt ctg gtg ggt cat cat gtt ttg gac ata aga gtg ttc 99
 Asn Ala Phe Phe Leu Val Gly His His Val Leu Asp Ile Arg Val Phe
 15 20 25 30

cgt aag aac cag aga tgt ttc aga gcg tcc ata tcg tgt tcg gct gtt 147
 Arg Lys Asn Gln Arg Cys Phe Arg Ala Ser Ile Ser Cys Ser Ala Val
 35 40 45

agg aac ggt tct att gag caa cta agt gat gca cgg ctt ata tac tcc 195
 Arg Asn Gly Ser Ile Glu Gln Leu Ser Asp Ala Arg Leu Ile Tyr Ser
 50 55 60

gtc gct cca tct atg ggc cac aac cag gag tct cat cca gaa tca cat 243
 Val Ala Pro Ser Met Gly His Asn Gln Glu Ser His Pro Glu Ser His
 65 70 75

ttt aga gtt ccc gcg att gtc aat gct cta gaa gaa atg cag ctc act 291
 Phe Arg Val Pro Ala Ile Val Asn Ala Leu Glu Glu Met Gln Leu Thr
 80 85 90

tcc aag ttc cgt ggc cca gag gta att gaa ctt caa cat ttt gag cct 339
 Ser Lys Phe Arg Gly Pro Glu Val Ile Glu Leu Gln His Phe Glu Pro
 95 100 105 110

gct tca gtt gat gat att gca agt gtg cat gca aga gcc tat gtt tct 387
 Ala Ser Val Asp Asp Ile Ala Ser Val His Ala Arg Ala Tyr Val Ser
 115 120 125

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 Gly Leu Glu Lys Val Met Asp Gln Ala Val Glu Lys Gly Leu Ile Phe
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ctt gat ggt tca gga cca aca tat gcc act gcc act acc ttc cag gag 483
 Leu Asp Gly Ser Gly Pro Thr Tyr Ala Thr Ala Thr Phe Gln Glu
 145 150 155

tca ata gtt gca gcc ggt gct gga tta gcc tta gtt gac tca gtg gtt 531
 Ser Ile Val Ala Ala Gly Ala Gly Leu Ala Leu Val Asp Ser Val Val
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gca tgt tca aag ata aag gga gat gca ccc act ggt ttt gct ctg ata 579
 Ala Cys Ser Lys Ile Lys Gly Asp Ala Pro Thr Gly Phe Ala Leu Ile
 175 180 185 190

aga cca cca gga cat cac gca gtt cca caa gga cct atg gga ttc tgc 627
 Arg Pro Pro Gly His His Ala Val Pro Gln Gly Pro Met Gly Phe Cys
 195 200 205

PhoenixTemp18436.tmp.txt

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Ile Phe Gly Asn Val Ala Ile Ala Ala Arg Tyr Ser Gln Arg Val His	
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gga ttg aag cgt gtg ttt ata att gac ttt gat gtt cat cat ggg aat	723
Gly Leu Lys Arg Val Phe Ile Ile Asp Phe Asp Val His His Gly Asn	
225 230 235	
gga aca aat gat gct ttc tat gat gat cca gat gta ttt ttc ctt tca	771
Gly Thr Asn Asp Ala Phe Tyr Asp Asp Pro Asp Val Phe Phe Leu Ser	
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Phe His Gln Asp Gly Ser Tyr Pro Gly Thr Gly Lys Phe Asp Glu Val	
255 260 265 270	
gga agt gga gat ggt gaa gga acc aca tta aat ctg cct ctt cct gga	867
Gly Ser Gly Asp Gly Glu Gly Thr Thr Leu Asn Leu Pro Leu Pro Gly	
275 280 285	
ggt tca ggt gat act gct att aga act gtg ttc gat gaa gtc att gta	915
Gly Ser Gly Asp Thr Ala Ile Arg Thr Val Phe Asp Glu Val Ile Val	
290 295 300	
cca tgt gct caa aga ttt aaa cca gac atc att ctt gtt tct gct ggg	963
Pro Cys Ala Gln Arg Phe Lys Pro Asp Ile Ile Leu Val Ser Ala Gly	
305 310 315	
tat gac ggc cac gtg ttg gat cca cta gct aat ctt caa tat aca act	1011
Tyr Asp Gly His Val Leu Asp Pro Leu Ala Asn Leu Gln Tyr Thr Thr	
320 325 330	
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Gly Thr Tyr Tyr Met Leu Ala Ser Ser Ile Lys Gln Leu Ala Lys Asp	
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Leu Cys Gly Gly Arg Cys Val Phe Phe Leu Glu Gly Gly Tyr Asn Leu	
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Lys Ser Leu Ser Tyr Ser Val Ala Asp Thr Phe Arg Ala Leu Leu Gly	
370 375 380	
gac cga agc ttg gca tct gag ttt gat aac cct aac att ttg tac gaa	1203
Asp Arg Ser Leu Ala Ser Glu Phe Asp Asn Pro Asn Ile Leu Tyr Glu	
385 390 395	
gag cca tct aca aaa gtt aag caa gct att cag aag ata aaa cac att	1251
Glu Pro Ser Thr Lys Val Lys Gln Ala Ile Gln Lys Ile Lys His Ile	
400 405 410	
cat tcc ctg tgagggtcaaa atagaaactg acatgacaag catctaaatg	1300
His Ser Leu	
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ttgggtgggc attctccac ttatcacata gaagcaaac cattgtacag gattgcttgt	1420
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 35 40 45
 Gly Ser Ile Glu Gln Leu Ser Asp Ala Arg Leu Ile Tyr Ser Val Ala
 50 55 60
 Pro Ser Met Gly His Asn Gln Glu Ser His Pro Glu Ser His Phe Arg
 65 70 75 80
 Val Pro Ala Ile Val Asn Ala Leu Glu Glu Met Gln Leu Thr Ser Lys
 85 90 95
 Phe Arg Gly Pro Glu Val Ile Glu Leu Gln His Phe Glu Pro Ala Ser
 100 105 110
 Val Asp Asp Ile Ala Ser Val His Ala Arg Ala Tyr Val Ser Gly Leu

