

# SEQUENCE LISTING

<110> Evolva SA  
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 <130> GHS/P543688WO  
 <150> US 61/844422  
 <151> 2012-08-17  
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 acatcccgtt ttgtaaaaga gaaatctatt ccacatattt cattcattcg gctaccatac 420  
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35 40 45

Pro Gly Gly Lys Leu Asn Arg Gly Leu Ser Val Val Asp Thr Tyr Ala  
50 55 60

Ile Leu Ser Asn Lys Thr Val Glu Gln Leu Gly Gln Glu Glu Tyr Glu  
65 70 75 80

Lys Val Ala Ile Leu Gly Trp Cys Ile Glu Leu Leu Gln Ala Tyr Phe  
85 90 95

Leu Val Ala Asp Asp Met Met Asp Lys Ser Ile Thr Arg Arg Gly Gln  
100 105 110

Pro Cys Trp Tyr Lys Val Pro Glu Val Gly Glu Ile Ala Ile Asn Asp  
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Ala Phe Met Leu Glu Ala Ala Ile Tyr Lys Leu Leu Lys Ser His Phe  
130 135 140

Arg Asn Glu Lys Tyr Tyr Ile Asp Ile Thr Glu Leu Phe His Glu Val  
145 150 155 160

Thr Phe Gln Thr Glu Leu Gly Gln Leu Met Asp Leu Ile Thr Ala Pro  
165 170 175

Glu Asp Lys Val Asp Leu Ser Lys Phe Ser Leu Lys Lys His Ser Phe  
180 185 190

Ile Val Thr Phe Lys Thr Ala Tyr Tyr Ser Phe Tyr Leu Pro Val Ala  
195 200 205

Leu Ala Met Tyr Val Ala Gly Ile Thr Asp Glu Lys Asp Leu Lys Gln  
210 215 220

Ala Arg Asp Val Leu Ile Pro Leu Gly Glu Tyr Phe Gln Ile Gln Asp  
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Asp Tyr Leu Asp Cys Phe Gly Thr Pro Glu Gln Ile Gly Lys Ile Gly  
245 250 255

Thr Asp Ile Gln Asp Asn Lys Cys Ser Trp Val Ile Asn Lys Ala Leu  
260 265 270

Glu Leu Ala Ser Ala Glu Gln Arg Lys Thr Leu Asp Glu Asn Tyr Gly  
275 280 285

Lys Lys Asp Ser Val Ala Glu Ala Lys Cys Lys Lys Ile Phe Asn Asp  
290 295 300

Leu Lys Ile Glu Gln Leu Tyr His Glu Tyr Glu Glu Ser Ile Ala Lys  
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Thr Ala Pro Met Phe Ala Ala Met Leu Asp Asn Ala Gly Tyr Asn Ile  
35 40 45

His Asp Gln Tyr Arg His Leu Gly Ile Phe Lys Lys His Ile Ile Pro  
50 55 60

Phe Leu Gly Val Tyr Pro Thr Lys Asp Lys Glu Arg Trp Leu Ser Ile  
65 70 75 80

Leu Thr Arg Cys Gly Leu Pro Leu Glu Leu Ser Leu Asn Cys Thr Asp  
85 90 95

Ser Val Val Arg Tyr Thr Tyr Glu Pro Ile Asn Glu Val Thr Gly Thr  
100 105 110

Glu Lys Asp Thr Phe Asn Thr Leu Ala Ile Met Thr Ser Val Gln Lys  
115 120 125

Leu Ala Gln Ile Gln Ala Gly Ile Asp Leu Glu Trp Phe Ser Tyr Phe  
130 135 140

Lys Asp Glu Leu Thr Leu Asp Glu Ser Glu Ser Ala Thr Leu Gln Ser  
145 150 155 160

Asn Glu Leu Val Lys Glu Gln Ile Lys Thr Gln Asn Lys Leu Ala Leu  
165 170 175

Asp Leu Lys Glu Ser Gln Phe Ala Leu Lys Val Tyr Phe Tyr Pro His  
180 185 190

Leu Lys Ser Ile Ala Thr Gly Lys Ser Thr His Asp Leu Ile Phe Asp  
195 200 205

Ser Val Leu Lys Leu Ser Gln Lys His Asp Ser Ile Gln Pro Ala Phe  
210 215 220

Gln Val Leu Cys Asp Tyr Val Ser Arg Arg Asn His Ser Ala Glu Val  
225 230 235 240

Asp Gln His Gly Ala Leu His Ala Arg Leu Leu Ser Cys Asp Leu Ile  
245 250 255

Asp Pro Ala Lys Ser Arg Val Lys Ile Tyr Leu Leu Glu Lys Thr Val  
260 265 270

Ser Leu Ser Val Met Glu Asp Leu Trp Thr Leu Gly Gly Gln Arg Val  
275 280 285

Asp Ala Ser Thr Met Asp Gly Leu Asp Met Leu Arg Glu Leu Trp Ser  
290 295 300

Leu Leu Lys Val Pro Thr Gly His Leu Glu Tyr Pro Lys Gly Tyr Leu  
305 310 315 320

Glu Leu Gly Glu Ile Pro Asn Glu Gln Leu Pro Ser Met Ala Asn Tyr  
325 330 335

Thr Leu His His Asn Asp Pro Met Pro Glu Pro Gln Val Tyr Phe Thr  
340 345 350

Val Phe Gly Met Asn Asp Ala Glu Ile Ser Asn Ala Leu Thr Ile Phe  
355 360 365

Phe Gln Arg His Gly Phe Asp Asp Met Ala Lys Asn Tyr Arg Val Phe  
370 375 380

Leu Gln Asp Ser Tyr Pro Tyr His Asp Phe Glu Ser Leu Asn Tyr Leu  
385 390 395 400

His Ala Tyr Ile Ser Phe Ser Tyr Arg Arg Asn Lys Pro Tyr Leu Ser  
Page 4

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

Cys Lys Leu Pro Thr Lys Ile Leu Arg Ala Tyr Thr Ala Asp Gly Val  
210 215 220

Val Pro Phe Ala Leu Ala Ser Leu Ser Tyr Ala Asn Ser Leu Phe His  
225 230 235 240

Pro Lys Gly Asp Arg Lys Ile Phe Asn Glu Glu Asp Trp Tyr Phe His  
245 250 255

Ser Glu Trp Asn His Ala Leu Gly Arg His Glu Ala Ser Leu Ile Thr  
260 265 270

Gln Ser Lys Asp Ile Gln Leu Gly Ala Pro Leu Glu Thr Val Ile Val  
275 280 285

Arg Arg Asp Glu Lys Ile Arg Phe Gly Cys Ser Tyr Lys Tyr Asp Lys  
290 295 300

Ala Glu Arg Asp Gln Leu Phe His Ser Ala Gly Leu Glu Asp Ala Ala  
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Arg Leu Asn

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Ala Ser Tyr His Leu Phe Thr Ser Gly Gly Lys Arg Leu Arg Pro Leu  
35 40 45

Ile Leu Thr Ile Ser Ser Asp Leu Phe Gly Gly Gln Arg Glu Arg Ala  
50 55 60

Tyr Tyr Ala Gly Ala Ala Ile Glu Val Leu His Thr Phe Thr Leu Val  
65 70 75 80

His Asp Asp Ile Met Asp Gln Asp Asn Ile Arg Arg Gly Leu Pro Thr  
85 90 95

Val His Val Lys Tyr Gly Leu Pro Leu Ala Ile Leu Ala Gly Asp Leu  
100 105 110

Leu His Ala Lys Ala Phe Gln Leu Leu Thr Gln Ala Leu Arg Gly Leu  
115 120 125

Pro Ser Glu Thr Ile Ile Lys Ala Phe Asp Ile Phe Thr Arg Ser Ile  
130 135 140

Ile Ile Ile Ser Glu Gly Gln Ala Val Asp Met Glu Phe Glu Asp Arg  
145 150 155 160

