

## SEQUENCE LISTING

<110> DSM IP Assets B.V.

<120> ADIPOYL-7-ADCA PRODUCING STRAINS

<130> 26947-WO-PCT

<160> 154

<170> PatentIn version 3.3

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<210> 8
<211> 2072
<212> DNA
<213> Penicillium chrysogenum

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<210> 9

<211> 1955

<212> DNA

<213> *Penicillium chrysogenum*

<400> 9

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<210> 10  
 <211> 1898  
 <212> DNA  
 <213> *Penicillium chrysogenum*

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<210> 11
<211> 2309
<212> DNA
<213> Penicillium chrysogenum

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<210> 12
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<212> DNA
<213> Penicillium chrysogenum
<400> 12

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 <212> DNA  
 <213> *Penicillium chrysogenum*

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 <211> 2025  
 <212> DNA  
 <213> *Penicillium chrysogenum*

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<210> 15  
<211> 2249  
<212> DNA  
<213> *Penicillium chrysogenum*

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catcagaatg atcgggcaac ctatgcatcc ttggacacaa gaagcaattc tctcgctcgg 420  
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tctgtcggaa agctcatgcc acatgtcgag gcaaagattg tgaatccggt ggacaagaac      1560
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<210> 16
<211> 1960
<212> DNA
<213> Penicillium chrysogenum

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<400> 16
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tgggcagtct tggggtccga tggatatgcg gcgcgcgctg aagggttccc ttgcttcttt     1860
caagattccg caggagatga aggttttggc ggctattccc aggaatgcga tggggaaggt     1920
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<210> 17
<211> 1701
<212> DNA
<213> Penicillium chrysogenum

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<400> 17
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 gtcgagaaag tcctcctgat agatggccaa acaccagtca atggtcaacc tacatgcaat 480  
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&lt;212&gt; DNA

<213> *Penicillium chrysogenum*

&lt;400&gt; 18

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cacagcatgt gtttgtattc ggagaagagg gggcttcgag cacggttccc gtgacgggaa      1920
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<210> 19
<211> 1696
<212> DNA
<213> Penicillium chrysogenum

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<210> 20
<211> 1922
<212> DNA
<213> Penicillium chrysogenum

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<210> 21
<211> 2079
<212> DNA
<213> Penicillium chrysogenum

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<210> 22

<211> 5001

<212> DNA

<213> *Penicillium chrysogenum*

<400> 22

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 <213> *Penicillium chrysogenum*

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<212> DNA
<213> Penicillium chrysogenum

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acgctatcaa ccagtcatcc gtgcccacgc gtgacctatt gaaatcgctg cgctatgttg     1080
gcgttgctgg cgctcctatt gatggctcact ccatgcagca gttccgcagc catatcaacc     1140
ctatgggata tgcgtgccag atctggggga tgacagaggt cgggtgtgaca ttccaaactc     1200
gttggggcca gcagggtgac cctggaagta ttggacgggtg tattgctggg tatgaggccc     1260
gcttgggtga accagatgga aagaccgtgc aggggtgataa ctgctcgggt gaactctacg     1320
tccgtgggcc gggctcgtct actgcataca agggccgcac agacgcattg gagccacatg     1380
gatggttccg gactggagac atagcgtatg tcaagcaggg ccagtattat attggtggac     1440
ggacgaagga gcttatcaaa gtacgagggg aagtctatta gtaccagttt ctttatcaaa     1500
atgaaaatgc taatatcatt caacagatgg caagtagccc cagctgaagt tgaaggcgtc     1560
ctcctccaac acccggaat ccttgatgcc ggcgtgatag gcgtgaacaa ggatggtgtg     1620
ggcgaagtcc cacgcgcttt cgtcgtgcgc tctcgcgacc catccgtgcg ccgcctaacc     1680
ggcgaacaag tttacaatta ttcacgccag cagctggcga ggtacaaagc cctcgatgga     1740
ggcgttgat tgcgtggaaga gatcccgcgc actgcaagcg gaaagatcca gcgcttcaag     1800
ctgtcccaga tgaactcgta ccgggagatg gtggcgctcc tgctttcccg attcgaaggc     1860
gagggctctg ctgcagccac cgcggcccga cgtggactac ccgctggggc tgagatgtcg     1920
ccagttagtc tcattcctga gggacggggt gcggtctaa      1959

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<210> 25
<211> 1947
<212> DNA
<213> Penicillium chrysogenum

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<400> 25
atggaagcca gactcgcgct ccttcaaggc tccaaagagc ctgccttgtg gtttgaacaa      60
ctgggaaact tcatcgacaa gcaagcttcc cagtatgaag accgagtagc tgctattttc     120
ccttggaat ccgtccgact ctcataccgt caattggcag agcggagcaa gattcttgca     180

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aaggcaatgc tagagatggg actacgcaag ggagactgtg ttggagtcac ggcagggaac	240
tgttatcagt atattgaggt tttcctcggg ggcgggcgca ttggatgccc tgttggtgtt	300
ctgaacaata cctacattcc aagggaacta atgagtgtg tgcaaaagag ctgtaagtcc	360
tggatagtcc aattggtcaa ataccacaag ttctgatcac tcatctcata tatttagcgt	420
gcaaattggg tttcgttgcc tccgatattg gttcgcggag tctctcggct catatcaacg	480
cgctttgtgg tgatcaatcg agaaacctg ctctgccaga actccgccg gttgtcaact	540
ttgggaataa ggatccaagt agcaccggag tcgaaatgca gtcttacagc gcctttacct	600
ctggcgcccc atctgtcttc atgaaagact caatgctgct ccgtgcagag aagtccgtgg	660
agcccgaaga tgcctcaac ctacaattca cctccggtat taccctttaa tcaccttcaa	720
aatgttcgc catctaatat ccaagtagga accactggct ccccaaaagc tgccatgcta	780
agccacatgt gagtaaattt cccaatatc caaagataat ctactaaga agcgcagtaa	840
cctcctcaac aacgcccgt ttgtcggcga cgcaatgcac ctaccccaa cagacataat	900
ctgctgcccc ccacctctat tccactgctt tggtttagtc ttaggcttcc tcgcgtcttt	960
cgtacacggc agctcaatag tatttccatc agacttcttc gacgtccgga aattcgtttc	1020
aacaatctc tccgaaaacg caaccgtcct cctcggcggt ccgacaatgt acatttcgga	1080
gctggaggtc ctttcaaaaa gtgcacagcg tccccacat ctgaggacag gtcttgctc	1140
gggctcggct gtttcacaag gtcttatgaa tcagctcaga gaggaaatgg gcgtacagaa	1200
gatgttgatc gcgtatggca tgaccgaaac cagtccagtc acattcatta cctctattga	1260
ggatggggat gagaagggga catcgaccgt gggtagagtc ctgccgcata cgggtgccaa	1320
ggttggtggg aaagggggcg agattgttcg gagaggggag aggggagagt tgtgtactag	1380
tgggtttgcc ctgcagaagg ggtattgggg gaatgaggag aagaccggg aggtcatgag	1440
ggtggatggg gatggagttt tgtggatgca tacaggggat gaggctttta ttgatgaaga	1500
tggatatgct catattacgg ggaggatcaa ggatctcatt atacggggta agttctggta	1560
taacctgatt ttgatctggg ttgctaacca ctaatgggtc taggcgggga aaatatattt	1620
ccgagagaga ttgaagagcg acttacgttg catccgtcta tcagcgaagc cagtgtggtt	1680
ggaatcaaag atgaaagata cggcgagggt gttggatgct ttttgaaaat ggctgaagga	1740
tatcccaaag tccctgatac agaggtgaaa cagtgggtag gcgagaagct tggtcgacac	1800
aagacgccac agtatacatt ctggattgga gatgaaaaag tgggaaccga tttccccaag	1860
actgggagcg ggaaacatca gaagcacatc atgcgggacc ttggaaattt gctagtgcag	1920

agggatacgg cgagagccaa gctatag

1947

<210> 26

<211> 564

<212> PRT

<213> *Penicillium chrysogenum*

<400> 26

Met Gly Asp Arg Thr Leu Phe Ile Pro Pro His Val Gly Asp Asn Val  
1 5 10 15

Leu Pro Asn Leu Pro Phe Phe His Arg Leu Leu Arg Tyr Ala Gln Arg  
20 25 30

Lys Pro Ser Pro Ile Val Val Arg Asp Leu Val Ala Asp Ala Glu Lys  
35 40 45

Thr Tyr His His Leu Val Ser Asp Val Leu Ala Phe Arg Lys Val Leu  
50 55 60

Glu Arg Ser Ile Ser His Glu Ala Arg Arg Asp Leu Asn Ala Asp Lys  
65 70 75 80

Glu Val Tyr Ile Gly Leu Leu Ala Pro Gly Gly Tyr Glu Tyr Thr Val  
85 90 95

Gly Phe Ile Ala Ile Leu Ala Ile Gly Ala Ala Val Val Pro Met Ala  
100 105 110

Ala Ala Leu Pro Ala Glu Glu Ala Ser Tyr Phe Leu Leu Lys Ala Arg  
115 120 125

Cys Val Gly Leu Val Ala Ser Thr Ala Ser Glu Lys Thr Ala Gln Ser  
130 135 140

Val Val Arg Tyr Met Gly Glu Ser Lys Gly Met His Ile Pro Cys Ile  
145 150 155 160