PhoenixTemp18436.tmp.txt

acc	ccg	gag	acg	cag	cag	gac	cag	atc	cgc	gcc	ctc	aag	cgc	ttc	aac	400
Thr	Pro	Glu	Thr	Gln	Gln	Asp	Gln	Ile	Arg	Ala	Leu	Lys	Arg	Phe	Asn	
		95					100					105				
gtc	ggc	gag	gac	tgc	ccc	gtc	ttc	gac	ggc	ctc	tac	agc	ttc	tgc	caa	448
Val	Gly	Glu	Asp	Cys	Pro	Val	Phe	Asp	Gly	Leu	Tyr	Ser	Phe	Cys	Gln	
	110					115					120					
acc	tac	gcc	ggc	ggc	tcc	gtc	ggg	ggc	gcc	gtc	aag	ctc	aac	cac	ggc	496
Thr	Tyr	Ala	Gly	Gly	Ser	Val	Gly	Gly	Ala	Val	Lys	Leu	Asn	His	Gly	
125					130					135					140	
cac	gac	atc	gcc	atc	aac	tgg	gcc	ggc	ggc	ctc	cac	cac	gcc	aag	aag	544
His	Asp	Ile	Ala	Ile	Asn	Trp	Ala	Gly	Gly	Leu	His	His	Ala	Lys	Lys	
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Cys	Glu	Ala	Ser	Gly	Phe	Cys	Tyr	Val	Asn	Asp	Ile	Val	Leu	Ala	Ile	
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ctc	gag	ctc	ctc	aaa	tac	cac	cag	cgt	gtt	ctg	tat	gtc	gat	atc	gat	640
Leu	Glu	Leu	Leu	Lys	Tyr	His	Gln	Arg	Val	Leu	Tyr	Val	Asp	Ile	Asp	
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gtg	atg	act	gtc	tca	ttc	cac	aag	ttt	ggg	gat	tat	ttc	cca	ggg	aca	736
Val	Met	Thr	Val	Ser	Phe	His	Lys	Phe	Gly	Asp	Tyr	Phe	Pro	Gly	Thr	
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Gly	Asp	Ile	Arg	Asp	Val	Gly	His	Ser	Lys	Gly	Lys	Tyr	Tyr	Ser	Leu	
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aat	gtc	ccg	ttg	gat	gac	ggc	atc	gac	gac	gag	agc	tat	caa	tcg	ttg	832
Asn	Val	Pro	Leu	Asp	Asp	Gly	Ile	Asp	Asp	Glu	Ser	Tyr	Gln	Ser	Leu	
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Val	Val	Leu	Gln	Cys	Gly	Ala	Asp	Ser	Leu	Ser	Gly	Asp	Arg	Leu	Gly	
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Cys	Phe	Asn	Leu	Ser	Ile	Lys	Gly	His	Ala	Glu	Cys	Val	Arg	Phe	Met	
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agg	tcc	ttc	aat	gtt	ccg	gtg	ttg	ctg	ctt	ggg	ggg	ggg	ggg	tat	acc	1024
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Ile	Arg	Asn	Val	Ala	Arg	Cys	Trp	Cys	Tyr	Glu	Thr	Gly	Val	Ala	Leu	
			320					325					330			
ggt	cat	gag	cta	act	gac	aag	atg	ccg	cta	aat	gag	cat	tat	gag	tat	1120
Gly	His	Glu	Leu	Thr	Asp	Lys	Met	Pro	Leu	Asn	Glu	His	Tyr	Glu	Tyr	
		335					340					345				
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Phe	Gly	Pro	Asp	Tyr	Thr	Leu	His	Val	Ala	Pro	Ser	Asn	Met	Glu	Asn	
	350					355					360					
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Lys	Asn	Thr	His	Arg	His	Leu	Asp	Glu	Ile	Arg	Ser	Arg	Leu	Leu	Glu	
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aat	ctt	aca	aaa	ctc	cgg	cat	gct	cct	agt	gtg	cag	ttt	caa	gag	cga	1264
Asn	Leu	Thr	Lys	Leu	Arg	His	Ala	Pro	Ser	Val	Gln	Phe	Gln	Glu	Arg	
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Pro	Pro	Glu	Ala	Glu	Gln	Pro	Glu	Gln	Asp	Glu	Asp	Gln	Glu	Asn	Pro	
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gat	gaa	agg	cat	cat	gct	gac	tct	gat	gtg	gaa	atg	gat	gat	gcc	aag	1360
Asp	Glu	Arg	His	His	Ala	Asp	Ser	Asp	Val	Glu	Met	Asp	Asp	Ala	Lys	
		415					420					425				
cct	ctg	gag	gac	tct	gaa	agg	aga	acc	agt	act	cag	ggg	gcg	aga	gtt	1408
Pro	Leu	Glu	Asp	Ser	Glu	Arg	Arg	Thr	Ser	Thr	Gln	Gly	Ala	Arg	Val	
	430					435					440					
aag	aga	gaa	tct	gct	gaa	act	gag	gtg	aca	aca	gat	cag	gat	ggg	aac	1456
Lys	Arg	Glu	Ser	Ala	Glu	Thr	Glu	Val	Thr	Thr	Asp	Gln	Asp	Gly	Asn	
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PhoenixTemp18436.tmp.txt