Ile Asp Ile Lys Glu Gln Glu Tyr Leu Asp Met Ile Ser Arg Lys Thr  
165 170 175

Ala Ala Leu Phe Ser Ala Ser Ser Ser Ile Gly Ala Leu Ile Ala Gly  
180 185 190

Ala Asn Asp Asn Asp Val Arg Leu Met Ser Asp Phe Gly Thr Asn Leu  
195 200 205

Gly Ile Ala Phe Gln Ile Val Asp Asp Ile Leu Gly Leu Thr Ala Asp  
210 215 220

Glu Lys Glu Leu Gly Lys Pro Val Phe Ser Asp Ile Arg Glu Gly Lys  
225 230 235 240

Lys Thr Ile Leu Val Ile Lys Thr Leu Glu Leu Cys Lys Glu Asp Glu  
245 250 255

Lys Lys Ile Val Leu Lys Ala Leu Gly Asn Lys Ser Ala Ser Lys Glu  
260 265 270

Glu Leu Met Ser Ser Ala Asp Ile Ile Lys Lys Tyr Ser Leu Asp Tyr  
275 280 285

Ala Tyr Asn Leu Ala Glu Lys Tyr Tyr Lys Asn Ala Ile Asp Ser Leu  
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<212> PRT  
<213> *Saccharomyces cerevisiae*

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



Leu Ile Gln Asp His Leu Leu Cys Ile Phe Ala Phe Ile Gly Cys Ser  
 305 310 315 320  
 Met Tyr Ala His Gln Leu Lys Thr Leu Thr Asn Phe Cys Ile Leu Ser  
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 Ala Phe Ile Leu Ile Phe Glu Leu Ile Leu Thr Pro Thr Phe Tyr Ser  
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 Ala Ile Leu Ala Leu Arg Leu Glu Met Asn Val Ile His Arg Ser Thr  
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 Ile Ile Lys Gln Thr Leu Glu Glu Asp Gly Val Val Pro Ser Thr Ala  
 370 375 380  
 Arg Ile Ile Ser Lys Ala Glu Lys Lys Ser Val Ser Ser Phe Leu Asn  
 385 390 395 400  
 Leu Ser Val Val Val Ile Ile Met Lys Leu Ser Val Ile Leu Leu Phe  
 405 410 415  
 Val Phe Ile Asn Phe Tyr Asn Phe Gly Ala Asn Trp Val Asn Asp Ala  
 420 425 430  
 Phe Asn Ser Leu Tyr Phe Asp Lys Glu Arg Val Ser Leu Pro Asp Phe  
 435 440 445  
 Ile Thr Ser Asn Ala Ser Glu Asn Phe Lys Glu Gln Ala Ile Val Ser  
 450 455 460  
 Val Thr Pro Leu Leu Tyr Tyr Lys Pro Ile Lys Ser Tyr Gln Arg Ile  
 465 470 475 480  
 Glu Asp Met Val Leu Leu Leu Leu Arg Asn Val Ser Val Ala Ile Arg  
 485 490 495  
 Asp Arg Phe Val Ser Lys Leu Val Leu Ser Ala Leu Val Cys Ser Ala  
 500 505 510  
 Val Ile Asn Val Tyr Leu Leu Asn Ala Ala Arg Ile His Thr Ser Tyr  
 515 520 525  
 Thr Ala Asp Gln Leu Val Lys Thr Glu Val Thr Lys Lys Ser Phe Thr  
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 Ala Pro Val Gln Lys Ala Ser Thr Pro Val Leu Thr Asn Lys Thr Val  
 545 550 555 560  
 Ile Ser Gly Ser Lys Val Lys Ser Leu Ser Ser Ala Gln Ser Ser Ser  
 565 570 575  
 Ser Gly Pro Ser Ser Ser Ser Glu Glu Asp Asp Ser Arg Asp Ile Glu  
 580 585 590

Ser Leu Asp Lys Lys Ile Arg Pro Leu Glu Glu Leu Glu Ala Leu Leu  
 595 600 605

Ser Ser Gly Asn Thr Lys Gln Leu Lys Asn Lys Glu Val Ala Ala Leu  
 610 615 620

Val Ile His Gly Lys Leu Pro Leu Tyr Ala Leu Glu Lys Lys Leu Gly  
 625 630 635 640

Asp Thr Thr Arg Ala Val Ala Val Arg Arg Lys Ala Leu Ser Ile Leu  
 645 650 655

Ala Glu Ala Pro Val Leu Ala Ser Asp Arg Leu Pro Tyr Lys Asn Tyr  
 660 665 670

Asp Tyr Asp Arg Val Phe Gly Ala Cys Cys Glu Asn Val Ile Gly Tyr  
 675 680 685

Met Pro Leu Pro Val Gly Val Ile Gly Pro Leu Val Ile Asp Gly Thr  
 690 695 700

Ser Tyr His Ile Pro Met Ala Thr Thr Glu Gly Cys Leu Val Ala Ser  
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Ala Met Arg Gly Cys Lys Ala Ile Asn Ala Gly Gly Gly Ala Thr Thr  
 725 730 735

Val Leu Thr Lys Asp Gly Met Thr Arg Gly Pro Val Val Arg Phe Pro  
 740 745 750

Thr Leu Lys Arg Ser Gly Ala Cys Lys Ile Trp Leu Asp Ser Glu Glu  
 755 760 765

Gly Gln Asn Ala Ile Lys Lys Ala Phe Asn Ser Thr Ser Arg Phe Ala  
 770 775 780

Arg Leu Gln His Ile Gln Thr Cys Leu Ala Gly Asp Leu Leu Phe Met  
 785 790 795 800

Arg Phe Arg Thr Thr Thr Gly Asp Ala Met Gly Met Asn Met Ile Ser  
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Lys Gly Val Glu Tyr Ser Leu Lys Gln Met Val Glu Glu Tyr Gly Trp  
 820 825 830

Glu Asp Met Glu Val Val Ser Val Ser Gly Asn Tyr Cys Thr Asp Lys  
 835 840 845

Lys Pro Ala Ala Ile Asn Trp Ile Glu Gly Arg Gly Lys Ser Val Val  
 850 855 860

Ala Glu Ala Thr Ile Pro Gly Asp Val Val Arg Lys Val Leu Lys Ser  
865 870 875 880

Asp Val Ser Ala Leu Val Glu Leu Asn Ile Ala Lys Asn Leu Val Gly  
885 890 895

Ser Ala Met Ala Gly Ser Val Gly Gly Phe Asn Ala His Ala Ala Asn  
900 905 910

Leu Val Thr Ala Val Phe Leu Ala Leu Gly Gln Asp Pro Ala Gln Asn  
915 920 925

Val Glu Ser Ser Asn Cys Ile Thr Leu Met Lys Glu Val Asp Gly Asp  
930 935 940

Leu Arg Ile Ser Val Ser Met Pro Ser Ile Glu Val Gly Thr Ile Gly  
945 950 955 960

Gly Gly Thr Val Leu Glu Pro Gln Gly Ala Met Leu Asp Leu Leu Gly  
965 970 975

Val Arg Gly Pro His Ala Thr Ala Pro Gly Thr Asn Ala Arg Gln Leu  
980 985 990

Ala Arg Ile Val Ala Cys Ala Val Leu Ala Gly Glu Leu Ser Leu Cys  
995 1000 1005

Ala Ala Leu Ala Ala Gly His Leu Val Gln Ser His Met Thr His  
1010 1015 1020

Asn Arg Lys Pro Ala Glu Pro Thr Lys Pro Asn Asn Leu Asp Ala  
1025 1030 1035

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Ser

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<213> Enterococcus faecalis  
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20 25 30

Val Thr Thr Gln Leu Leu Lys Arg His Ser Thr Ile Ser Glu Glu Ile  
35 40 45

Asp Gln Val Ile Phe Gly Asn Val Leu Gln Ala Gly Asn Gly Gln Asn  
50 55 60

Pro Ala Arg Gln Ile Ala Ile Asn Ser Gly Leu Ser His Glu Ile Pro  
65 70 75 80

Ala Met Thr Val Asn Glu Val Cys Gly Ser Gly Met Lys Ala Val Ile  
85 90 95

Leu Ala Lys Gln Leu Ile Gln Leu Gly Glu Ala Glu Val Leu Ile Ala  
100 105 110

Gly Gly Ile Glu Asn Met Ser Gln Ala Pro Lys Leu Gln Arg Phe Asn  
115 120 125

Tyr Glu Thr Glu Ser Tyr Asp Ala Pro Phe Ser Ser Met Met Tyr Asp  
130 135 140

Gly Leu Thr Asp Ala Phe Ser Gly Gln Ala Met Gly Leu Thr Ala Glu  
145 150 155 160