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

Met Thr Ile Ser Ser Gly Pro Val Pro Asp Met Asn Ala Ala Ala Leu  
180 185 190

Val Ile Phe Thr Ser Gly Thr Thr Gly Pro Pro Lys Gly Ala Val Gln  
 195 200 205

Arg Arg Ser Tyr Ile Ser Gly Asn Gly Glu Ala Asp Ala Ala Tyr Tyr  
 210 215 220

Arg Ile Thr Asp Lys Asp Thr Val Leu His Val Leu Pro Val His His  
 225 230 235 240

Ala Ser Gly Val Gly Leu Thr Phe Leu Pro Phe Leu Ala Ala Gly Ala  
 245 250 255

Cys Ile Glu Phe Arg Cys Gly Ser Phe Asp Thr Ala Trp Thr Trp Glu  
 260 265 270

Arg Trp Arg Arg Gly Gly Leu Thr Phe Phe Ser Gly Val Pro Thr Ile  
 275 280 285

Tyr Met Arg Met Met Arg Tyr Tyr Glu Glu Asn Ile Ser His Gln Ala  
 290 295 300

Pro Glu Ile Arg Asp Gln Tyr Val Ala Gly Ala Arg Gln Ile Arg Ala  
 305 310 315 320

Met Leu Cys Gly Thr Ser Ala Leu Pro Gly Pro Val Gln Glu Phe Trp  
 325 330 335

His Asn Ile Arg Ser Lys Pro Ile Leu Thr Arg Tyr Gly Ala Thr Glu  
 340 345 350

Phe Gly Ala Val Ile Lys Thr Glu Leu Asp Ser Asp Gly Thr Pro Gln  
 355 360 365

Asn Ser Val Gly Cys Val Ala Glu Ala Val Ser Leu Lys Leu Thr Glu  
 370 375 380

Glu Gly Gln Ile Leu Val Lys Cys Pro Tyr Met Phe Ser Lys Tyr Leu  
 385 390 395 400

Phe Asp Glu Lys Ala Thr Ala Asp Ala His Asp Ala Glu Gly Tyr Phe  
 405 410 415

Lys Thr Gly Asp Ile Ala Arg Arg Glu Gly Lys Tyr Tyr Phe Ile Leu  
 420 425 430

Gly Arg Ala Ser Ile Asp Ile Ile Lys Ser Gly Gly Tyr Lys Ile Ser  
 435 440 445

Ala Leu Asp Ile Glu Arg Glu Ile Leu Gly Leu Asp Tyr Val Ser Glu  
 450 455 460

Val Met Val Val Gly Val Glu Asp Glu Glu Phe Gly Gln Arg Val Ala  
 465 470 475 480

Ala Thr Val Ser Leu Lys Gln Asp Gln Lys Thr Thr Arg Lys Ser Leu  
 485 490 495

Thr Ile Ala Glu Leu Arg Glu Asp Leu Arg Ser Lys Met Ala Gly Tyr  
 500 505 510

Lys Met Pro Thr Val Leu Arg Val Val Gln Gly Glu Leu Pro Lys Ser  
 515 520 525

Gly Thr Gly Lys Val Gln Lys Lys Ile Leu Gly Pro Gln Phe Phe Pro  
 530 535 540

Pro Asn Tyr Arg Gln Leu Pro Glu Val Gln Val Trp Ser Arg Glu Asn  
 545 550 555 560

Lys Ala Arg Leu

<210> 27  
 <211> 560  
 <212> PRT  
 <213> *Penicillium chrysogenum*

<400> 27

Met Arg Lys Thr Leu Arg His Gly Leu Gly Leu Pro Thr Tyr Ile Tyr  
 1 5 10 15

Ile Pro Ser His His Ile Asp Ile Pro Pro Ile Asp Thr Trp Asp Cys  
 20 25 30

Leu Phe Glu Arg Glu Asp Arg Pro Phe Leu Asp Asp His Ile Ile Phe

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

Asn Val Lys Ala Glu Ser Ile Thr His Ile Tyr Ala Val Pro Pro Val  
 275 280 285

Val Leu Tyr Leu Ala Lys Asp Pro Ala Met Thr Arg Glu Gln Leu Ser  
 290 295 300

Ser Leu Arg Met Val Thr Ser Ala Ala Ala Pro Leu Ala Ser Asp Leu  
 305 310 315 320

Ile His Ala Val Tyr Asp Arg Leu Lys Val Pro Val Arg Gln Ala Tyr  
 325 330 335

Gly Leu Thr Glu Ser Thr Ala Val Thr His Leu Gln Arg Trp Asp Glu  
 340 345 350

Trp Asp Lys Ala Met Gly Ser Ser Gly Pro Leu Tyr Pro Ala Val Glu  
 355 360 365

Thr Lys Phe Ile Asp Asp Gln Gly Asn Pro Val Thr Lys Gly Asp Gly  
 370 375 380

Glu Leu Cys Leu Arg Gly Pro Thr Leu Phe Pro Gly Tyr His Asn Asn  
 385 390 395 400

Ala Glu Ala Thr Ala Arg Ser Ile Thr Ser Asp Gly Trp Phe Lys Thr  
 405 410 415

Gly Asp Ile Gly Phe Gln Asp Glu Glu Gly Asn Leu Phe Ile Thr Asp  
 420 425 430

Arg Leu Lys Asp Leu Ile Lys Phe Lys Gly Phe Gln Ile Pro Pro Ala  
 435 440 445

Glu Ile Glu Ser Ala Leu His Glu His Pro Leu Val His Asp Ala Ala  
 450 455 460

Val Ile Gly Leu Ala Val Glu Lys Ile Ala Thr Glu Val Pro Val Ala  
 465 470 475 480

Tyr Val Val Leu Glu Lys Thr Asp Lys Pro Ala Glu Gln Val Ala Glu  
 485 490 495



Glu Leu Val Ala Tyr Val Ser Gly Lys Leu Ala Pro His Lys Arg Leu  
500 505 510

Arg Gly Gly Ile Val Leu Ile Asp Glu Ile Pro Lys Gly Pro Ala Gly  
515 520 525

Lys Ile Leu Lys Arg Val Leu Lys Thr Arg Ala Glu Gly Val Asp Gln  
530 535 540

Gly Lys Ala Ile Gly Ala Ser Ile Tyr Asp Asp Arg Pro Ser Lys Leu  
545 550 555 560

<210> 28  
<211> 562  
<212> PRT  
<213> *Penicillium chrysogenum*

<400> 28

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

Leu Trp Thr Phe Leu Phe Glu Arg Lys Asp Arg Ala Tyr Pro Asp Asp  
20 25 30

Lys Ile Ile Tyr Gln Asp Ala Asp Thr Gln Arg His Tyr Thr Tyr Lys  
35 40 45

Ser Leu Arg Asp Ala Ser Leu Asp Phe Gly Lys Gly Leu Lys Ala Leu  
50 55 60

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

Ile Asp Thr Pro Val Val Met Trp Gly Thr Leu Trp Ala Gly Gly Thr  
85 90 95

Ile Ser Pro Ala Asn Pro Gly Tyr Thr Val Asp Glu Leu Ala Phe Gln  
100 105 110

Leu Lys Asn Ser His Ala Lys Gly Leu Val Thr Gln Ala Ser Val Leu  
115 120 125

Pro Val Ala Arg Glu Ala Ala Lys Lys Val Gly Met Pro Glu Asp Arg

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

Met Gln Ala Lys Tyr Met Thr Met Pro Glu Asp Gly Ser Glu Pro Lys  
 370 375 380

Glu Val Gly Glu Gly Glu Val Gly Glu Leu Tyr Leu Lys Gly Pro Asn  
 385 390 395 400

Val Phe Leu Gly Tyr His Glu Asn Pro Glu Ala Thr Lys Gly Cys Leu  
 405 410 415

Ser Glu Asp Gly Trp Phe Gln Thr Gly Asp Val Gly Tyr Gln Asp Ala  
 420 425 430

Lys Gly Asn Phe Tyr Ile Thr Asp Arg Val Lys Glu Leu Ile Lys Tyr  
 435 440 445

Lys Gly Phe Gln Val Pro Pro Ala Glu Leu Glu Gly Tyr Leu Val Asp  
 450 455 460

Asn Asp Ala Ile Asp Asp Val Ala Val Ile Gly Ile Glu Ser Glu Thr  
 465 470 475 480

His Gly Ser Glu Val Pro Met Ala Cys Val Val Arg Ser Ala Lys Ser  
 485 490 495

Lys Ser Ser Gly Thr Ser Glu Lys Asp Glu Ala Ala Arg Ile Ile Lys  
 500 505 510

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

His Phe Val Asp Glu Ile Pro Lys Asn Pro Ser Gly Lys Ile Leu Arg  
 530 535 540

Arg Ile Leu Lys Gln Lys Phe Lys Gly Ala Ala Glu Ala Pro Lys Ala  
 545 550 555 560