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Val Gly Ser Ser Lys Gln Asn Pro Pro Ile Asp Ala Ser Pro Met Ala	
480 485 490	
ata gac ggg cca gct gtt gtc agg gct gaa cca gag agg tca aac aaa	1600
Ile Asp Gly Pro Ala Val Val Arg Ala Glu Pro Glu Arg Ser Asn Lys	
495 500 505	
tta cag gaa caa caa gca ttg cat cag aaa cca tgatcatcca ccttaacgta	1653
Leu Gln Glu Gln Gln Ala Leu His Gln Lys Pro	
510 515	
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ctgtagcata gttcaaacaa tctactgcac caacaagtta gctaccagaa tccaagatgg	1773
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 35 40 45
 Arg Met Thr His Ala Leu Leu Ala His Tyr Gly Leu Leu Asp Glu Met
 50 55 60
 Gln Val Leu Lys Pro His Pro Ala Arg Asp Arg Asp Leu Cys Arg Phe
 65 70 75 80
 His Ala Asp Asp Tyr Val Ser Phe Leu Arg Ser Val Thr Pro Glu Thr
 85 90 95
 Gln Gln Asp Gln Ile Arg Ala Leu Lys Arg Phe Asn Val Gly Glu Asp
 100 105 110
 Cys Pro Val Phe Asp Gly Leu Tyr Ser Phe Cys Gln Thr Tyr Ala Gly
 115 120 125
 Gly Ser Val Gly Gly Ala Val Lys Leu Asn His Gly His Asp Ile Ala
 130 135 140
 Ile Asn Trp Ala Gly Gly Leu His His Ala Lys Lys Cys Glu Ala Ser
 145 150 155 160
 Gly Phe Cys Tyr Val Asn Asp Ile Val Leu Ala Ile Leu Glu Leu Leu
 165 170 175
 Lys Tyr His Gln Arg Val Leu Tyr Val Asp Ile Asp Ile His His Gly
 180 185 190
 Asp Gly Val Glu Glu Ala Phe Tyr Thr Thr Asp Arg Val Met Thr Val
 195 200 205
 Ser Phe His Lys Phe Gly Asp Tyr Phe Pro Gly Thr Gly Asp Ile Arg
 210 215 220
 Asp Val Gly His Ser Lys Gly Lys Tyr Tyr Ser Leu Asn Val Pro Leu
 225 230 235 240
 Asp Asp Gly Ile Asp Asp Glu Ser Tyr Gln Ser Leu Phe Lys Pro Ile
 245 250 255
 Met Gly Lys Val Met Glu Ile Phe Arg Pro Gly Ala Val Val Leu Gln
 260 265 270
 Cys Gly Ala Asp Ser Leu Ser Gly Asp Arg Leu Gly Cys Phe Asn Leu
 275 280 285
 Ser Ile Lys Gly His Ala Glu Cys Val Arg Phe Met Arg Ser Phe Asn
 290 295 300
 Val Pro Val Leu Leu Leu Gly Gly Gly Tyr Thr Ile Arg Asn Val