Asn Val Ala Glu Lys Tyr His Val Thr Arg Glu Glu Gln Asp Gln Phe  
165 170 175

Ser Val His Ser Gln Leu Lys Ala Ala Gln Ala Gln Ala Glu Gly Ile  
180 185 190

Phe Ala Asp Glu Ile Ala Pro Leu Glu Val Ser Gly Thr Leu Val Glu  
195 200 205

Lys Asp Glu Gly Ile Arg Pro Asn Ser Ser Val Glu Lys Leu Gly Thr  
210 215 220

Leu Lys Thr Val Phe Lys Glu Asp Gly Thr Val Thr Ala Gly Asn Ala  
225 230 235 240

Ser Thr Ile Asn Asp Gly Ala Ser Ala Leu Ile Ile Ala Ser Gln Glu  
245 250 255

Tyr Ala Glu Ala His Gly Leu Pro Tyr Leu Ala Ile Ile Arg Asp Ser  
260 265 270

Val Glu Val Gly Ile Asp Pro Ala Tyr Met Gly Ile Ser Pro Ile Lys  
275 280 285

Ala Ile Gln Lys Leu Leu Ala Arg Asn Gln Leu Thr Thr Glu Glu Ile  
290 295 300

Asp Leu Tyr Glu Ile Asn Glu Ala Phe Ala Ala Thr Ser Ile Val Val  
305 310 315 320

Gln Arg Glu Leu Ala Leu Pro Glu Glu Lys Val Asn Ile Tyr Gly Gly  
Page 12

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Gly	Ile	Ser	Leu 340	Gly	His	Ala	Ile	Gly 345	Ala	Thr	Gly	Ala	Arg 350	Leu	Leu
Thr	Ser	Leu 355	Ser	Tyr	Gln	Leu	Asn 360	Gln	Lys	Glu	Lys	Lys 365	Tyr	Gly	Val
Ala	Ser 370	Leu	Cys	Ile	Gly	Gly 375	Gly	Leu	Gly	Leu	Ala 380	Met	Leu	Leu	Glu
Arg 385	Pro	Gln	Gln	Lys	Lys 390	Asn	Ser	Arg	Phe	Tyr 395	Gln	Met	Ser	Pro	Glu 400
Glu	Arg	Leu	Ala	Ser 405	Leu	Leu	Asn	Glu	Gly 410	Gln	Ile	Ser	Ala	Asp 415	Thr
Lys	Lys	Glu	Phe 420	Glu	Asn	Thr	Ala	Leu 425	Ser	Ser	Gln	Ile	Ala 430	Asn	His
Met	Ile	Glu 435	Asn	Gln	Ile	Ser	Glu 440	Thr	Glu	Val	Pro	Met 445	Gly	Val	Gly
Leu	His 450	Leu	Thr	Val	Asp	Glu 455	Thr	Asp	Tyr	Leu	Val 460	Pro	Met	Ala	Thr
Glu 465	Glu	Pro	Ser	Val	Ile 470	Ala	Ala	Leu	Ser	Asn 475	Gly	Ala	Lys	Ile	Ala 480
Gln	Gly	Phe	Lys	Thr 485	Val	Asn	Gln	Gln	Arg 490	Leu	Met	Arg	Gly	Gln 495	Ile
Val	Phe	Tyr	Asp 500	Val	Ala	Asp	Ala	Glu 505	Ser	Leu	Ile	Asp	Glu 510	Leu	Gln
Val	Arg	Glu 515	Thr	Glu	Ile	Phe	Gln 520	Gln	Ala	Glu	Leu	Ser 525	Tyr	Pro	Ser
Ile	Val 530	Lys	Arg	Gly	Gly	Gly 535	Leu	Arg	Asp	Leu	Gln 540	Tyr	Arg	Ala	Phe
Asp 545	Glu	Ser	Phe	Val	Ser 550	Val	Asp	Phe	Leu	Val 555	Asp	Val	Lys	Asp	Ala 560
Met	Gly	Ala	Asn	Ile 565	Val	Asn	Ala	Met	Leu 570	Glu	Gly	Val	Ala	Glu 575	Leu
Phe	Arg	Glu	Trp 580	Phe	Ala	Glu	Gln	Lys 585	Ile	Leu	Phe	Ser	Ile 590	Leu	Ser
Asn	Tyr	Ala 595	Thr	Glu	Ser	Val	Val 600	Thr	Met	Lys	Thr	Ala 605	Ile	Pro	Val

Ser Arg Leu Ser Lys Gly Ser Asn Gly Arg Glu Ile Ala Glu Lys Ile  
610 615 620

Val Leu Ala Ser Arg Tyr Ala Ser Leu Asp Pro Tyr Arg Ala Val Thr  
625 630 635 640

His Asn Lys Gly Ile Met Asn Gly Ile Glu Ala Val Val Leu Ala Thr  
645 650 655

Gly Asn Asp Thr Arg Ala Val Ser Ala Ser Cys His Ala Phe Ala Val  
660 665 670

Lys Glu Gly Arg Tyr Gln Gly Leu Thr Ser Trp Thr Leu Asp Gly Glu  
675 680 685

Gln Leu Ile Gly Glu Ile Ser Val Pro Leu Ala Leu Ala Thr Val Gly  
690 695 700

Gly Ala Thr Lys Val Leu Pro Lys Ser Gln Ala Ala Ala Asp Leu Leu  
705 710 715 720

Ala Val Thr Asp Ala Lys Glu Leu Ser Arg Val Val Ala Ala Val Gly  
725 730 735

Leu Ala Gln Asn Leu Ala Ala Leu Arg Ala Leu Val Ser Glu Gly Ile  
740 745 750

Gln Lys Gly His Met Ala Leu Gln Ala Arg Ser Leu Ala Met Thr Val  
755 760 765

Gly Ala Thr Gly Lys Glu Val Glu Ala Val Ala Gln Gln Leu Lys Arg  
770 775 780

Gln Lys Thr Met Asn Gln Asp Arg Ala Leu Ala Ile Leu Asn Asp Leu  
785 790 795 800

Arg Lys Gln

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20 25 30

Phe His Ile Gly Ile Gly Gln Asp Gln Met Ala Val Asn Pro Ile Ser  
35 40 45

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

Ala Gly Tyr Gln Asn His Leu Gln Lys Glu Thr His Leu Ala Leu Leu  
325 330 335

Asp Asn Arg Thr Glu Leu Ser Ile Ala Glu Tyr Glu Ala Met Phe Ala  
340 345 350

Glu Thr Leu Asp Thr Asp Ile Asp Gln Thr Leu Glu Asp Glu Leu Lys  
355 360 365

Tyr Ser Ile Ser Ala Ile Asn Asn Thr Val Arg Ser Tyr Arg Asn  
370 375 380

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<213> Artemisia annua  
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Gln Gly Val Glu Gln Ile Val Asn Asp Leu Lys Lys Glu Val Arg Gln  
35 40 45

Leu Leu Lys Glu Ala Leu Asp Ile Pro Met Lys His Ala Asn Leu Leu  
50 55 60

Lys Leu Ile Asp Glu Ile Gln Arg Leu Gly Ile Pro Tyr His Phe Glu  
65 70 75 80

Arg Glu Ile Asp His Ala Leu Gln Cys Ile Tyr Glu Thr Tyr Gly Asp  
85 90 95

Asn Trp Asn Gly Asp Arg Ser Ser Leu Trp Phe Arg Leu Met Arg Lys  
100 105 110

Gln Gly Tyr Tyr Val Thr Cys Asp Val Phe Asn Asn Tyr Lys Asp Lys  
115 120 125

Asn Gly Ala Phe Lys Gln Ser Leu Ala Asn Asp Val Glu Gly Leu Leu  
130 135 140

Glu Leu Tyr Glu Ala Thr Ser Met Arg Val Pro Gly Glu Ile Ile Leu  
145 150 155 160