Lys Leu

<210> 29  
 <211> 698  
 <212> PRT

<213> Penicillium chrysogenum

<400> 29

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

Thr Gln Met Gly Arg Phe Gln Arg Asp Leu Glu Lys Ser Thr Gly His  
20 25 30

Lys Phe Asp Ser Phe His Asp Met Tyr Leu Tyr Ser Val Lys Asn Arg  
35 40 45

Ser Ala Phe Trp Glu Phe Cys Trp Lys Tyr Phe Gln Leu Ile His Glu  
50 55 60

Gly Ser Tyr Thr Lys Val Val Asp Glu Thr Ala Arg Met Asp Ser Val  
65 70 75 80

Pro Glu Trp Phe Pro Gly Val Arg Leu Asn Phe Ala Glu Asn Leu Leu  
85 90 95

Phe Ser Arg Ile Ala Gly Asp Lys Thr Asp Lys Glu Asp Asp Lys Ile  
100 105 110

Ala Val Ser Glu Val Arg Glu Gly Ala Ala His Glu Val Ile His Leu  
115 120 125

Thr Trp Gly Glu Leu Arg Arg Arg Thr Gly Ala Leu Val Gln Ala Met  
130 135 140

Lys Ala His Gly Val Val Gln Gly Asp Arg Ile Ala Leu Cys Ala Ala  
145 150 155 160

Asn Ser Ile Asp Thr Leu Phe Val Phe Leu Ala Ser Thr Ala Leu Gly  
165 170 175

Ala Ile Phe Ser Ser Ser Ser Thr Asp Met Gly Thr Lys Gly Val Leu  
180 185 190

Asp Arg Leu Leu Gln Ile Lys Pro Arg Trp Leu Phe Met Asp Asp Leu  
195 200 205

Ala Val Tyr Asn Gly Lys Thr Ile Asp Leu Arg Ser Lys Ile Gly Glu

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

Asn Pro Leu Val Pro Leu Tyr Val Gly Gly Cys Ala Gly Cys Ser Leu  
 450 455 460

Gly Ile Pro Val Glu Val Tyr Asp Ser Thr Ile Glu Gly Gly Asp Gly  
 465 470 475 480

Ile Lys Gly Val Pro Val Glu Asp Gly Val Pro Gly Glu Leu Val Ala  
 485 490 495

Thr Ser Ala Phe Pro Asn Met Pro Thr Leu Phe Trp Gly Asp Glu Ser  
 500 505 510

Gly Lys Lys Tyr His Asp Ala Tyr Phe Glu Arg Phe Asp Asn Val Trp  
 515 520 525

Thr His Gly Asp Phe Val Ser Ile Arg Pro Ile Thr Lys Gln Ile Val  
 530 535 540

Phe His Gly Arg Ala Asp Gly Val Leu Asn Pro Ser Gly Val Arg Phe  
 545 550 555 560

Gly Ser Ala Glu Ile Tyr Arg Val Leu Glu Gly Gln Phe Ser Lys Glu  
 565 570 575

Ile Ser Asp Ser Ile Cys Val Gly Gln Arg Arg Pro Thr Asp Thr Asp  
 580 585 590

Glu Arg Val Ile Leu Phe Leu Leu Met Arg Pro Gly Met Ala Phe Thr  
 595 600 605

Pro Asp Leu Val Ala Arg Val Lys Ser Ala Ile Arg Ser Glu Leu Ser  
 610 615 620

Pro Arg His Val Pro Met Phe Thr Phe Glu Thr His Glu Ile Pro Thr  
 625 630 635 640

Thr Val Asn Leu Lys Lys Val Glu Leu Pro Val Lys Gln Ile Val Ser  
 645 650 655

Gly Lys Ile Ile Lys Pro Ser Gly Thr Leu Leu Asn Pro Lys Ser Leu  
 660 665 670

Asp Phe Tyr Tyr Gln Phe Ala Lys Val Glu Thr Leu Arg Glu Lys Ile  
 675 680 685

Leu Asn Asn Ala Tyr Glu Arg Asn Ser Lys  
 690 695

<210> 30  
 <211> 707  
 <212> PRT  
 <213> *Penicillium chrysogenum*

<400> 30

Met Phe Phe Ser Ser Pro Pro His Leu Ala Lys Ala Glu Glu Leu Lys  
 1 5 10 15

Gln Ala Pro Pro Lys Gly Val Ala Tyr Ser Val Ala Ile Pro Gly Ser  
 20 25 30

Glu Gln Pro Gly Arg Ser Arg Val Tyr Arg Ala Trp Asn Ala Gln Lys  
 35 40 45

Glu Leu Leu Thr Thr Leu Asp Ser Gln Val Thr Thr Ala His Asp Met  
 50 55 60

Phe Glu Ser Thr Ala Asn Arg Gln Pro Lys Asn His Cys Leu Gly Trp  
 65 70 75 80

Arg Pro Tyr Asn Ser Thr Thr Lys Ser Phe Asp Pro Tyr Gln Trp Leu  
 85 90 95

Thr Tyr Glu Thr Val Gln Lys Arg Arg Ala Ala Phe Gly Ala Gly Leu  
 100 105 110

Val Glu Leu His His Lys His Asp Cys His Arg Ser Gly Gln Tyr Gly  
 115 120 125

Val Gly Leu Trp Ser Gln Asn Arg Pro Glu Trp Gln Ile Thr Asp Leu  
 130 135 140

Ala Cys Ile Ser Gln Ser Leu Tyr Ser Val Ser Ile Tyr Asp Val Leu  
 145 150 155 160

Ser Pro Asp Ala Thr Glu Tyr Ile Ile Asn His Ala Glu Leu Ser Cys





Asp Arg Leu Trp Ala Lys Lys Val Ala Ala Ala Leu Gly Leu Glu Arg  
 405 410 415

Ala Arg Tyr Met Val Ser Gly Ser Ala Pro Leu Asp Pro Thr Leu His  
 420 425 430

Asp Phe Leu Arg Val Ala Thr Gly Thr Asp Ile Leu Gln Gly Tyr Gly  
 435 440 445

Leu Thr Glu Ser Tyr Ala Ser Ala Thr Ala Gln Pro Thr Tyr Asp Leu  
 450 455 460

Thr Ser Gly Asn Cys Gly Ser Leu Ala Pro Cys Val Glu Ala Cys Leu  
 465 470 475 480

Ala Ser Leu Pro Asp Met Glu Tyr Ser Val Asp Asp Lys Pro Phe Pro  
 485 490 495

Arg Gly Glu Leu Leu Leu Arg Gly Asn Asn Met Phe Arg Glu Tyr Tyr  
 500 505 510

Lys Asn Glu Glu Glu Thr Ser Lys Ala Val Thr Glu Asp Gly Trp Phe  
 515 520 525

Arg Thr Gly Asp Val Cys Thr Ile Asp Glu Lys Gly Arg Phe Ile Ile  
 530 535 540

Ile Asp Arg Arg Lys Asn Val Leu Lys Leu Ala Gln Gly Glu Tyr Ile  
 545 550 555 560

Ser Pro Glu Arg Leu Glu Gly Val Val Leu Ala Glu Leu Gly Tyr Ile  
 565 570 575

Ala Gln Ala Tyr Val His Gly Asp Ser Met Gln Thr Phe Leu Val Gly  
 580 585 590

Ile Phe Gly Val Ala Pro Asp Leu Phe Ala Pro Phe Ala Ser Lys Val  
 595 600 605

Leu Gly Lys Thr Ile Ala Pro Thr Asp Leu Glu Ala Ile Lys Glu Ser  
 610 615 620

Leu Arg Asp Asp Lys Ile Arg Arg Ala Val Leu Arg Asp Leu Glu Arg  
625 630 635 640

Val Ala Lys Lys His Lys Phe Ala Gly Tyr Glu Arg Ile Arg Asn Val  
645 650 655

Ser Leu Lys Val Glu Pro Phe Thr Val Glu Asn Asn Leu Leu Thr Pro  
660 665 670

Thr Leu Lys Leu Lys Arg Pro Pro Ala Val Lys Leu Tyr Arg Ser Leu  
675 680 685

Leu Asp Gln Leu Tyr Glu Gln Ala Thr Glu Glu Gln Ser Ala Pro Lys  
690 695 700

Ala Lys Leu  
705

<210> 31  
<211> 556  
<212> PRT  
<213> Penicillium chrysogenum

<400> 31

Met Pro Tyr Lys Ser Arg Trp Thr Ile Asp Ile Pro Asp Thr His Leu  
1 5 10 15

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

Lys Cys Tyr Leu Asp Ala Ala Arg Pro Glu Thr His Tyr Leu Thr Thr  
35 40 45

His Asp Leu Arg Leu Trp Ser Gln Arg Leu Ala Ala Gly Leu Arg Lys  
50 55 60

Ser Gly Leu Gln Arg Gly Asp Arg Val Leu Leu Phe Ser Gly Asn Asp  
65 70 75 80

Leu Phe Phe Pro Val Val Phe Leu Gly Val Ile Met Ala Gly Gly Ile  
85 90 95

Phe Thr Gly Ala Asn Pro Thr Phe Val Ala Arg Glu Leu Ala Tyr Gln



Trp Pro Pro Gly Lys Ile Asn Ile Lys Gln Gly Trp Gly Met Thr Glu  
 340 345 350

Ala Thr Cys Ser Val Thr Gly Trp Asn Pro Ala Glu Ile Ser Thr Ser  
 355 360 365

Ala Ser Val Gly Glu Leu Asn Ala Asn Cys Glu Ala Lys Ile Met Phe  
 370 375 380

Asp Gly Val Glu Val Lys Glu Arg Asn Ser Arg Gly Glu Leu Trp Val  
 385 390 395 400