PhoenixTemp18436.tmp.txt

305 310 315 320
 Ala Arg Cys Trp Cys Tyr Glu Thr Gly Val Ala Leu Gly His Glu Leu
 Thr Asp Lys Met Pro Leu Asn Glu His Tyr Glu Tyr Phe Gly Pro Asp
 Tyr Thr Leu His Val Ala Pro Ser Asn Met Glu Asn Lys Asn Thr His
 Arg His Leu Asp Glu Ile Arg Ser Arg Leu Leu Glu Asn Leu Thr Lys
 Leu Arg His Ala Pro Ser Val Gln Phe Gln Glu Arg Pro Pro Glu Ala
 Glu Gln Pro Glu Gln Asp Glu Asp Gln Glu Asn Pro Asp Glu Arg His
 His Ala Asp Ser Asp Val Glu Met Asp Asp Ala Lys Pro Leu Glu Asp
 Ser Glu Arg Arg Thr Ser Thr Gln Gly Ala Arg Val Lys Arg Glu Ser
 Ala Glu Thr Glu Val Thr Thr Asp Gln Asp Gly Asn Gly Val Ala Ser
 Glu Gln Val Arg Gly Pro Glu Pro Val Ala Asp Gly Val Gly Ser Ser
 Lys Gln Asn Pro Pro Ile Asp Ala Ser Pro Met Ala Ile Asp Gly Pro
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 Met Lys Asn Asp Glu Ala His Ser His Asp
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 Asn His Ile Ser Gly Gly Met Lys Ala Ala Glu Ala Phe Val Glu Gly
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 Arg Ser Ile Arg Thr Gly Arg His Ser Glu Gly Ser Arg Ser Gly Gln
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 Leu Phe Pro Asp Glu Arg His Ser Gly Ser Ser Ala Gly Asp Ala Ser
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 Ala Thr Tyr Tyr Glu Leu His Ser Asn Met Ala Cys Lys Ser Gly Thr
 75 80 85 90
 gca gca ggg cat atc ttt gat gag gaa ggt gtt gga gat tac gcc agt 460
 Page 60

PhoenixTemp18436.tmp.txt

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gac	ttg	gag	gat	gat	caa	ctc	tgc	cat	ggt	gaa	gat	gca	gat	cac	ttc	556
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Gln	Arg	Asp	Ala	Lys	Asp	Leu	Phe	Leu	Asn	Glu	Arg	Ser	Ser	Asp	Lys	
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Asp	Val	Asp	Tyr	Cys	Asn	Gly	Ser	Ser	Arg	Leu	Glu	Phe	Asp	Ala	Tyr	
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tat	ccc	agg	agt	gat	gtt	cat	aac	ccc	gag	agc	ata	cgt	agt	gga	tct	892
Tyr	Pro	Arg	Ser	Asp	Val	His	Asn	Pro	Glu	Ser	Ile	Arg	Ser	Gly	Ser	
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Phe	Leu	Gln	Lys	Asp	Asp	Ile	Ala	Glu	Phe	Asp	Ala	Asp	Asn	Val	Lys	
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	300					305					310					
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Arg	Ser	Val	Asn	Pro	Leu	Cys	Thr	Val	Ala	His	Phe	Ser	Gly	Val	Gly		
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Leu	Lys	Leu	Pro	Pro	Pro	Leu	Gly	Ala	His	Asn	Asn	Leu	Lys	Thr	Leu		
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aag	agc	tta	cat	aca	ttg	gat	ttg	tca	cga	aat	aag	ata	gtt	gtg	ata	1516	
Lys	Ser		Leu	His	Thr	Leu	Leu	Ser	Arg	Asn	Lys	Ile	Val	Val	Ile		
			445				450					455					
gaa	ggg	ctc	cgt	gaa	ctc	tct	cga	ctc	cgt	gtg	ctg	aac	cta	tca	cat	1564	
Glu	Gly	Leu	Arg	Glu	Leu	Ser	Arg	Leu	Arg	Val	Leu	Asn	Leu	Ser	His		
	460					465					470						
aat	cga	att	att	cga	att	gga	cat	ggg	ttg	gcg	aac	tgt	act	tct	ttg	1612	
Asn	Arg	Ile	Ile	Arg	Ile	Gly	His	Gly	Leu	Ala	Asn	Cys	Thr	Ser	Leu		
475					480					485					490		
agg	gaa	atc	tat	ttg	gct	ggg	aac	aag	att	agc	gag	att	gag	gga	cta	1660	
Arg	Glu	Ile	Tyr	Leu	Ala	Gly	Asn	Lys	Ile	Ser	Glu	Ile	Glu	Gly	Leu		
				495					500					505			
cat	cga	cta	ctg	aaa	ctt	agc	ttc	att	gat	ttg	agt	ttc	aac	aaa	atc	1708	
His	Arg	Leu	Leu	Lys	Leu	Ser	Phe	Ile	Asp	Leu	Ser	Phe	Asn	Lys	Ile		
				510				515					520				
gcc	tca	gct	aaa	tct	att	ggg	cag	cta	gcc	gcc	aac	tac	aat	tcc	ctc	1756	
Ala	Ser	Ala	Lys	Ser	Ile	Gly	Gln	Leu	Ala	Ala	Asn	Tyr	Asn	Ser	Leu		
		525					530					535					
cag	gca	atc	aac	ctt	ttg	gga	aat	cca	tta	cac	agc	aac	ctt	ggg	gag	1804	
Gln	Ala	Ile	Asn	Leu	Leu	Gly	Asn	Pro	Leu	His	Ser	Asn	Leu	Gly	Glu		
	540					545					550						
gag	cca	tta	cgg	aaa	ttg	atc	gtt	gga	ctt	act	ccg	cat	gta	gtg	tac	1852	
Glu	Pro	Leu	Arg	Lys	Leu	Ile	Val	Gly	Leu	Thr	Pro	His	Val	Val	Tyr		
555					560					565					570		
ctt	aac	aaa	caa	gct	acg	aag	gcc	gta	tct	gca	cga	gat	gct	tca	gtg	1900	
Leu	Asn	Lys	Gln	Ala	Thr	Lys	Ala	Val	Ser	Ala	Arg	Asp	Ala	Ser	Val		
				575					580					585			
gat	agc	gtg	gcc	aga	gct	gct	ttg	gca	aat	cct	agt	cac	cac	act	cac	1948	
Asp	Ser	Val	Ala	Arg	Ala	Ala	Leu	Ala	Asn	Pro	Ser	His	His	Thr	His		
			590					595					600				
caa	cga	gga	aag	acc	tct	tca	caa	agc	aaa	tcc	ctt	cgg	cga	agc	ggg	1996	
Gln	Arg	Gly	Lys	Thr	Ser	Ser	Gln	Ser	Lys	Ser	Leu	Arg	Arg	Ser	Gly		
		605					610					615					
gcg	cct	gcc	cca	tcc	act	gct	tcc	agc	ccc	cgt	cac	cgg	gac	aaa	cgg	2044	
Ala	Pro	Ala	Pro	Ser	Thr	Ala	Ser	Ser	Pro	Arg	His	Arg	Asp	Lys	Arg		
	620					625					630						
act	ggc	gag	aag	tct	gca	gca	ggg	cgt	acc	aat	gca	ctg	aag	agt	aga	2092	
Thr	Gly	Glu	Lys	Ser	Ala	Ala	Gly	Arg	Thr	Asn	Ala	Leu	Lys	Ser	Arg		
635					640					645					650		