Glu Asp Ala Leu Gly Phe Thr Arg Ser Arg Leu Ser Ile Met Thr Lys  
165 170 175

Asp Ala Phe Ser Thr Asn Pro Ala Leu Phe Thr Glu Ile Gln Arg Ala  
180 185 190



Leu Lys Gln Pro Leu Trp Lys Arg Leu Pro Arg Ile Glu Ala Ala Gln  
 195 200 205  
 Tyr Ile Pro Phe Tyr Gln Gln Gln Asp Ser His Asn Lys Thr Leu Leu  
 210 215 220  
 Lys Leu Ala Lys Leu Glu Phe Asn Leu Leu Gln Ser Leu His Lys Glu  
 225 230 235 240  
 Glu Leu Ser His Val Cys Lys Trp Trp Lys Ala Phe Asp Ile Lys Lys  
 245 250 255  
 Asn Ala Pro Cys Leu Arg Asp Arg Ile Val Glu Cys Tyr Phe Trp Gly  
 260 265 270  
 Leu Gly Ser Gly Tyr Glu Pro Gln Tyr Ser Arg Ala Arg Val Phe Phe  
 275 280 285  
 Thr Lys Ala Val Ala Val Ile Thr Leu Ile Asp Asp Thr Tyr Asp Ala  
 290 295 300  
 Tyr Gly Thr Tyr Glu Glu Leu Lys Ile Phe Thr Glu Ala Val Glu Arg  
 305 310 315 320  
 Trp Ser Ile Thr Cys Leu Asp Thr Leu Pro Glu Tyr Met Lys Pro Ile  
 325 330 335  
 Tyr Lys Leu Phe Met Asp Thr Tyr Thr Glu Met Glu Glu Phe Leu Ala  
 340 345 350  
 Lys Glu Gly Arg Thr Asp Leu Phe Asn Cys Gly Lys Glu Phe Val Lys  
 355 360 365  
 Glu Phe Val Arg Asn Leu Met Val Glu Ala Lys Trp Ala Asn Glu Gly  
 370 375 380  
 His Ile Pro Thr Thr Glu Glu His Asp Pro Val Val Ile Ile Thr Gly  
 385 390 395 400  
 Gly Ala Asn Leu Leu Thr Thr Thr Cys Tyr Leu Gly Met Ser Asp Ile  
 405 410 415  
 Phe Thr Lys Glu Ser Val Glu Trp Ala Val Ser Ala Pro Pro Leu Phe  
 420 425 430  
 Arg Tyr Ser Gly Ile Leu Gly Arg Arg Leu Asn Asp Leu Met Thr His  
 435 440 445  
 Lys Ala Glu Gln Glu Arg Lys His Ser Ser Ser Ser Leu Glu Ser Tyr  
 450 455 460  
 Met Lys Glu Tyr Asn Val Asn Glu Glu Tyr Ala Gln Thr Leu Ile Tyr

465                      470                      475                      480  
 Lys Glu Val Glu Asp Val Trp Lys Asp Ile Asn Arg Glu Tyr Leu Thr  
                                  485                      490                      495  
 Thr Lys Asn Ile Pro Arg Pro Leu Leu Met Ala Val Ile Tyr Leu Cys  
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 Gln Phe Leu Glu Val Gln Tyr Ala Gly Lys Asp Asn Phe Thr Arg Met  
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 Ala Ser Thr Ser Leu Glu Ala Phe Asn Gly Glu His Met Gly Leu Leu  
                                  35                      40                      45  
  
 Arg Gly Tyr Ser Lys Arg Lys Leu Ser Ser Tyr Lys Asn Pro Ala Ser  
                                  50                      55                      60  
  
 Arg Ser Ser Asn Ala Thr Val Ala Gln Leu Leu Asn Pro Pro Gln Lys  
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 Gly Lys Lys Ala Val Glu Phe Asp Phe Asn Lys Tyr Met Asp Ser Lys  
                                  85                      90  
  
 Ala Met Thr Val Asn Glu Ala Leu Asn Lys Ala Ile Pro Leu Arg Tyr  
                                  100                      105                      110  
  
 Pro Gln Lys Ile Tyr Glu Ser Met Arg Tyr Ser Leu Leu Ala Gly Gly  
                                  115                      120                      125  
  
 Lys Arg Val Arg Pro Val Leu Cys Ile Ala Ala Cys Glu Leu Val Gly  
                                  130                      135                      140  
  
 Gly Thr Glu Glu Leu Ala Ile Pro Thr Ala Cys Ala Ile Glu Met Ile  
 145                      150                      155                      160

His Thr Met Ser Leu Met His Asp Asp Leu Pro Cys Ile Asp Asn Asp  
165 170 175

Asp Leu Arg Arg Gly Lys Pro Thr Asn His Lys Ile Phe Gly Glu Asp  
180 185 190

Thr Ala Val Thr Ala Gly Asn Ala Leu His Ser Tyr Ala Phe Glu His  
195 200 205

Ile Ala Val Ser Thr Ser Lys Thr Val Gly Ala Asp Arg Ile Leu Arg  
210 215 220

Met Val Ser Glu Leu Gly Arg Ala Thr Gly Ser Glu Gly Val Met Gly  
225 230 235 240

Gly Gln Met Val Asp Ile Ala Ser Glu Gly Asp Pro Ser Ile Asp Leu  
245 250 255

Gln Thr Leu Glu Trp Ile His Ile His Lys Thr Ala Met Leu Leu Glu  
260 265 270

Cys Ser Val Val Cys Gly Ala Ile Ile Gly Gly Ala Ser Glu Ile Val  
275 280 285

Ile Glu Arg Ala Arg Arg Tyr Ala Arg Cys Val Gly Leu Leu Phe Gln  
290 295 300

Val Val Asp Asp Ile Leu Asp Val Thr Lys Ser Ser Asp Glu Leu Gly  
305 310 315 320

Lys Thr Ala Gly Lys Asp Leu Ile Ser Asp Lys Ala Thr Tyr Pro Lys  
325 330 335

Leu Met Gly Leu Glu Lys Ala Lys Glu Phe Ser Asp Glu Leu Leu Asn  
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Arg Ala Lys Gly Glu Leu Ser Cys Phe Asp Pro Val Lys Ala Ala Pro  
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<213> Citrus limon

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

305		310		315		320
Glu Pro Gln Phe	Ala 325	Tyr Cys Arg Arg	Val 330	Leu Thr Ile Ser	Ile 335	Ala
Leu Ile Thr	Val 340	Ile Asp Asp Ile	Tyr 345	Asp Val Tyr Gly	Thr 350	Leu Asp
Glu Leu	Glu 355	Ile Phe Thr Asp	Ala 360	Val Glu Arg Trp	Asp 365	Ile Asn Tyr
Ala Leu	Lys 370	His Leu Pro	Gly 375	Tyr Met Lys Met	Cys 380	Phe Leu Ala Leu
Tyr 385	Asn Phe Val	Asn Glu 390	Phe Ala Tyr Tyr	Val 395	Leu Lys Gln Gln	Asp 400
Phe Asp Leu Leu	Leu 405	Ser Ile Lys Asn	Ala 410	Trp Leu Gly Leu	Ile 415	Gln
Ala Tyr Leu	Val 420	Glu Ala Lys Trp	Tyr 425	His Ser Lys Tyr	Thr 430	Pro Lys
Leu Glu	Glu 435	Tyr Leu Glu Asn	Gly 440	Leu Val Ser Ile	Thr 445	Gly Pro Leu
Ile Ile	Thr 450	Ile Ser Tyr	Leu 455	Ser Gly Thr Asn	Pro 460	Ile Ile Lys Lys
Glu 465	Leu Glu Phe Leu	Glu 470	Ser Asn Pro Asp	Ile 475	Val His Trp Ser	Ser 480
Lys Ile Phe Arg	Leu 485	Gln Asp Asp Leu	Gly 490	Thr Ser Ser Asp	Glu 495	Ile
Gln Arg Gly	Asp 500	Val Pro Lys Ser	Ile 505	Gln Cys Tyr Met	His 510	Glu Thr
Gly Ala	Ser 515	Glu Glu Val Ala	Arg 520	Gln His Ile Lys	Asp 525	Met Met Arg
Gln Met	Trp 530	Lys Lys Val	Asn 535	Ala Tyr Thr Ala	Asp 540	Lys Asp Ser Pro
Leu Thr	Gly 545	Thr Thr	Glu 550	Phe Leu Leu	Asn 555	Leu Val Arg Met Ser
His Phe Met Tyr	Leu 565	His Gly Asp Gly	His 570	Gly Val Gln Asn	Gln 575	Glu
Thr Ile Asp	Val 580	Gly Phe Thr Leu	Leu 585	Phe Gln Pro Ile	Pro 590	Leu Glu