Arg Ala Pro Asn Val Met Lys Gly Tyr Trp Arg Asn Glu Lys Ala Thr  
 405 410 415

Lys Glu Thr Lys Thr Glu Asp Gly Trp Leu Leu Thr Gly Asp Ile Ala  
 420 425 430

Phe Val Asp Asp Asp Gly Lys Phe His Val Val Asp Arg Met Lys Glu  
 435 440 445

Leu Ile Lys Val Lys Gly Asn Gln Val Ala Pro Ala Glu Leu Glu Ala  
 450 455 460

Leu Leu Leu Glu His Pro Ala Ile Ser Asp Val Ala Val Ile Gly Val  
 465 470 475 480

Val Ile Asn Asn Asp Glu Arg Pro Arg Ala Tyr Val Val Leu Arg Pro  
 485 490 495

Gly Gln Ser Ala Thr Ala Asn Glu Ile Ala His Tyr Leu Asp Asn Lys  
 500 505 510

Val Ser Ala Phe Lys Arg Ile Thr Gly Gly Val Val Phe Leu Glu Ala  
 515 520 525

Ile Pro Lys Asn Pro Ser Gly Lys Ile Leu Arg Met Lys Leu Arg Glu  
 530 535 540

Gln Ala Lys Glu Glu Leu Arg Val Thr Ala Lys Leu  
 545 550 555

<210> 32  
 <211> 658  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 32

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

Leu Pro Ala Ala Ala Thr Thr Leu Ala Tyr Leu Asn Ala Arg Trp Ser  
 20 25 30

Leu Ser Tyr Asp Leu Asn Leu Leu Lys Gly Leu Leu Lys Met Ser Ala  
 35 40 45

Lys Ser Arg Ile Ala Glu Arg Gly Asp Arg Leu Asn Leu Phe Tyr Thr  
 50 55 60

Leu Glu Ala Tyr Ala Leu Asp Pro Lys Thr Ala Asp Asn Asp Phe Ile  
 65 70 75 80

Val Tyr Asn Gly Arg Thr Thr Thr Phe His Glu Thr Tyr Ile Thr Ala  
 85 90 95

Leu Arg Tyr Gly Ala Trp Phe Lys Thr Val His Gly Ile Lys Arg Lys  
 100 105 110

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

Leu Leu Gly Leu Trp Ser Ile Gly Ala Val Pro Ala Phe Ile Asn Tyr  
 130 135 140

Asn Leu Ser Gly Lys Pro Leu Thr His Ser Ile Arg Thr Ser Ser Ala  
 145 150 155 160

Arg Leu Val Val Val Asp Glu Glu Val Arg His Cys Phe Pro Glu Glu  
 165 170 175

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

Val Glu Ile Val Phe His Thr Pro Glu Val Glu Ala Gln Ile Leu Gly

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

Thr Gly Leu Cys Lys Lys Val Pro Arg Gly Asp Pro Gly Glu Leu Leu  
 435 440 445

Phe Ala Ile Asp Ala Ala Asp Pro Thr Ala Asn Phe Gln Gly Tyr Phe  
 450 455 460

Gly Asn Lys Lys Ala Thr Glu Gly Lys Ile Ile Arg Asp Val Ile Lys  
 465 470 475 480

Lys Gly Asp Ala Tyr Phe Arg Thr Gly Asp Met Val Arg Trp Asp Lys  
 485 490 495

Asp Gly Arg Trp Phe Phe Ser Asp Arg Leu Gly Asp Thr Phe Arg Trp  
 500 505 510

Lys Ser Glu Asn Val Ser Thr Ser Glu Val Ser Glu Val Leu Gly Ala  
 515 520 525

His Pro Glu Val His Glu Ala Asn Val Tyr Gly Val Ser Leu Pro Asn  
 530 535 540

His Asp Gly Arg Ala Gly Cys Ala Ala Ile Leu Phe Asn Gln Gln Ile  
 545 550 555 560

Thr Ser Gly Gly Leu Ser Asp Ser Ala Leu Glu Pro Ser Arg Glu Val  
 565 570 575

Leu Asp Thr Leu Ala Ala His Thr Leu Gln Asn Leu Pro Arg Phe Ala  
 580 585 590

Ala Pro Leu Phe Leu Arg Val Thr Pro Val Thr Gln Ser Thr Gly Asn  
 595 600 605

Asn Lys Gln Gln Lys His Val Leu Arg Thr Glu Gly Val Asp Pro Ala  
 610 615 620

Leu Val Ser Lys Lys Asp Arg Leu Tyr Trp Leu Gln Gly Asn Thr Tyr  
 625 630 635 640

Val Pro Phe Gly Gln Arg Asp Trp Glu Arg Leu Thr Gly Gly Gln Val  
 645 650 655

Arg Leu

<210> 33  
 <211> 632  
 <212> PRT  
 <213> *Penicillium chrysogenum*

<400> 33

Met Asp Ile Gly Thr Ala Ala Ala Ala Leu Val Gly Gly Ala Thr Ile  
 1 5 10 15

Ala Gly Tyr Leu Asn Ala Lys Phe His Ile Gln Lys Asp Ile Ser Gly  
 20 25 30

Leu Phe Thr Leu Lys Asn Ala Glu Arg Gln Tyr Ala Asn Ala Ala Ser  
 35 40 45

Gln Asn Gln Gly Asn Pro Trp Phe Val Leu Val Gln Thr Val Lys Arg  
 50 55 60

Tyr Pro Asp Met Ile Cys Leu Trp Thr Arg Glu Arg Ser Tyr Thr Tyr  
 65 70 75 80

Arg Glu Ile Gln Asp Gln Ala Cys Gln Tyr Ala His Phe Phe Leu Ser  
 85 90 95

His Gly Val Lys Lys Gly Asp Leu Val Ala Leu Tyr Leu Gln Asn Ser  
 100 105 110

Asn Glu Tyr Leu Val Ala Trp Val Ala Leu Trp Ser Ile Gly Cys Ala  
 115 120 125

Pro Ala Ala Ile Asn Tyr Asn Leu Thr Gly Asp Ala Leu Leu His Cys  
 130 135 140

Leu Lys Ile Ser Asp Ala Thr Ile Leu Leu Val Asp Glu Asn Ala Asp  
 145 150 155 160

Cys Arg Ala Arg Val Glu Glu Ser His Asp Ala Ile Thr Gly Asn Leu  
 165 170 175

Gly Met Lys Pro Met Thr Leu Asp Ser Ala Leu Lys Ala His Ile Arg





Val Arg Ser Pro Tyr Glu Gln Gly Gly Glu Ile Ile Val Asn Val Pro  
 420 425 430

Ser Glu Glu Ala Phe Gln Gly Tyr Trp His Asn Asp Glu Ala Thr Asn  
 435 440 445

Lys Lys Phe Leu Arg Asp Val Phe Lys Lys Gly Asp Leu Tyr Tyr Arg  
 450 455 460

Ser Gly Asp Ala Leu Arg Arg Gln Ser Asp Gly Arg Trp Tyr Phe Leu  
 465 470 475 480

Asp Arg Leu Gly Asp Thr Phe Arg Trp Lys Ser Glu Asn Val Ala Thr  
 485 490 495

Ala Glu Val Ser Glu Val Leu Gly Gln Phe Pro Gly Ile Thr Glu Ala  
 500 505 510

Asn Val Tyr Gly Val Arg Leu Pro Asn His Glu Gly Arg Ala Gly Cys  
 515 520 525

Ala Ala Ile Gln Ile Ser Pro Asp Ala Arg Gln Thr Phe Asp Tyr Thr  
 530 535 540

Glu Leu Ala Arg Phe Val Arg Ser Lys Leu Pro Lys Tyr Ala Val Pro  
 545 550 555 560

Leu Phe Leu Arg Ile Val Glu Asn Pro Thr His Ile His Asn His Lys  
 565 570 575

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

Gly Thr Lys Ala Pro Glu Gly Lys Asp Asp His Phe Leu Trp Ile Ala  
 595 600 605

Pro Gly Glu Glu Ser Tyr Ser Pro Tyr Gly Gln Lys Glu Trp Glu Gln  
 610 615 620

Leu Ser Ser Gly Ser Val Arg Leu  
 625 630

<210> 34  
 <211> 572  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 34

Met Ser Gly Ser Lys Ser Arg Leu Ser Gly Leu Leu Gly His Phe Thr  
 1 5 10 15

Gly Ser Thr Pro Pro Val Glu His Arg Val Asn Thr His Thr Leu Ser  
 20 25 30

Pro Thr Phe Phe Leu Pro Arg Ala Ala Ala Val Glu Pro Asn Ala Glu  
 35 40 45

Ala Ile Tyr His Val Thr Ala Asn Asn Lys Ile Leu Arg Arg Ser Tyr  
 50 55 60

Gly Glu Thr Ala Asp Arg Ala Arg Gly Met Ala Tyr Tyr Leu Lys Lys  
 65 70 75 80

His Gly Leu Ser Arg Val Gly Ile Leu Cys Pro Asn Thr Pro Ala Phe  
 85 90 95

Leu Glu Ser Ile Phe Gly Ile Ala Ala Ala Gly Ala Val Asn Ile Ala  
 100 105 110

Val Asn Tyr Arg Leu Lys Gln Glu Asp Ile Ala Tyr Ile Phe Asp His  
 115 120 125

Gly Asp Ala Glu Val Ile Ile Val Asp Glu Glu Tyr Val Pro Leu Leu  
 130 135 140

Glu His Tyr Arg Ser Gln His Pro Arg Ile Pro Ile Ile Val Asp Thr  
 145 150 155 160