PhoenixTemp18436.tmp.txt

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acg ccc tct gag ctg cct cct cga cat cga tat tct cac agc cgg ctt      2140
Thr Pro Ser Glu Leu Pro Pro Arg His Arg Tyr Ser His Ser Arg Leu
655                                660                                665

gtt cat ggc tct ggg gtc act aag gat cac cct cgt tta gcc cat ctt      2188
Val His Gly Ser Gly Val Thr Lys Asp His Pro Arg Leu Ala His Leu
670                                675                                680

cca atg cct cca cca gtc cag aat ttt atc aga gcc gag gaa aag gtt      2236
Pro Met Pro Pro Pro Val Gln Asn Phe Ile Arg Ala Glu Glu Lys Val
685                                690                                695

taattgacct gacgtttgca atattgttgc agtcggagac aagactagag ggaggaagtt      2296

tggaagttt gtccgtttgg tttggtgttc acaatatctg cagagttgtg ttagcaacct      2356

ggtcatttct gtttcagtgt acggtatgct agtgctctaa aagtttgata tgttcatgcc      2416

ataatgaata ccctgtgggc attttcattt taatattgct gcctcaatta attgatgaga      2476

ttctctggca tgagttaacg c                                              2497

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<210> 56
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<212> PRT
<213> Physcomitrella patens

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```

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Met Lys Ala Ala Glu Ala Phe Val Glu Gly Ala Tyr Glu Gly Asp Glu
20      25      30
```

```
Glu Glu Glu Phe Glu Lys Asp Arg Asn Ser Arg Ser Ile Arg Thr Gly
35      40      45
```

```
Arg His Ser Glu Gly Ser Arg Ser Gly Gln Leu Phe Pro Asp Glu Arg
50      55      60
```

```
His Ser Gly Ser Ser Ala Gly Asp Ala Ser Ala Thr Tyr Tyr Glu Leu
65      70      75      80
```

```
His Ser Asn Met Ala Cys Lys Ser Gly Thr Ala Ala Gly His Ile Phe
85      90      95
```

```
Asp Glu Glu Gly Val Gly Asp Tyr Ala Ser Asp Pro Gly Val Tyr His
100     105     110
```

```
Asp Asp Ser Cys Leu Asn Pro Leu Glu Lys Asp Leu Glu Asp Asp Gln
115     120     125
```

```
Leu Cys His Gly Glu Asp Ala Asp His Phe Leu Lys Lys Ala Arg Ser
130     135     140
```