Asp Lys His Met Ala Phe Thr Ala Ser Pro Gly Thr Lys Gly  
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Glu Arg Pro Glu Ser Leu Arg Glu Ala Met Arg Tyr Ser Leu Leu Ala  
35 40 45

Gly Gly Lys Arg Leu Arg Pro Ile Leu Cys Leu Ala Ala Cys Glu Leu  
50 55 60

Ala Gly Gly Glu Val Ala Leu Ala Leu Pro Thr Ala Val Ala Leu Glu  
65 70 75 80

Met Ile His Thr Met Ser Leu Ile His Asp Asp Leu Pro Ala Met Asp  
85 90 95

Asn Asp Asp Leu Arg Arg Gly Arg Pro Thr Asn His Lys Val Tyr Gly  
100 105 110

Asp Ala Gln Ala Ile Leu Ala Gly Asp Ala Leu Leu Thr Arg Ala Phe  
115 120 125

Glu Met Val Ala Leu Arg Ser Pro Gly Val Pro Ala Glu Arg Leu Leu  
130 135 140

Gln Val Val Gly Glu Leu Ser Leu Ala Ala Gly Ala Pro Gly Leu Val  
145 150 155 160

Gly Gly Gln Val Val Asp Leu Glu Ser Glu Gly Lys Asp Val Asp Leu  
165 170 175

Ala Thr Leu Glu Tyr Ile His Leu His Lys Thr Gly Ala Leu Leu Gln  
180 185 190

Ala Cys Val Leu Thr Gly Ala Met Ile Ala Gly Ala Pro Glu Pro Leu  
195 200 205

Leu Gln Gly Leu Arg Thr Tyr Ser Arg Gly Ile Gly Leu Ala Phe Gln  
210 215 220

Ile Ile Asp Asp Ile Leu Asp Val Thr Ala Ser Ser Glu Val Leu Gly  
225 230 235 240

Lys Thr Ala Gly Lys Asp Leu Thr Ala Asp Lys Thr Thr Tyr Pro Lys  
245 250 255

Leu Leu Gly Leu Glu Glu Ser Arg Gln Arg Ala Asp Ala Leu Val Ala  
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Glu Ala Lys Ala Ala Leu Gln Pro Trp Gln Ala Ser Ala Gln Pro Leu  
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Leu Ala Leu Ala Asp Tyr Ile Thr Ser Arg Asp Arg  
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<400> 17

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Thr Leu Glu Arg Gly Leu Asp Ser Glu Val Gln Thr Arg Ala Asn Asn  
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Val Ser Phe Glu Gln Thr Lys Glu Lys Ile Arg Lys Met Leu Glu Lys  
35 40 45

Val Glu Leu Ser Val Ser Ala Tyr Asp Thr Ser Trp Val Ala Met Val  
50 55 60

Pro Ser Pro Ser Ser Gln Asn Ala Pro Leu Phe Pro Gln Cys Val Lys  
65 70 75 80

Trp Leu Leu Asp Asn Gln His Glu Asp Gly Ser Trp Gly Leu Asp Asn  
85 90 95

His Asp His Gln Ser Leu Lys Lys Asp Val Leu Ser Ser Thr Leu Ala  
Page 23

100	105	110
Ser Ile Leu Ala Leu Lys Lys Trp Gly Ile Gly Glu Arg Gln Ile Asn 115 120 125		
Lys Gly Leu Gln Phe Ile Glu Leu Asn Ser Ala Leu Val Thr Asp Glu 130 135 140		
Thr Ile Gln Lys Pro Thr Gly Phe Asp Ile Ile Phe Pro Gly Met Ile 145 150 155 160		
Lys Tyr Ala Arg Asp Leu Asn Leu Thr Ile Pro Leu Gly Ser Glu Val 165 170 175		
Val Asp Asp Met Ile Arg Lys Arg Asp Leu Asp Leu Lys Cys Asp Ser 180 185 190		
Glu Lys Phe Ser Lys Gly Arg Glu Ala Tyr Leu Ala Tyr Val Leu Glu 195 200 205		
Gly Thr Arg Asn Leu Lys Asp Trp Asp Leu Ile Val Lys Tyr Gln Arg 210 215 220		
Lys Asn Gly Ser Leu Phe Asp Ser Pro Ala Thr Thr Ala Ala Ala Phe 225 230 235 240		
Thr Gln Phe Gly Asn Asp Gly Cys Leu Arg Tyr Leu Cys Ser Leu Leu 245 250 255		
Gln Lys Phe Glu Ala Ala Val Pro Ser Val Tyr Pro Phe Asp Gln Tyr 260 265 270		
Ala Arg Leu Ser Ile Ile Val Thr Leu Glu Ser Leu Gly Ile Asp Arg 275 280 285		
Asp Phe Lys Thr Glu Ile Lys Ser Ile Leu Asp Glu Thr Tyr Arg Tyr 290 295 300		
Trp Leu Arg Gly Asp Glu Glu Ile Cys Leu Asp Leu Ala Thr Cys Ala 305 310 315 320		
Leu Ala Phe Arg Leu Leu Leu Ala His Gly Tyr Asp Val Ser Tyr Asp 325 330 335		
Pro Leu Lys Pro Phe Ala Glu Glu Ser Gly Phe Ser Asp Thr Leu Glu 340 345 350		
Gly Tyr Val Lys Asn Thr Phe Ser Val Leu Glu Leu Phe Lys Ala Ala 355 360 365		
Gln Ser Tyr Pro His Glu Ser Ala Leu Lys Lys Gln Cys Cys Trp Thr 370 375 380		



Lys Gln Tyr Leu Glu Met Glu Leu Ser Ser Trp Val Lys Thr Ser Val  
385 390 395 400

Arg Asp Lys Tyr Leu Lys Lys Glu Val Glu Asp Ala Leu Ala Phe Pro  
405 410 415

Ser Tyr Ala Ser Leu Glu Arg Ser Asp His Arg Arg Lys Ile Leu Asn  
420 425 430

Gly Ser Ala Val Glu Asn Thr Arg Val Thr Lys Thr Ser Tyr Arg Leu  
435 440 445

His Asn Ile Cys Thr Ser Asp Ile Leu Lys Leu Ala Val Asp Asp Phe  
450 455 460

Asn Phe Cys Gln Ser Ile His Arg Glu Glu Met Glu Arg Leu Asp Arg  
465 470 475 480

Trp Ile Val Glu Asn Arg Leu Gln Glu Leu Lys Phe Ala Arg Gln Lys  
485 490 495

Leu Ala Tyr Cys Tyr Phe Ser Gly Ala Ala Thr Leu Phe Ser Pro Glu  
500 505 510

Leu Ser Asp Ala Arg Ile Ser Trp Ala Lys Gly Gly Val Leu Thr Thr  
515 520 525

Val Val Asp Asp Phe Phe Asp Val Gly Gly Ser Lys Glu Glu Leu Glu  
530 535 540

Asn Leu Ile His Leu Val Glu Lys Trp Asp Leu Asn Gly Val Pro Glu  
545 550 555 560

Tyr Ser Ser Glu His Val Glu Ile Ile Phe Ser Val Leu Arg Asp Thr  
565 570 575

Ile Leu Glu Thr Gly Asp Lys Ala Phe Thr Tyr Gln Gly Arg Asn Val  
580 585 590

Thr His His Ile Val Lys Ile Trp Leu Asp Leu Leu Lys Ser Met Leu  
595 600 605

Arg Glu Ala Glu Trp Ser Ser Asp Lys Ser Thr Pro Ser Leu Glu Asp  
610 615 620

Tyr Met Glu Asn Ala Tyr Ile Ser Phe Ala Leu Gly Pro Ile Val Leu  
625 630 635 640