Asp Thr Asp Ala Thr Glu Gly Glu Leu Thr Gly Pro Phe Asp Glu Ala  
 165 170 175

Val Leu Glu Gly Leu Arg His Asp Ile Asp Thr Gly Ser Arg Gly Trp  
 180 185 190

Glu Gly Leu Glu Ser Gln Ala Ala Asp Glu Glu Ser Thr Ile Ala Leu

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

Glu Ala Thr Arg Lys Leu Phe Ala Gly Gly Val Leu His Ser Gly Asp  
 435 440 445

Leu Ala Val Trp His Pro Asp Gly Ala Ile Gln Ile Leu Asp Arg Ala  
 450 455 460

Lys Asp Ile Ile Ile Ser Gly Gly Glu Asn Ile Ser Ser Val Ala Leu  
 465 470 475 480

Glu Ser Met Leu Val Met His Pro Asp Ile Leu Glu Ala Gly Val Val  
 485 490 495

Ala Val Pro Asp Ser His Trp Gly Glu Arg Pro Lys Ala Phe Val Thr  
 500 505 510

Val Lys Glu Gly Lys Ser Leu Gln Gly Ser Asp Leu Ile Asp Trp Ala  
 515 520 525

Arg Asn Thr Ser Gly Ile Ser Lys Phe Met Ile Pro Arg Glu Val Glu  
 530 535 540

Val Val Thr Glu Leu Pro Lys Thr Ser Thr Gly Lys Ile Arg Lys Asn  
 545 550 555 560

Ile Leu Arg Asp Trp Val Lys Gly Pro Arg Glu Ala  
 565 570

<210> 35  
 <211> 577  
 <212> PRT  
 <213> *Penicillium chrysogenum*

<400> 35

Met Ser Leu Gln Asp Ser His His Ser Phe Gln Pro Lys Pro Ser Tyr  
 1 5 10 15

Lys Gln Gly Leu Leu Glu Pro Ala Leu Arg Asn Trp Thr Ile Gly Asp  
 20 25 30

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

Cys Pro Gly Thr Ser Asn Ser Ile Thr Tyr Arg Gln Leu Asn Asp Arg  
50 55 60

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

Asp Arg Val Gly Ile Phe Ala Gly Asn Val Leu Glu Tyr Val Glu Val  
85 90 95

Ala Leu Ala Thr Ala Arg Ile Gly Ala Ile Ile Val Leu Leu Asn Thr  
100 105 110

Phe Tyr Thr Thr Glu Glu Ile Lys Arg Ala Leu Arg Phe Thr Gly Cys  
115 120 125

Ser Leu Leu Phe Ile Thr Glu Ser Leu Gly Lys Arg Ser Leu Leu Pro  
130 135 140

Cys Ile Asp Gln Leu Asn Glu Ile Ile Glu Asn Gln Lys Ser Glu Phe  
145 150 155 160

Pro Asp Leu Arg Ser Met Val Leu Leu Ser Gly Gln Cys Ser Glu Ser  
165 170 175

Ser Asn Leu Gln Ser Tyr Ala Asp Phe Phe Asn Ile Pro Pro Thr Gly  
180 185 190

Ala Lys Ala Ala Ser Ala Cys Lys Ala Ala Glu Thr Gln Val Thr Pro  
195 200 205

Glu Thr Ile Cys Asn Phe Gln Phe Thr Ser Gly Thr Thr Gly Met Pro  
210 215 220

Lys Ala Val Met Leu Thr His Phe Asn Val Val Asn Asn Gly Phe Leu  
225 230 235 240

Ile Gly Asp Arg Val Cys Leu Ser Pro Asn Asp Thr Ile Cys Cys Pro  
245 250 255

Trp Pro Leu Phe His Ser Ser Gly Phe Val Val Gly Leu Ile Thr Ser  
260 265 270

Leu Cys His Gly Ala Thr Leu Val Leu Pro Ser Pro Val Phe Asp Pro

275								280								285
Ala	Ala	Thr	Ala	Arg	Ala	Leu	Ile	Ser	Glu	Arg	Cys	Thr	Gly	Leu	Gln	
290						295					300					
Gly	Val	Pro	Thr	Met	Phe	Ala	Ala	Val	Leu	Glu	Trp	Tyr	Arg	Gln	Arg	
305					310					315					320	
Gly	Thr	Arg	Pro	Pro	Pro	Leu	Arg	Thr	Gly	Ile	Ile	Gly	Gly	Ser	Pro	
				325					330					335		
Val	Ser	Pro	Ala	Leu	Leu	Arg	Glu	Leu	Gln	His	Glu	Phe	Ala	Leu	Glu	
			340					345					350			
Asp	Leu	Gly	Ile	Ala	Tyr	Gly	Met	Thr	Glu	Thr	Ser	Pro	Leu	Ser	Phe	
		355					360					365				
Leu	Ser	Lys	Gly	Phe	Glu	Pro	Glu	Gly	Thr	His	Ser	Trp	Met	Glu	Ile	
	370					375					380					
Leu	Pro	His	Thr	Thr	Ala	Lys	Ile	Val	Asp	Ala	Gln	Gly	Thr	Ile	Val	
385					390				395						400	
Pro	Ile	Gly	Ser	Pro	Gly	Glu	Leu	Cys	Val	Ser	Gly	Tyr	Leu	Leu	Gln	
				405					410							
Gln	Gly	Tyr	Tyr	Gln	Asn	Pro	Gly	Lys	Thr	Ser	Glu	Ala	Met	Arg	Val	
			420					425					430			
His	Glu	Asp	Gly	Val	Leu	Trp	Ile	His	Ser	Gly	Asp	Glu	Ala	Ile	Met	
		435					440					445				
Asp	Glu	Gln	Gly	Arg	Cys	Arg	Ile	Ser	Gly	Arg	Ile	Lys	Asp	Thr	Ile	
	450					455					460					
Ile	Arg	Gly	Gly	Glu	Asn	Ile	Tyr	Pro	Ala	Glu	Ile	Glu	Asp	Arg	Leu	
465					470					475					480	
Asn	Glu	His	Pro	Ala	Ile	Ser	Met	Ser	Ala	Val	Val	Gly	Ile	Gln	Asp	
				485					490					495		
Ala	Lys	Tyr	Gly	Glu	Ala	Val	Ala	Ala	Phe	Leu	Gln	Leu	Lys	His	Gly	
			500					505					510			

Glu Asn Pro Cys Ala Gln Ala His Ile Ser Glu Trp Val Gln Gln Thr  
 515 520 525

Leu Gly Lys His Lys Val Pro Thr Leu Val Phe His Leu Gly Val Asp  
 530 535 540

Gly Val Pro Gly Asp Phe Pro Lys Thr Ala Ser Gly Lys Ile Lys Lys  
 545 550 555 560

Val Asp Leu Val Ala Ile Gly Thr Gln Leu Val Arg Gly Ala Gly Lys  
 565 570 575

Leu

<210> 36  
 <211> 696  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 36

Met Ser Pro His Pro Gln Thr Thr Thr His Ser His Ser Leu Gly Asp  
 1 5 10 15

Pro Glu Thr Phe Trp Ser His His Ala Ala Arg Leu His Trp His His  
 20 25 30

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

Thr Lys His Glu His Trp Ser Trp Phe Ala Asp Gly Glu Ile Ser Thr  
 50 55 60

Thr Tyr Asn Cys Val Asp Arg His Val Leu Ala Gly His Gly Asp Asn  
 65 70 75 80

Val Ala Ile Val Trp Glu Ser Pro Val Thr Gly Val Thr Glu Lys Tyr  
 85 90 95

Thr Tyr Ala Arg Leu Leu Asp Glu Val Glu Val Leu Ala Gly Val Leu  
 100 105 110



Arg Glu Glu Gly Val Gln Lys Gly Asp Val Val Ile Ile Tyr Met Pro  
 115 120 125

Met Ile Pro Ala Ala Leu Ile Ala Ala Leu Ala Ile Thr Arg Leu Gly  
 130 135 140

Ala Ile His Ala Ala Val Phe Gly Gly Phe Ala Pro Gln Ala Leu Ala  
 145 150 155 160

Gln Arg Ile Glu Ala Ala Arg Pro Arg Ala Ile Met Thr Ala Ser Cys  
 165 170 175

Gly Ile Glu Gly Ser Lys Gly Pro Ile Pro Tyr Arg Pro Leu Val Glu  
 180 185 190

Gly Ala Leu Lys Ala Ser Ser Phe Lys Pro Ser Lys Val Ile Val Trp  
 195 200 205

Gln Arg Asp Gln Leu Arg Trp Asn Gln Pro Asp Lys Arg Gly Gly Gln  
 210 215 220

Arg Asn Trp Gln Arg Leu Val Lys Ser Ala Arg Phe Arg Gly Val Lys  
 225 230 235 240