```
Glu Gly Gly Leu Tyr Glu Leu Gly Leu Ile Ser Gln Gln Leu Thr Gly
145     150     155     160
```

PhoenixTemp18436.tmp.txt

Gln Ser Thr Glu Gln Asp Leu Ala His His Ser Gln Gly Ser Pro Ser
165 170 175

Tyr Gln Gly Ile Ser Arg Gln Asp Ser Ser Ile His Leu Pro Lys Gly
180 185 190

Leu Val Glu Gly Pro His Ser Glu Ile Asp Gln Arg Asp Ala Lys Asp
195 200 205

Leu Phe Leu Asn Glu Arg Ser Ser Asp Lys Asp Val Asp Tyr Cys Asn
210 215 220

Gly Ser Ser Arg Leu Glu Phe Asp Ala Tyr Tyr Pro Arg Ser Asp Val
225 230 235 240

His Asn Pro Glu Ser Ile Arg Ser Gly Ser Phe Leu Gln Lys Asp Asp
245 250 255

Ile Ala Glu Phe Asp Ala Asp Asn Val Lys Ser His Asn Ser Ala Gly
260 265 270

Val Asp Gly Val Pro Asp Gly Cys Ile Ser Gly His Phe Gln Asp Leu
275 280 285

Asn Leu Asp Leu Val Ala Gly His Asp Glu Asn Asp His Thr Lys Gln
290 295 300

Asp Ala Arg Ala Ser Glu Leu Asp Arg Pro Asn Leu Ser Arg Val Glu
305 310 315 320

Glu Trp Ile Arg Ser Ile Glu Pro Thr Pro Phe Leu Ala Asp Glu Glu
325 330 335

Val Glu Pro Thr Ala Tyr Ser Asp Thr Glu Pro Ser Ala Pro Ala Ala
340 345 350

Ser Phe Phe Arg Ala Arg Ala Arg Pro Asp Gln Met His Leu Asp Gly
355 360 365

Ile Ala Leu Val Asp Arg Arg Asn His Gln Gly Glu Gln Leu Ile Asp
370 375 380

Ala Asp Ser Glu Met Ala Ser Phe Ile Ala Arg Ser Val Asn Pro Leu
385 390 395 400

Cys Thr Val Ala His Phe Ser Gly Val Gly Leu Lys Leu Pro Pro Pro
405 410 415

Leu Gly Ala His Asn Asn Leu Lys Thr Leu Asn Leu Ser Ala Asn Ala
420 425 430

PhoenixTemp18436.tmp.txt

Ile Val Arg Met Leu Pro Gly Cys Leu Pro Lys Ser Leu His Thr Leu
435 440 445

Asp Leu Ser Arg Asn Lys Ile Val Val Ile Glu Gly Leu Arg Glu Leu
450 455 460

Ser Arg Leu Arg Val Leu Asn Leu Ser His Asn Arg Ile Ile Arg Ile
465 470 475 480

Gly His Gly Leu Ala Asn Cys Thr Ser Leu Arg Glu Ile Tyr Leu Ala
485 490 495

Gly Asn Lys Ile Ser Glu Ile Glu Gly Leu His Arg Leu Leu Lys Leu
500 505 510

Ser Phe Ile Asp Leu Ser Phe Asn Lys Ile Ala Ser Ala Lys Ser Ile
515 520 525

Gly Gln Leu Ala Ala Asn Tyr Asn Ser Leu Gln Ala Ile Asn Leu Leu
530 535 540

Gly Asn Pro Leu His Ser Asn Leu Gly Glu Glu Pro Leu Arg Lys Leu
545 550 555 560

Ile Val Gly Leu Thr Pro His Val Val Tyr Leu Asn Lys Gln Ala Thr
565 570 575

Lys Ala Val Ser Ala Arg Asp Ala Ser Val Asp Ser Val Ala Arg Ala
580 585 590

Ala Leu Ala Asn Pro Ser His His Thr His Gln Arg Gly Lys Thr Ser
595 600 605

Ser Gln Ser Lys Ser Leu Arg Arg Ser Gly Ala Pro Ala Pro Ser Thr
610 615 620

Ala Ser Ser Pro Arg His Arg Asp Lys Arg Thr Gly Glu Lys Ser Ala
625 630 635 640

Ala Gly Arg Thr Asn Ala Leu Lys Ser Arg Thr Pro Ser Glu Leu Pro
645 650 655

Pro Arg His Arg Tyr Ser His Ser Arg Leu Val His Gly Ser Gly Val
660 665 670

Thr Lys Asp His Pro Arg Leu Ala His Leu Pro Met Pro Pro Pro Val
675 680 685

Gln Asn Phe Ile Arg Ala Glu Glu Lys Val
690 695

PhoenixTemp18436.tmp.txt

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 <212> DNA
 <213> Physcomitrella patens

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

PhoenixTemp18436.tmp.txt

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Ile	Ala	Glu	Phe 260	Asp	Ala	Asp	Asn	Val 265	Lys	Ser	His	Asn	Ser 270	Ala	Gly	
gtt	gat	gga	gtc	cct	gat	ggt	tgc	ata	tct	ggt	cac	ttt	caa	gat	ttg	864
Val	Asp	Gly 275	Val	Pro	Asp	Gly	Cys 280	Ile	Ser	Gly	His	Phe 285	Gln	Asp	Leu	