Pro Ala Thr Tyr Leu Ile Gly Pro Pro Leu Pro Glu Lys Thr Val Asp  
645 650 655

Ser His Gln Tyr Asn Gln Leu Tyr Lys Leu Val Ser Thr Met Gly Arg  
Page 25

660 665 670  
 Leu Leu Asn Asp Ile Gln Gly Phe Lys Arg Glu Ser Ala Glu Gly Lys  
 675 680 685  
 Leu Asn Ala Val Ser Leu His Met Lys His Glu Arg Asp Asn Arg Ser  
 690 695 700  
 Lys Glu Val Ile Ile Glu Ser Met Lys Gly Leu Ala Glu Arg Lys Arg  
 705 710 715 720  
 Glu Glu Leu His Lys Leu Val Leu Glu Glu Lys Gly Ser Val Val Pro  
 725 730 735  
 Arg Glu Cys Lys Glu Ala Phe Leu Lys Met Ser Lys Val Leu Asn Leu  
 740 745 750  
 Phe Tyr Arg Lys Asp Asp Gly Phe Thr Ser Asn Asp Leu Met Ser Leu  
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 <212> PRT  
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 Gly Ser Pro Leu Asn Val Ala Arg Asp Lys Ser Arg Ser Gly Ser Ile  
 35 40 45  
 His Cys Ser Lys Leu Arg Thr Gln Glu Tyr Ile Asn Ser Gln Glu Val  
 50 55 60  
 Gln His Asp Leu Pro Leu Ile His Glu Trp Gln Gln Leu Gln Gly Glu  
 65 70 75 80  
 Asp Ala Pro Gln Ile Ser Val Gly Ser Asn Ser Asn Ala Phe Lys Glu  
 85 90 95  
 Ala Val Lys Ser Val Lys Thr Ile Leu Arg Asn Leu Thr Asp Gly Glu  
 100 105 110

Ile Thr Ile Ser Ala Tyr Asp Thr Ala Trp Val Ala Leu Ile Asp Ala  
 115 120 125  
 Gly Asp Lys Thr Pro Ala Phe Pro Ser Ala Val Lys Trp Ile Ala Glu  
 130 135 140  
 Asn Gln Leu Ser Asp Gly Ser Trp Gly Asp Ala Tyr Leu Phe Ser Tyr  
 145 150 155 160  
 His Asp Arg Leu Ile Asn Thr Leu Ala Cys Val Val Ala Leu Arg Ser  
 165 170 175  
 Trp Asn Leu Phe Pro His Gln Cys Asn Lys Gly Ile Thr Phe Phe Arg  
 180 185 190  
 Glu Asn Ile Gly Lys Leu Glu Asp Glu Asn Asp Glu His Met Pro Ile  
 195 200 205  
 Gly Phe Glu Val Ala Phe Pro Ser Leu Leu Glu Ile Ala Arg Gly Ile  
 210 215 220  
 Asn Ile Asp Val Pro Tyr Asp Ser Pro Val Leu Lys Asp Ile Tyr Ala  
 225 230 235 240  
 Lys Lys Glu Leu Lys Leu Thr Arg Ile Pro Lys Glu Ile Met His Lys  
 245 250 255  
 Ile Pro Thr Thr Leu Leu His Ser Leu Glu Gly Met Arg Asp Leu Asp  
 260 265 270  
 Trp Glu Lys Leu Leu Lys Leu Gln Ser Gln Asp Gly Ser Phe Leu Phe  
 275 280 285  
 Ser Pro Ser Ser Thr Ala Phe Ala Phe Met Gln Thr Arg Asp Ser Asn  
 290 295 300  
 Cys Leu Glu Tyr Leu Arg Asn Ala Val Lys Arg Phe Asn Gly Gly Val  
 305 310 315 320  
 Pro Asn Val Phe Pro Val Asp Leu Phe Glu His Ile Trp Ile Val Asp  
 325 330 335  
 Arg Leu Gln Arg Leu Gly Ile Ser Arg Tyr Phe Glu Glu Glu Ile Lys  
 340 345 350  
 Glu Cys Leu Asp Tyr Val His Arg Tyr Trp Thr Asp Asn Gly Ile Cys  
 355 360 365  
 Trp Ala Arg Cys Ser His Val Gln Asp Ile Asp Asp Thr Ala Met Ala  
 370 375 380  
 Phe Arg Leu Leu Arg Gln His Gly Tyr Gln Val Ser Ala Asp Val Phe  
 385 390 395 400

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

Tyr Leu Ser Trp Gly Asp Trp Met Glu Lys Trp Lys Leu Tyr Gly Asp  
675 680 685

Glu Gly Glu Gly Glu Leu Met Val Lys Met Ile Ile Leu Met Lys Asn  
690 695 700

Asn Asp Leu Thr Asn Phe Phe Thr His Thr His Phe Val Arg Leu Ala  
705 710 715 720

Glu Ile Ile Asn Arg Ile Cys Leu Pro Arg Gln Tyr Leu Lys Ala Arg  
725 730 735

Arg Asn Asp Glu Lys Glu Lys Thr Ile Lys Ser Met Glu Lys Glu Met  
740 745 750

Gly Lys Met Val Glu Leu Ala Leu Ser Glu Ser Asp Thr Phe Arg Asp  
755 760 765

Val Ser Ile Thr Phe Leu Asp Val Ala Lys Ala Phe Tyr Tyr Phe Ala  
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Leu Cys Gly Asp His Leu Gln Thr His Ile Ser Lys Val Leu Phe Gln  
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Lys Val

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<212> PRT  
<213> Saccharomyces cerevisiae

<400> 19

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Pro Lys Leu Val Glu Glu Leu Asn Ala Ser Leu Leu Ala Tyr Gly Met  
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Pro Lys Glu Ala Cys Asp Trp Tyr Ala His Ser Leu Asn Tyr Asn Thr  
35 40 45

Pro Gly Gly Lys Leu Asn Arg Gly Leu Ser Val Val Asp Thr Tyr Ala  
50 55 60

Ile Leu Ser Asn Lys Thr Val Glu Gln Leu Gly Gln Glu Glu Tyr Glu  
65 70 75 80

Lys Val Ala Ile Leu Gly Trp Cys Ile Glu Leu Leu Gln Ala Tyr Phe  
85 90 95

Leu Val Ala Asp Asp Met Met Asp Lys Ser Ile Thr Arg Arg Gly Gln  
100 105 110

Pro Cys Trp Tyr Lys Val Pro Glu Val Gly Glu Ile Ala Ile Asn Asp  
115 120 125

Ala Phe Met Leu Glu Ala Ala Ile Tyr Lys Leu Leu Lys Ser His Phe  
130 135 140

Arg Asn Glu Lys Tyr Tyr Ile Asp Ile Thr Glu Leu Phe His Glu Val  
145 150 155 160

Thr Phe Gln Thr Glu Leu Gly Gln Leu Met Asp Leu Ile Thr Ala Pro  
165 170 175

Glu Asp Lys Val Asp Leu Ser Lys Phe Ser Leu Lys Lys His Ser Phe  
180 185 190

Ile Val Thr Phe Lys Thr Ala Tyr Tyr Ser Phe Tyr Leu Pro Val Ala  
195 200 205

Leu Ala Met Tyr Val Ala Gly Ile Thr Asp Glu Lys Asp Leu Lys Gln  
210 215 220

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

Asp Tyr Leu Asp Cys Phe Gly Thr Pro Glu Gln Ile Gly Lys Ile Gly  
245 250 255

Thr Asp Ile Gln Asp Asn Lys Cys Ser Trp Val Ile Asn Lys Ala Leu  
260 265 270

Glu Leu Ala Ser Ala Glu Gln Arg Lys Thr Leu Asp Glu Asn Tyr Gly  
275 280 285

Lys Lys Asp Ser Val Ala Glu Ala Lys Cys Lys Lys Ile Phe Asn Asp  
290 295 300

Leu Lys Ile Glu Gln Leu Tyr His Glu Tyr Glu Glu Ser Ile Ala Lys  
305 310 315 320

Asp Leu Lys Ala Lys Ile Ser Gln Val Asp Glu Ser Arg Gly Phe Lys  
325 330 335

Ala Asp Val Leu Thr Ala Phe Leu Asn Lys Val Tyr Lys Arg Ser Lys  
340 345 350

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<212> PRT  
<213> Artemisia tridentata