Ala Gly Pro Val Pro Val Lys Ser Thr Asp Ala Leu Tyr Ile Ile Tyr  
 245 250 255

Thr Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Leu Arg Glu Ala Gly  
 260 265 270

Gly His Ala Val Gly Leu Glu Leu Ser Ile Lys Ser Leu Phe Gly Ile  
 275 280 285

Thr Gly Pro Gly Asp Thr Met Phe Cys Ala Ser Asp Ile Gly Trp Val  
 290 295 300

Val Gly His Ser Tyr Ile Leu Tyr Ala Pro Leu Leu Val Gly Ala Thr  
 305 310 315 320

Thr Val Leu Phe Glu Gly Lys Pro Val Gly Thr Pro Asp Ala Gly Thr  
 325 330 335

Phe Trp Arg Ile Ile Glu Lys His Asn Val Asn Ala Leu Phe Thr Ala



Gly His Leu Pro Phe Ala Phe Ile Gln Pro Lys Ala Gly Ala Val Pro  
                   580                  585                  590

Gly Glu Asn Gly His Leu Pro Ala Thr Pro Ser Pro Gln Leu Phe Ala  
           595                  600                  605

Glu Val Asn Ala Leu Val Arg Glu Gln Ile Gly Ala Ile Ala Ser Leu  
       610                  615                  620

Gly Gly Ile Ile Gln Gly Arg Gly Met Ile Pro Lys Thr Arg Ser Gly  
       625                  630                  635                  640

Lys Thr Leu Arg Arg Val Leu Arg Glu Leu Val Glu Ile Gly Val Lys  
                   645                  650                  655

Gly Glu Tyr Ala Ala Glu Val Ser Val Pro Pro Thr Val Glu Asp Ala  
                   660                  665                  670

Glu Val Val Ser Val Ala Arg Lys Arg Val Arg Glu Tyr Phe Glu Ala  
           675                  680                  685

Lys Gly Val Gly Lys Ser Lys Leu  
       690                  695

<210> 37  
 <211> 693  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 37

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

Arg Pro Ser Ser Pro Glu Thr Thr Gln Ile Tyr Asp Phe Met Thr Lys  
           20                  25                  30

Val Asn Lys Lys Tyr Gly Leu Ser Leu Asn Asn Tyr Asp Thr Leu Trp  
           35                  40                  45

Lys Trp Ser Val Ser Glu Pro Ala Gln Phe Trp Glu Glu Ile Trp His  
       50                  55                  60

Tyr Thr Lys Ile Asn Ala His Thr Pro Tyr Gln His Val Leu Asp Ser  
65 70 75 80

Lys Asp Val Leu Phe Pro Arg Pro Ser Phe Phe Glu Gly Ser Thr Leu  
85 90 95

Asn Phe Ala Glu Asn Leu Leu Tyr Pro Ala Thr Ser Pro Asp Glu Asp  
100 105 110

Ser Val Ala Val Ile Gly Ala Thr Glu Val Ala Arg Glu Phe Val Ser  
115 120 125

Trp Lys Glu Leu Arg Glu Arg Val Arg Leu Cys Ala Asn Ala Leu Lys  
130 135 140

Glu Ala Gly Leu Lys Thr Gly Asp Arg Val Ala Gly Phe Val Gly Asn  
145 150 155 160

His Ala Asn Thr Val Val Ala Met Leu Ala Ala Ala Ser Ile Gly Ala  
165 170 175

Phe Trp Thr Gly Val Ser Pro Asp Thr Gly Val His Ala Val Leu Glu  
180 185 190

Arg Leu Lys Gln Ile Gln Pro Lys Ile Leu Phe Ala Asp Asn Gly Ser  
195 200 205

Phe Tyr Asn Gly Lys Val His Ser Ser His Ala Lys Val Arg Glu Ile  
210 215 220

Val Ser Glu Leu Pro Asp Leu Glu Leu Leu Val Leu Leu Ile Thr Thr  
225 230 235 240

Pro Glu Leu Glu Val Asn Leu Asp Asp Leu Arg Pro Ala Asn Gly Lys  
245 250 255

Ala Lys Val Tyr Gly Asp Phe Val Ser Glu Val Lys Asp Ser Gln Ala  
260 265 270

Pro Leu Glu Phe Ala Ser Leu Arg Pro Asp His Pro Val Tyr Ile Leu  
275 280 285

Tyr Ser Ser Gly Thr Thr Gly Ala Pro Lys Pro Ile Val His Gly Ser

290		295		300
Leu Gly Thr Leu Leu Gln His Lys Lys Glu His Leu Leu His Cys Asp				
305		310		315 320
Ile Arg Pro Gly Asp Arg Leu Phe Tyr Phe Thr Thr Thr Thr Trp Met				
		325	330	335
Met Trp His Trp Leu Val Ser Gly Leu Ala Ser Gly Ala Thr Ile Val				
		340	345	350
Leu Tyr Asp Gly Ser Pro Phe Arg Pro Phe Asp Ala Glu Gly Gly Lys				
		355	360	365
Gly Glu Met Ala Met Pro Arg Leu Ile Glu Glu Leu Gln Ile Thr His				
		370	375	380
Phe Gly Thr Ser Ala Lys Tyr Leu Ser Leu Leu Glu Gln Ala Ala Leu				
385		390	395	400
Asn Pro Arg Lys His Ala His Arg Pro Val Ser Leu Lys Thr Leu Arg				
		405	410	415
Ala Ile Phe Ser Thr Gly Ser Pro Leu Ala Pro Ser Thr Phe Glu Tyr				
		420	425	430
Val Tyr Ser Ser Phe His His Asp Ile Met Leu Gly Ser Ile Thr Gly				
		435	440	445
Gly Thr Asp Ile Leu Ser Leu Phe Ala Ser Gly Cys Pro Ile Leu Pro				
		450	455	460
Val Tyr Lys Gly Glu Ile Gln Cys Arg Ser Leu Gly Met Asp Ile Ser				
465		470	475	480
Val Phe Asp Tyr Ala Gly Lys Asp Ile Ser Ala Thr Gly Glu Pro Gly				
		485	490	495
Asp Leu Val Cys Val Thr Pro Phe Pro Ala Gln Pro Val Met Phe Trp				
		500	505	510
Pro Pro Gly Pro Thr Gly Leu Glu Lys Tyr Arg Lys Ser Tyr Phe Asp				
		515	520	525

Val Phe Gly Ser Ser Val Trp His His Gly Asp Tyr Val Arg Leu Asn  
 530 535 540

Pro Gln Thr Gly Gly Val Val Met Leu Gly Arg Ser Asp Gly Val Leu  
 545 550 555 560

Lys Pro Ser Gly Val Arg Phe Gly Ser Ala Glu Ile Tyr Asn Ile Leu  
 565 570 575

Leu Lys His Phe Ala Glu Asp Val Glu Asp Ser Leu Cys Ile Gly Arg  
 580 585 590

Arg Arg Asp Gly Val Asp Thr Asp Glu Thr Val Val Leu Phe Val Arg  
 595 600 605

Leu Ser Ser Ala Asn Glu Ser Gly Met Pro Ala Asp Leu Ala Ala Arg  
 610 615 620

Ile Gln Ala Thr Ile Arg Lys Glu Leu Ser Pro Arg His Val Pro Gly  
 625 630 635 640

Ile Ile Asp Ala Cys Pro Glu Ile Pro Val Thr Ser Asn Gly Lys Lys  
 645 650 655

Val Glu Asn Ala Val Lys Gln Ile Leu Cys Gly Leu Asn Ile Lys Ile  
 660 665 670

Gly Ala Ser Val Ala Asn Ala Ser Cys Leu Asp Trp Tyr Arg Asn Trp  
 675 680 685

Ala Ser Glu Asn Pro  
 690

<210> 38  
 <211> 669  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 38

Met Ser Asp Gly Pro Ile Gln Pro Pro Lys Pro Ala Val Val His Glu  
 1 5 10 15

Ala His Glu Val Asp Thr Phe His Val Pro Lys Ala Phe His Asp Lys  
20 25 30

His Pro Ser Gly Thr His Ile Lys Asp Ile Glu Glu Tyr Lys Lys Leu  
35 40 45

Tyr Glu Glu Ser Ile Lys Ser Pro Asp Thr Phe Trp Ala Arg Met Ala  
50 55 60

Arg Glu Leu Leu Thr Phe Asp Lys Asp Phe Glu Thr Thr His His Gly  
65 70 75 80

Ser Phe Glu Asn Gly Asp Asn Ala Trp Phe Val Glu Gly Arg Leu Asn  
85 90 95

Ala Ser Phe Asn Cys Val Asp Arg His Ala Leu Lys Asn Pro Asp Lys  
100 105 110

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

Thr Tyr Gly Glu Leu Met Arg Glu Val Ser Arg Val Ala Trp Thr Leu  
130 135 140

Lys Glu Arg Gly Val Lys Lys Gly Asp Thr Val Gly Ile Tyr Leu Pro  
145 150 155 160