aac	ttg	gat	tta	gtt	gct	ggg	cac	gat	gag	aat	gac	cac	act	aag	caa	912
Asn	Leu 290	Asp	Leu	Val	Ala	Gly 295	His	Asp	Glu	Asn	Asp 300	His	Thr	Lys	Gln	
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Asp 305	Ala	Arg	Ala	Ser	Glu 310	Leu	Asp	Arg	Pro	Asn 315	Leu	Ser	Arg	Val	Glu 320	
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Glu	Trp	Ile	Arg	Ser 325	Ile	Glu	Pro	Thr	Pro 330	Phe	Leu	Ala	Asp	Glu 335	Glu	
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Val	Glu	Pro	Thr 340	Ala	Tyr	Ser	Asp	Thr 345	Glu	Pro	Ser	Ala	Pro 350	Ala	Ala	
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Ser	Phe	Phe 355	Arg	Ala	Arg	Ala	Arg 360	Pro	Asp	Gln	Met	His 365	Leu	Asp	Gly	
atc	gct	ctt	gtg	gac	cgt	aga	aac	cat	cag	gga	gag	caa	ctg	ata	gat	1152
Ile	Ala 370	Leu	Val	Asp	Arg	Arg 375	Asn	His	Gln	Gly	Glu 380	Gln	Leu	Ile	Asp	
gct	gac	agt	gaa	atg	gca	agc	ttt	att	gct	cgg	tct	gtg	aat	cca	ctt	1200
Ala 385	Asp	Ser	Glu	Met	Ala 390	Ser	Phe	Ile	Ala	Arg 395	Ser	Val	Asn	Pro	Leu 400	
tgt	aca	gtg	gct	cat	ttc	tcg	gga	gtg	gga	tta	aag	tta	cct	cca	ccc	1248
Cys	Thr	Val	Ala	His 405	Phe	Ser	Gly	Val 410	Gly	Leu	Lys	Leu	Pro	Pro 415	Pro	
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Leu	Gly	Ala	His 420	Asn	Asn	Leu	Lys	Thr 425	Leu	Asn	Leu	Ser	Ala 430	Asn	Ala	
atc	gta	cgc	atg	tta	ccc	ggg	tgt	ctt	cca	aag	agc	tta	cat	aca	ttg	1344
Ile	Val	Arg 435	Met	Leu	Pro	Gly	Cys 440	Leu	Pro	Lys	Ser	Leu 445	His	Thr	Leu	
gat	ttg	tca	cga	aat	aag	ata	gtt	gtg	ata	gaa	ggg	ctc	cgt	gaa	ctc	1392
Asp	Leu 450	Ser	Arg	Asn	Lys	Ile 455	Val	Val	Ile	Glu	Gly 460	Leu	Arg	Glu	Leu	
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Ser 465	Arg	Leu	Arg	Val	Leu 470	Asn	Leu	Ser	His	Asn 475	Arg	Ile	Ile	Arg	Ile 480	
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Gly	His	Gly	Leu	Ala 485	Asn	Cys	Thr	Ser	Leu 490	Arg	Glu	Ile	Tyr	Leu 495	Ala	
ggt	aac	aag	att	agc	gag	att	gag	gga	cta	cat	cga	cta	ctg	aaa	ctt	1536
Gly	Asn	Lys	Ile 500	Ser	Glu	Ile	Glu	Gly 505	Leu	His	Arg	Leu	Leu 510	Lys	Leu	

PhoenixTemp18436.tmp.txt

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 Ser Phe Ile Asp Leu Ser Phe Asn Lys Ile Ala Ser Ala Lys Ser Ile
 515 520 525
 ggg cag cta gcc gcc aac tac aat tcc ctc cag gca atc aac ctt ttg 1632
 Gly Gln Leu Ala Ala Asn Tyr Asn Ser Leu Gln Ala Ile Asn Leu Leu
 530 535 540
 gga aat cca tta cac agc aac ctt ggt gag gag cca tta cgg aaa ttg 1680
 Gly Asn Pro Leu His Ser Asn Leu Gly Glu Glu Pro Leu Arg Lys Leu
 545 550 555 560
 atc gtt gga ctt act ccg cat gta gtg tac ctt aac aaa caa gct acg 1728
 Ile Val Gly Leu Thr 565 Pro His Val Val Tyr 570 Leu Asn Lys Gln Ala Thr
 575
 aag gcc gta tct gca cga gat gct tca gtg gat agc gtg gcc aga gct 1776
 Lys Ala Val Ser 580 Ala Arg Asp Ala Ser Val Asp Ser Val Ala Arg Ala
 585 590
 gct ttg gca aat cct agt cac cac act cac caa cga gga aag acc tct 1824
 Ala Leu Ala Asn Pro Ser His His Thr His Gln Arg Gly Lys Thr Ser
 595 600 605
 tca caa agc aaa tcc ctt cgg cga agc ggt gcg cct gcc cca tcc act 1872
 Ser Gln Ser Lys Ser Leu Arg Arg Ser Gly Ala Pro Ala Pro Ser Thr
 610 615 620
 gct tcc agc ccc cgt cac cgg gac aaa cgg act ggc gag aag tct gca 1920
 Ala Ser Ser Pro Arg His Arg Asp Lys Arg Thr 635 Gly Glu Lys Ser Ala
 625 630 640
 gca ggt cgt acc aat gca ctg aat agg acg ccg agc ccg agc tcg aat 1968
 Ala Gly Arg Thr 645 Ala Leu Asn Arg Thr 650 Pro Ser Pro Ser Ser Asn