<400> 20

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

Ala Ser Val Ala Lys Val Lys Glu Val Tyr His Thr Leu Asn Leu Gln  
 290 295 300

Ala Val Phe Glu Asp Tyr Glu Ala Thr Ser Tyr Lys Lys Leu Ile Thr  
 305 310 315 320

Ser Ile Glu Asn His Pro Ser Lys Ala Val Gln Ala Val Leu Lys Ser  
 325 330 335

Phe Leu Gly Lys Ile Tyr Lys Arg Gln Lys  
 340 345

<210> 21  
 <211> 342  
 <212> PRT  
 <213> Artemisia tridentata

<400> 21

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

Lys Ser Asp Leu Ile His Asp Pro Ala Phe Glu Phe Asp Asp Asp Ser  
 20 25 30

Arg Asn Trp Val Glu Arg Met Leu Asp Tyr Asn Val Pro Gly Gly Lys  
 35 40 45

Leu Asn Arg Gly Leu Ser Val Val Asp Ser Tyr Lys Leu Leu Lys Gln  
 50 55 60

Glu Glu Leu Thr Glu Asp Glu Val Phe Leu Ala Cys Ala Leu Gly Trp  
 65 70 75 80

Cys Ile Glu Trp Leu Gln Ala Tyr Phe Leu Val Leu Asp Asp Ile Met  
 85 90 95

Asp Glu Ser His Thr Arg Arg Gly Gln Pro Cys Trp Phe Arg Leu Pro  
 100 105 110

Lys Val Gly Met Ile Ala Val Asn Asp Gly Val Val Leu Arg Asn His  
 115 120 125

Ile Pro Arg Ile Leu Lys Lys His Phe Arg Gly Lys Ala Tyr Tyr Ala  
 130 135 140

Asp Leu Leu Asp Leu Phe Asn Glu Val Glu Phe Gln Thr Ala Ser Gly  
 145 150 155 160

Gln Met Ile Asp Leu Ile Thr Thr Leu Phe Gly Gln Lys Glu Leu Ser  
 165 170 175

Lys Tyr Ser Leu Ser Thr His Gln Arg Ile Val Lys Phe Lys Thr Ala  
 180 185 190



Tyr Tyr Ser Phe Tyr Leu Pro Val Ala Cys Ala Leu Leu Met Phe Gly  
195 200 205

Glu Asn Leu Asp Asp His Val Gln Val Lys Asp Val Leu Val Glu Met  
210 215 220

Gly Thr Tyr Phe Gln Val Gln Asp Asp Tyr Leu Asp Cys Phe Gly Ser  
225 230 235 240

Pro Glu Val Ile Gly Lys Ile Gly Thr Asp Ile Glu Asp Phe Lys Cys  
245 250 255

Ser Trp Leu Val Val Lys Ala Leu Glu Leu Ala Asp Glu Gln Gln Lys  
260 265 270

Lys Leu Leu Asn Glu Asn Tyr Gly Arg Lys Asp Pro Ala Ser Val Ala  
275 280 285

Lys Val Lys Glu Leu Tyr His Thr Leu Asn Leu Gln Gly Val Phe Glu  
290 295 300

Asp Tyr Glu Asn Lys Ser His Glu Lys Ile Ile Lys Ser Ile Glu Thr  
305 310 315 320

His Pro Ser Lys Ala Val Gln Glu Val Leu Lys Ser Phe Leu Gly Lys  
325 330 335

Ile Phe Lys Arg Gln Lys  
340

<210> 22  
<211> 247  
<212> PRT  
<213> Arabidopsis thaliana

<400> 22

Met Asp Asn Ser Val Thr Arg Arg Gly Gln Pro Cys Trp Phe Arg Lys  
1 5 10 15

Pro Lys Val Gly Met Ile Ala Ile Asn Asp Gly Ile Leu Leu Arg Asn  
20 25 30

His Ile His Arg Ile Leu Lys Lys His Phe Arg Glu Met Pro Tyr Tyr  
35 40 45

Val Asp Leu Val Asp Leu Phe Asn Glu Val Glu Phe Gln Thr Ala Cys  
50 55 60

Gly Gln Met Ile Asp Leu Ile Thr Thr Phe Asp Gly Glu Lys Asp Leu  
65 70 75 80

Ser Lys Tyr Ser Leu Gln Ile His Arg Arg Ile Val Glu Tyr Lys Thr  
85 90 95

Ala Tyr Tyr Ser Phe Tyr Leu Pro Val Ala Cys Ala Leu Leu Met Ala  
100 105 110

Gly Glu Asn Leu Glu Asn His Thr Asp Val Lys Thr Val Leu Val Asp  
115 120 125

Met Gly Ile Tyr Phe Gln Val Gln Asp Asp Tyr Leu Asp Cys Phe Ala  
130 135 140

Asp Pro Glu Thr Leu Gly Lys Ile Gly Thr Asp Ile Glu Asp Phe Lys  
145 150 155 160

Cys Ser Trp Leu Val Val Lys Ala Leu Glu Arg Cys Ser Glu Glu Gln  
165 170 175

Thr Lys Ile Leu Tyr Glu Asn Tyr Gly Lys Ala Glu Pro Ser Asn Val  
180 185 190

Ala Lys Val Lys Ala Leu Tyr Lys Glu Leu Asp Leu Glu Gly Ala Phe  
195 200 205

Met Glu Tyr Glu Lys Glu Ser Tyr Glu Lys Leu Thr Lys Leu Ile Glu  
210 215 220

Ala His Gln Ser Lys Ala Ile Gln Ala Val Leu Lys Ser Phe Leu Ala  
225 230 235 240

Lys Ile Tyr Lys Arg Gln Lys  
245

<210> 23  
<211> 335  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 23

Met Glu Ala Lys Ile Asp Glu Leu Ile Asn Asn Asp Pro Val Trp Ser  
1 5 10 15

Ser Gln Asn Glu Ser Leu Ile Ser Lys Pro Tyr Asn His Ile Leu Leu  
20 25 30

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

Val Met Asn Leu Pro Lys Asp Gln Leu Ala Ile Val Ser Gln Ile Val  
50 55 60

Glu Leu Leu His Asn Ser Ser Leu Leu Ile Asp Asp Ile Glu Asp Asn  
65 70 75 80

Ala Pro Leu Arg Arg Gly Gln Thr Thr Ser His Leu Ile Phe Gly Val

85

90

95

Pro Ser Thr Ile Asn Thr Ala Asn Tyr Met Tyr Phe Arg Ala Met Gln  
 100 105 110

Leu Val Ser Gln Leu Thr Thr Lys Glu Pro Leu Tyr His Asn Leu Ile  
 115 120 125

Thr Ile Phe Asn Glu Glu Leu Ile Asn Leu His Arg Gly Gln Gly Leu  
 130 135 140

Asp Ile Tyr Trp Arg Asp Phe Leu Pro Glu Ile Ile Pro Thr Gln Glu  
 145 150 155 160

Met Tyr Leu Asn Met Val Met Asn Lys Thr Gly Gly Leu Phe Arg Leu  
 165 170 175

Thr Leu Arg Leu Met Glu Ala Leu Ser Pro Ser Ser His His Gly His  
 180 185 190

Ser Leu Val Pro Phe Ile Asn Leu Leu Gly Ile Ile Tyr Gln Ile Arg  
 195 200 205

Asp Asp Tyr Leu Asn Leu Lys Asp Phe Gln Met Ser Ser Glu Lys Gly  
 210 215 220

Phe Ala Glu Asp Ile Thr Glu Gly Lys Leu Ser Phe Pro Ile Val His  
 225 230 235 240

Ala Leu Asn Phe Thr Lys Thr Lys Gly Gln Thr Glu Gln His Asn Glu  
 245 250 255

Ile Leu Arg Ile Leu Leu Leu Arg Thr Ser Asp Lys Asp Ile Lys Leu  
 260 265 270

Lys Leu Ile Gln Ile Leu Glu Phe Asp Thr Asn Ser Leu Ala Tyr Thr  
 275 280 285

Lys Asn Phe Ile Asn Gln Leu Val Asn Met Ile Lys Asn Asp Asn Glu  
 290 295 300

Asn Lys Tyr Leu Pro Asp Leu Ala Ser His Ser Asp Thr Ala Thr Asn  
 305 310 315 320