Met Ile Pro Glu Ala Val Ile Ala Phe Leu Ala Cys Ser Arg Ile Gly  
165 170 175

Ala Val His Ser Val Val Phe Ala Gly Phe Ser Ser Asp Ser Leu Arg  
180 185 190

Asp Arg Val Leu Asp Ala Ser Ser Lys Val Ile Ile Thr Ser Asp Glu  
195 200 205

Gly Lys Arg Gly Gly Lys Ile Ile Gly Thr Lys Lys Ile Val Asp Glu  
210 215 220

Ala Met Lys Gln Cys Pro Asp Val His Thr Val Leu Val Tyr Lys Arg  
225 230 235 240

Thr Gly Ala Glu Val Pro Trp Thr Ala Gly Arg Asp Ile Trp Trp His





Gly Val Leu Ala Phe Lys Gln Pro Trp Pro Ser Met Ala Arg Thr Val  
 485 490 495

Trp Gly Ala His Lys Arg Tyr Met Asp Thr Tyr Leu Asn Val Tyr Lys  
 500 505 510

Gly Tyr Tyr Phe Thr Gly Asp Gly Ala Gly Arg Asp His Asp Gly Tyr  
 515 520 525

Tyr Trp Ile Arg Gly Arg Val Asp Asp Val Val Asn Val Ser Gly His  
 530 535 540

Arg Leu Ser Thr Ala Glu Ile Glu Ala Ala Leu Leu Glu His Pro Ser  
 545 550 555 560

Val Ala Glu Ala Ala Val Val Gly Ile Ala Asp Glu Leu Thr Gly Gln  
 565 570 575

Ala Val Asn Ala Phe Val Ser Leu Lys Glu Gly Lys Pro Thr Glu Gln  
 580 585 590

Ile Ser Lys Asp Leu Ala Met Gln Val Arg Lys Ser Ile Gly Pro Phe  
 595 600 605

Ala Ala Pro Lys Ala Val Phe Val Val Asp Asp Leu Pro Lys Thr Arg  
 610 615 620

Ser Gly Lys Ile Met Arg Arg Ile Leu Arg Lys Ile Leu Ser Gly Glu  
 625 630 635 640

Glu Asp Ser Leu Gly Asp Thr Ser Thr Leu Ser Asp Pro Ser Val Val  
 645 650 655

Asp Lys Ile Ile Glu Thr Val His Ser Ala Arg Gln Lys  
 660 665

<210> 39

<211> 578

<212> PRT

<213> Penicillium chrysogenum

<400> 39

Met Val Phe Leu Pro Pro Lys Glu Ser Gly Gln Leu Asp Pro Ile Pro  
1 5 10 15

Asp Asn Ile Pro Ile Ser Glu Phe Met Leu Asn Glu Arg Tyr Gly Arg  
20 25 30

Val Arg His Ala Ser Ser Arg Asp Pro Tyr Thr Cys Gly Ile Thr Gly  
35 40 45

Lys Ser Tyr Ser Ser Lys Glu Val Ala Asn Arg Val Asp Ser Leu Ala  
50 55 60

Arg Ser Leu Ser Lys Glu Phe Gly Trp Ala Pro Asn Glu Gly Ser Glu  
65 70 75 80

Trp Asp Lys Thr Leu Ala Val Phe Ala Leu Asn Thr Ile Asp Ser Leu  
85 90 95

Pro Leu Phe Trp Ala Val His Arg Leu Gly Gly Val Leu Thr Pro Ala  
100 105 110

Asn Ala Ser Tyr Ser Ala Ala Glu Leu Thr His Gln Leu Leu Asp Ser  
115 120 125

Lys Ala Lys Ala Leu Val Thr Cys Val Pro Leu Leu Ser Ile Ser Leu  
130 135 140

Glu Ala Ala Ala Lys Ala Gly Leu Pro Lys Asn Arg Ile Tyr Leu Leu  
145 150 155 160

Asp Val Pro Glu Gln Leu Leu Gly Gly Val Lys Pro Pro Ala Gly Tyr  
165 170 175

Lys Ser Val Ser Glu Leu Thr Gln Ala Gly Lys Ser Leu Pro Pro Val  
180 185 190

Asp Glu Leu Arg Trp Ser Ala Gly Glu Gly Ala Arg Arg Thr Ala Phe  
195 200 205

Val Cys Tyr Ser Ser Gly Thr Ser Gly Leu Pro Lys Gly Val Met Ile  
210 215 220

Ser His Arg Asn Val Ile Ala Asn Thr Leu Gln Ile Lys Ala Phe Glu

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

Glu Leu Ile Lys Val Lys Gly Leu Gln Val Ala Pro Ala Glu Leu Glu  
465 470 475 480

Ala His Ile Leu Ala His Pro Asp Val Ser Asp Cys Ala Val Ile Ala  
485 490 495

Ile Pro Asp Asp Arg Ala Gly Glu Val Pro Lys Ala Ile Val Val Lys  
500 505 510

Ser Ala Ser Ala Gly Ser Asp Glu Ser Val Ser Gln Ala Leu Val Lys  
515 520 525

Tyr Val Glu Asp His Lys Ala Arg His Lys Trp Leu Lys Gly Gly Ile  
530 535 540

Arg Phe Val Asp Ala Ile Pro Lys Ser Pro Ser Gly Lys Ile Leu Arg  
545 550 555 560

Arg Leu Ile Arg Asp Gln Glu Lys Glu Ala Arg Arg Lys Ala Gly Ser  
565 570 575

Lys Ile

<210> 40  
<211> 617  
<212> PRT  
<213> Penicillium chrysogenum

<400> 40

Met Ser Tyr Ser Gly Ile Val Thr Gly Leu Gly Leu Arg Gly Arg Val  
1 5 10 15

Ser Cys Arg Arg Ser Ala Phe Gly Gly Lys Arg Ile Leu Gln Gln Pro  
20 25 30

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

Ser Gly Pro Pro Leu Ile Glu Ser Thr Val Gly Glu His Phe Ala Lys  
50 55 60

Ile Val Ala Glu Cys Gly Asp Arg Thr Ala Val Val Ser Arg His Gln  
65 70 75 80

Asn Asp Arg Ala Thr Tyr Ala Ser Leu Asp Thr Arg Ser Asn Ser Leu  
85 90 95

Ala Arg Gly Leu Glu Ser Leu Gly Val Gly Lys Gly Glu Arg Val Gly  
100 105 110

Val Met Leu Gly Asn Ser Met Glu Tyr Ala Val Ala Thr Tyr Ala Leu  
115 120 125

Phe Lys Leu Gly Ala Val Leu Val Pro Leu Asn Pro Ser Phe Asn Thr  
130 135 140

Ala Gln Val Ile Ala Ala Leu Gly His Leu Glu Ala Ser His Leu Leu  
145 150 155 160

Ile Ser Thr Glu Ser Asn Leu Pro Arg Lys Lys Pro Arg Ser Asn Val  
165 170 175

Pro Leu Leu Asn Asp Leu Val Glu Asp Leu His Lys Ser Lys Leu Glu  
180 185 190

Ser Ala Pro Val Pro Ser Leu Arg Asn Ile Ile Met Val Asp Asn Ser  
195 200 205

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

Ser Ile Met Ser Gln Leu Thr Val Asp Gly Ser Pro Leu Pro Pro Arg  
225 230 235 240

Asn Leu Ser Pro Asp Glu Thr Val Asn Ile Gln Phe Thr Ser Gly Thr  
245 250 255

Thr Ser Met Pro Lys Ala Ala Cys Leu Thr His Arg Ser Ile Leu Asn  
260 265 270

Asn Gly Ser Gln Ile Gly Asp Arg Met Leu Leu Thr Pro Asn Asp Ile  
275 280 285

Ile Cys Cys Pro Pro Pro Leu Phe His Cys Phe Gly Ser Ile Leu Gly

290		295		300
Tyr Met Ala Thr Ala Thr His Gly Ser Ala Ile Val Phe Pro Ser Glu				
305		310		315 320
Ser Phe Asn Ala Arg Ala Ala Leu Glu Ala Val Gln Glu Glu Lys Cys				
		325		330 335
Thr Ala Leu Tyr Gly Val Pro Thr Met Phe Leu Glu Glu Leu Ser Leu				
		340		345 350
Ile Glu Thr Gly Glu Val Ser Ser Glu Gly Phe Gln His Leu Arg Thr				
		355		360 365
Gly Ile Ala Ala Gly Ser Ser Ile Pro Ala Glu Ile Met Lys Lys Leu				
		370		375 380
His Lys Val Leu Asn Leu Thr Glu Leu Thr Ile Cys Tyr Gly Met Thr				
385		390		395 400
Glu Thr Ser Pro Val Ser Ala Met Thr Thr Thr Asp Asp Pro Ile Asp				
		405		410 415
Lys Arg Ile Tyr Ser Val Gly Lys Leu Met Pro His Val Glu Ala Lys				
		420		425 430
Ile Val Asn Pro Val Asp Lys Asn Val Ile Leu Pro Ile Glu Arg Arg				
		435		440 445
Gly Glu Leu Ala Val Ser Gly Tyr Leu Leu Met Lys Glu Tyr Trp Ala				
		450		455 460
Asp Pro Glu Lys Thr Ala Glu Val Met Ile Pro Asp Asp Ser Gly Lys				
465		470		475 480
Val Trp Met His Thr Gly Asp Glu Ala Ser Met Ser Pro Asp Gly Tyr				
		485		490 495
Ile Thr Ile Thr Gly Arg Ile Lys Asp Leu Ile Ile Arg Gly Gly Glu				
		500		505 510
Asn Ile His Pro Leu Glu Ile Glu Asn Cys Leu Leu Ala Asn Asn Gly				
		515		520 525