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 ttc ccc gat cgt tca aac att tgg caa taa 1998
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<210> 58
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 <212> PRT
 <213> Physcomitrella patens

<400> 58

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

His Ser Asn Met Ala Cys Lys Ser Gly Thr Ala Ala Gly His Ile Phe
85 90 95

Asp Glu Glu Gly Val Gly Asp Tyr Ala Ser Asp Pro Gly Val Tyr His
100 105 110

Asp Asp Ser Cys Leu Asn Pro Leu Glu Lys Asp Leu Glu Asp Asp Gln
115 120 125

Leu Cys His Gly Glu Asp Ala Asp His Phe Leu Lys Lys Ala Arg Ser
130 135 140

Glu Gly Gly Leu Tyr Glu Leu Gly Leu Ile Ser Gln Gln Leu Thr Gly
145 150 155 160

Gln Ser Thr Glu Gln Asp Leu Ala His His Ser Gln Gly Ser Pro Ser
165 170 175

Tyr Gln Gly Ile Ser Arg Gln Asp Ser Ser Ile His Leu Pro Lys Gly
180 185 190

Leu Val Glu Gly Pro His Ser Glu Ile Asp Gln Arg Asp Ala Lys Asp
195 200 205

Leu Phe Leu Asn Glu Arg Ser Ser Asp Lys Asp Val Asp Tyr Cys Asn
210 215 220

Gly Ser Ser Arg Leu Glu Phe Asp Ala Tyr Tyr Pro Arg Ser Asp Val
225 230 235 240

His Asn Pro Glu Ser Ile Arg Ser Gly Ser Phe Leu Gln Lys Asp Asp
245 250 255

Ile Ala Glu Phe Asp Ala Asp Asn Val Lys Ser His Asn Ser Ala Gly
260 265 270

Val Asp Gly Val Pro Asp Gly Cys Ile Ser Gly His Phe Gln Asp Leu
275 280 285

Asn Leu Asp Leu Val Ala Gly His Asp Glu Asn Asp His Thr Lys Gln
290 295 300

Asp Ala Arg Ala Ser Glu Leu Asp Arg Pro Asn Leu Ser Arg Val Glu
305 310 315 320

Glu Trp Ile Arg Ser Ile Glu Pro Thr Pro Phe Leu Ala Asp Glu Glu
325 330 335

Val Glu Pro Thr Ala Tyr Ser Asp Thr Glu Pro Ser Ala Pro Ala Ala
340 345 350

Ser Phe Phe Arg Ala Arg Ala Arg Pro Asp Gln Met His Leu Asp Gly
Page 69

355

360

365

Ile Ala Leu Val Asp Arg Arg Asn His Gln Gly Glu Gln Leu Ile Asp
 370 375 380

Ala Asp Ser Glu Met Ala Ser Phe Ile Ala Arg Ser Val Asn Pro Leu
 385 390 395 400

Cys Thr Val Ala His Phe Ser Gly Val Gly Leu Lys Leu Pro Pro Pro
 405 410 415

Leu Gly Ala His Asn Asn Leu Lys Thr Leu Asn Leu Ser Ala Asn Ala
 420 425 430

Ile Val Arg Met Leu Pro Gly Cys Leu Pro Lys Ser Leu His Thr Leu
 435 440 445

Asp Leu Ser Arg Asn Lys Ile Val Val Ile Glu Gly Leu Arg Glu Leu
 450 455 460

Ser Arg Leu Arg Val Leu Asn Leu Ser His Asn Arg Ile Ile Arg Ile
 465 470 475 480

Gly His Gly Leu Ala Asn Cys Thr Ser Leu Arg Glu Ile Tyr Leu Ala
 485 490 495

Gly Asn Lys Ile Ser Glu Ile Glu Gly Leu His Arg Leu Leu Lys Leu
 500 505 510

Ser Phe Ile Asp Leu Ser Phe Asn Lys Ile Ala Ser Ala Lys Ser Ile
 515 520 525

Gly Gln Leu Ala Ala Asn Tyr Asn Ser Leu Gln Ala Ile Asn Leu Leu
 530 535 540

Gly Asn Pro Leu His Ser Asn Leu Gly Glu Glu Pro Leu Arg Lys Leu
 545 550 555 560

Ile Val Gly Leu Thr Pro His Val Val Tyr Leu Asn Lys Gln Ala Thr
 565 570 575

Lys Ala Val Ser Ala Arg Asp Ala Ser Val Asp Ser Val Ala Arg Ala
 580 585 590

Ala Leu Ala Asn Pro Ser His His Thr His Gln Arg Gly Lys Thr Ser
 595 600 605

Ser Gln Ser Lys Ser Leu Arg Arg Ser Gly Ala Pro Ala Pro Ser Thr
 610 615 620

Ala Ser Ser Pro Arg His Arg Asp Lys Arg Thr Gly Glu Lys Ser Ala
 625 630 635 640

PhoenixTemp18436.tmp.txt

Ala Gly Arg Thr Asn Ala Leu Asn Arg Thr Pro Ser Pro Ser Ser Asn
645 650 655

Phe Pro Asp Arg Ser Asn Ile Trp Gln
660 665