Leu His Asp Glu Leu Leu Tyr Ile Ile Asp His Leu Ser Glu Leu  
 325 330 335

<210> 24  
 <211> 000  
 <212> PRT  
 <213>

<400> 24

000

<210> 25  
<211> 330  
<212> PRT  
<213> Sulfobacillus acidophilus

<400> 25

Met Ser Tyr Phe Asp Asn Tyr Phe Asn Glu Ile Val Asn Ser Val Asn  
1 5 10 15

Asp Ile Ile Lys Ser Tyr Ile Ser Gly Asp Val Pro Lys Leu Tyr Glu  
20 25 30

Ala Ser Tyr His Leu Phe Thr Ser Gly Gly Lys Arg Leu Arg Pro Leu  
35 40 45

Ile Leu Thr Ile Ser Ser Asp Leu Phe Gly Gly Gln Arg Glu Arg Ala  
50 55 60

Tyr Tyr Ala Gly Ala Ala Ile Glu Val Leu His Thr Phe Thr Leu Val  
65 70 75 80

His Asp Asp Ile Met Asp Gln Asp Asn Ile Arg Arg Gly Leu Pro Thr  
85 90 95

Val His Val Lys Tyr Gly Leu Pro Leu Ala Ile Leu Ala Gly Asp Leu  
100 105 110

Leu His Ala Lys Ala Phe Gln Leu Leu Thr Gln Ala Leu Arg Gly Leu  
115 120 125

Pro Ser Glu Thr Ile Ile Lys Ala Phe Asp Ile Phe Thr Arg Ser Ile  
130 135 140

Ile Ile Ile Ser Glu Gly Gln Ala Val Asp Met Glu Phe Glu Asp Arg  
145 150 155 160

Ile Asp Ile Lys Glu Gln Glu Tyr Leu Asp Met Ile Ser Arg Lys Thr  
165 170 175

Ala Ala Leu Phe Ser Ala Ser Ser Ser Ile Gly Ala Leu Ile Ala Gly  
180 185 190

Ala Asn Asp Asn Asp Val Arg Leu Met Ser Asp Phe Gly Thr Asn Leu  
195 200 205

Gly Ile Ala Phe Gln Ile Val Asp Asp Ile Leu Gly Leu Thr Ala Asp  
210 215 220

Glu Lys Glu Leu Gly Lys Pro Val Phe Ser Asp Ile Arg Glu Gly Lys  
225 230 235 240

Lys Thr Ile Leu Val Ile Lys Thr Leu Glu Leu Cys Lys Glu Asp Glu  
245 250 255

Lys Lys Ile Val Leu Lys Ala Leu Gly Asn Lys Ser Ala Ser Lys Glu  
260 265 270

Glu Leu Met Ser Ser Ala Asp Ile Ile Lys Lys Tyr Ser Leu Asp Tyr  
275 280 285

Ala Tyr Asn Leu Ala Glu Lys Tyr Tyr Lys Asn Ala Ile Asp Ser Leu  
290 295 300

Asn Gln Val Ser Ser Lys Ser Asp Ile Pro Gly Lys Ala Leu Lys Tyr  
305 310 315 320

Leu Ala Glu Phe Thr Ile Arg Arg Arg Lys  
325 330

<210> 26  
<211> 386  
<212> PRT  
<213> Picea abies

<400> 26

Met Gly Tyr Asn Gly Met Val Val Ser Ser Asn Leu Gly Leu Tyr Tyr  
1 5 10 15

Leu Asn Ile Ala Ser Arg Glu Cys Asn Leu Lys Arg Ile Ser Ile Pro  
20 25 30

Ser Pro Phe His Gly Val Ser Thr Ser Leu Gly Ser Ser Thr Ser Lys  
35 40 45

His Leu Gly Leu Arg Gly His Leu Lys Lys Glu Leu Leu Ser His Arg  
50 55 60

Leu Leu Leu Ser Ser Thr Arg Ser Ser Lys Ala Leu Val Gln Leu Ala  
65 70 75 80

Asp Leu Ser Glu Gln Val Lys Asn Val Val Glu Phe Asp Phe Asp Lys  
85 90 95

Tyr Met His Ser Lys Ala Ile Ala Val Asn Glu Ala Leu Asp Lys Val  
100 105 110

Ile Pro Pro Arg Tyr Pro Gln Lys Ile Tyr Glu Ser Met Arg Tyr Ser  
115 120 125

Leu Leu Ala Gly Gly Lys Arg Val Arg Pro Ile Leu Cys Ile Ala Ala  
130 135 140

Cys Glu Leu Met Gly Gly Thr Glu Glu Leu Ala Met Pro Thr Ala Cys  
145 150 155 160

Ala Ile Glu Met Ile His Thr Met Ser Leu Ile His Asp Asp Leu Pro  
165 170 175

Tyr Ile Asp Asn Asp Asp Leu Arg Arg Gly Lys Pro Thr Asn His Lys  
180 185 190

Val Phe Gly Glu Asp Thr Ala Ile Ile Ala Gly Asp Ala Leu Leu Ser  
195 200 205

Leu Ala Phe Glu His Val Ala Val Ser Thr Ser Arg Thr Leu Gly Thr  
210 215 220

Asp Ile Ile Leu Arg Leu Leu Ser Glu Ile Gly Arg Ala Thr Gly Ser  
225 230 235 240

Glu Gly Val Met Gly Gly Gln Val Val Asp Ile Glu Ser Glu Gly Asp  
245 250 255

Pro Ser Ile Asp Leu Glu Thr Leu Glu Trp Val His Ile His Lys Thr  
260 265 270

Ala Val Leu Leu Glu Cys Ser Val Val Cys Gly Ala Ile Met Gly Gly  
275 280 285

Ala Ser Glu Asp Asp Ile Glu Arg Ala Arg Arg Tyr Ala Arg Cys Val  
290 295 300

Gly Leu Leu Phe Gln Val Val Asp Asp Ile Leu Asp Val Ser Gln Ser  
305 310 315 320

Ser Glu Glu Leu Gly Lys Thr Ala Gly Lys Asp Leu Ile Ser Asp Lys  
325 330 335

Ala Thr Tyr Pro Lys Leu Met Gly Leu Glu Lys Ala Lys Glu Phe Ala  
340 345 350

Asp Glu Leu Leu Asn Arg Gly Lys Gln Glu Leu Ser Cys Phe Asp Pro  
355 360 365

Thr Lys Ala Ala Pro Leu Phe Ala Leu Ala Asp Tyr Ile Ala Ser Arg  
370 375 380

Gln Asn  
385

<210> 27  
<211> 444  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 27

Met Gly Lys Leu Leu Gln Leu Ala Leu His Pro Val Glu Met Lys Ala  
1 5 10 15

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

Glu Gln Ser Thr Phe Gln Phe Cys Ala Ile Pro Gln Val Met Ala Ile  
290 295 300

Ala Thr Leu Ala Leu Val Phe Asn Asn Arg Glu Val Leu His Gly Asp  
305 310 315 320

Val Lys Ile Arg Lys Gly Thr Thr Cys Cys Leu Ile Leu Lys Ser Arg  
325 330 335

Thr Leu Arg Gly Cys Val Glu Ile Phe Asp Tyr Tyr Leu Arg Asp Ile  
340 345 350

Lys Ser Lys Leu Ala Val Gln Asp Pro Asn Phe Leu Lys Leu Asn Ile  
355 360 365

Gln Ile Ser Lys Ile Glu Gln Phe Met Glu Glu Met Tyr Gln Asp Lys  
370 375 380

Leu Pro Pro Asn Val Lys Pro Asn Glu Thr Pro Ile Phe Leu Lys Val  
385 390 395 400

Lys Glu Arg Ser Arg Tyr Asp Asp Glu Leu Val Pro Thr Gln Gln Glu  
405 410 415

Glu Glu Tyr Lys Phe Asn Met Val Leu Ser Ile Ile Ser Ser Val Leu  
420 425 430

Leu Gly Phe Tyr Tyr Ile Tyr Thr Leu His Arg Ala  
435 440

<210> 28  
<211> 13  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> mRNA destabilizing consensus sequence

<400> 28  
tatatatata tat

13

<210> 29  
<211> 9  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> mRNA destabilizing consensus sequence

<400> 29  
tgtataata

9