Val Ala Asp Val Ser Val Val Gly Val Pro Asp Val Arg Tyr Gly Glu  
 530 535 540

Ala Val Ala Ala Phe Ile Val Pro Arg Asp His Ser Ser Asn Thr Val  
 545 550 555 560

Thr Ala Glu Glu Ile Gln Gln Trp Val Arg Glu Lys Leu Ser Asn His  
 565 570 575

Leu Ile Pro Lys His Val Phe Phe Leu Gly Pro Leu Glu Ser Phe Pro  
 580 585 590

Lys Thr Ala Ser Gly Lys Ile Gln Lys Phe Lys Leu Arg Glu Thr Ala  
 595 600 605

Ile Ala Leu Leu Thr Lys Cys Ala Ala  
 610 615

<210> 41  
 <211> 595  
 <212> PRT  
 <213> *Penicillium chrysogenum*

<400> 41

Met Ser Ser Ser Leu Leu Ser Leu Leu Ser Arg Ser Asn Ala Arg Val  
 1 5 10 15

Cys Phe Thr Pro Arg Arg Thr Pro Leu Ser Ala Arg Leu Leu Ser Thr  
 20 25 30

Leu Pro Asn Thr Pro Ile Phe Arg Ala Leu Gln Asn His Asp Pro Glu  
 35 40 45

Arg Val Ala Val Val His Ser Val Ser Ser Arg Ser Phe Thr Tyr Gly  
 50 55 60

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

Ala Ala Lys Ala Gln Gly Gln Leu Ala Gly Glu Arg Val Ala Phe Leu  
 85 90 95

Ala Glu Asn Ser Tyr Asp Tyr Val Val Thr Leu Leu Ala Ile Phe Ala  
 100 105 110

Ser Asp Ala Ile Ala Leu Pro Leu Ser Pro Ser Phe Pro Thr Gly Glu  
 115 120 125

Leu Lys Tyr Ile Leu Asp Asn Ser Gln Ala Lys Met Leu Leu Thr Thr  
 130 135 140

Glu Lys Tyr Ala Asp Lys Gly Met Glu Leu Leu Arg Glu Gly Leu Glu  
 145 150 155 160

Arg Glu Pro Leu Phe Ala Ile Arg Asn Lys Leu Thr Glu Gly Ala Ser  
 165 170 175

Ser Gly Glu Ser Val Thr Leu His Asp Leu Lys Gln Pro Ser Ser Gly  
 180 185 190

Gly Met Met Leu Tyr Thr Ser Gly Thr Thr Asn Arg Pro Lys Gly Val  
 195 200 205

Leu Ile Pro Gln Ser Ala Leu Ala Ala Gln Ala Ser Ser Leu Leu Glu  
 210 215 220

Ala Trp Lys Tyr Ser Pro Asp Asp Arg Leu Leu His Leu Leu Pro Leu  
 225 230 235 240

His His Ile His Gly Val Val Asn Ala Ile Val Ala Pro Ile Val Ala  
 245 250 255

Gly Ser Ser Val Glu Phe Met Tyr Pro Phe Asn Pro Asp Lys Val Trp  
 260 265 270

Lys Arg Leu Ala Ala Pro Phe Leu Ser Ser Asn Ala Ser Lys Pro Ala  
 275 280 285

Ile Thr Phe Leu Thr Ala Val Pro Thr Ile Tyr Asn Arg Leu Met Ala  
 290 295 300

Thr Phe Pro Lys Leu Thr Pro Glu Leu Gln Asn Ala Ala Lys Glu Gly  
 305 310 315 320

Ile Ser Pro Gln Asn Leu Arg Leu Asn Ile Ser Gly Ser Ala Ala Leu



				325				330				335			
Pro	Thr	Pro	Thr	Lys	Thr	Ala	Trp	Thr	Asn	Leu	Ser	Asn	Gly	Asn	Val
				340				345				350			
Leu	Leu	Glu	Arg	Phe	Gly	Met	Thr	Glu	Val	Gly	Met	Ala	Ile	Ser	Cys
				355				360				365			
Gly	Leu	Asp	Ala	Ala	Asp	Arg	Val	Asp	Gly	Ser	Val	Gly	Trp	Pro	Leu
				370				375				380			
Pro	Gly	Val	Glu	Ala	Arg	Leu	Ala	Asp	Thr	Glu	Thr	Gly	Ala	Val	Ile
385				390				395				400			
Pro	Val	Glu	Glu	Lys	Glu	Pro	Ser	Gly	Arg	Glu	Arg	Glu	Gly	Glu	Ile
				405				410				415			
Gln	Leu	Arg	Gly	Glu	Thr	Ile	Phe	Asp	His	Tyr	Trp	Gly	Asn	Glu	Lys
				420				425				430			
Ala	Thr	Arg	Glu	Ser	Phe	Val	Gln	Ser	Asp	Asp	Gly	Gly	Arg	Pro	Trp
				435				440				445			
Phe	Cys	Thr	Gly	Asp	Val	Ala	Thr	Arg	Arg	Val	Val	Asp	Gly	Ala	Gly
				450				455				460			
Ser	Gly	Ala	Ser	Gly	Ala	Trp	Ala	Gln	Gly	Pro	Met	Tyr	Phe	Ile	Gln
465				470				475				480			
Gly	Arg	Lys	Ser	Val	Asp	Ile	Ile	Lys	Thr	Gly	Gly	Glu	Lys	Val	Ser
				485				490				495			
Ala	Leu	Glu	Val	Glu	Arg	Glu	Leu	Leu	Ser	Leu	Pro	Gln	Ile	Thr	Glu
				500				505				510			
Ala	Ala	Val	Val	Gly	Leu	Pro	Ser	Glu	Gln	Trp	Gly	Gln	Lys	Ile	Ala
				515				520				525			
Ala	Val	Val	Val	Leu	Ala	Pro	Asp	Ala	Ala	Ala	Ser	Gly	Arg	Asn	Gly
				530				535				540			
Gln	Ser	Trp	Gly	Pro	Met	Asp	Met	Arg	Arg	Ala	Leu	Lys	Gly	Ser	Leu
545				550				555				560			

Ala Ser Phe Lys Ile Pro Gln Glu Met Lys Val Leu Ala Ala Ile Pro  
565 570 575

Arg Asn Ala Met Gly Lys Val Asn Lys Lys Ala Leu Val Lys Glu Val  
580 585 590

Phe Gly Val  
595

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<210> 42
<211> 566
<212> PRT
<213> Penicillium chrysogenum
```

<400> 42

Met Pro Thr Ile Tyr Arg Ser Pro Tyr Pro Asp Leu Asp Ile Gln Ser  
1 5 10 15

Val	Asp	Leu	Val	Ser	Tyr	Leu	Phe	Ser	Asn	Pro	Phe	Asn	Thr	Pro	Leu
			20					25					30		

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

Gly Asp Val Val Gln Arg Thr Arg Ser Leu Ser Asn Gly Leu Arg Gln  
50 55 60

Ser Ile Gly Leu Lys Pro Asn Asp Val Val Ala Leu Phe Ser Pro Asn  
65 70 75 80

Thr Ile Asp Tyr Pro Val Val Cys His Ala Ile Val Gly Ser Arg Ala  
85 90 95

Ile Val Ala Pro Thr Ser Ala Ala Leu Thr Ala Leu Glu Leu Asn Ala  
100 105 110

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

Leu Glu Thr Ala Gln Lys Ala Ala Lys Gly Thr Ser Val Glu Lys Val  
130 135 140

Leu Leu Ile Asp Gly Gln Thr Pro Val Asn Gly Gln Pro Thr Cys Asn  
145 150 155 160

Tyr Leu Ala Asn Thr Phe Ala Pro Asp Asp Leu Leu Thr Val Asp Pro  
165 170 175

Ala Glu Ala Asp Arg Gln Pro Thr Phe Ile Cys Phe Ser Ser Gly Thr  
180 185 190

Ser Gly Ala Ala Lys Gly Val Ile Thr Thr His Gln Asn Ile Thr Ser  
195 200 205

Asn Leu Gln Gln Trp Arg Gln His Met Leu Glu Ser Gly Leu Pro Ser  
210 215 220

Gln Arg Pro Arg Arg Gln Ser Ala Ile Ala Phe Leu Pro Phe Ser His  
225 230 235 240

Ile Tyr Gly Leu Asn Leu Phe Met Cys Gln Cys Leu Ile Trp Gly Thr  
245 250 255

Thr Val Val Val Met Pro Arg Phe Asp Leu Asp Leu Tyr Leu Ser Cys  
260 265 270

Ile Gln Lys Tyr Arg Pro Asp Glu Leu Ala Leu Val Pro Pro Ile Ala  
275 280 285

Leu Met Leu Val Lys Asp Pro Arg Val Ser Lys Tyr Asp Leu Ser Ser  
290 295 300

Val Arg Lys Ile Met Ser Ala Ala Ala Pro Leu Thr Ile Glu Leu Ser  
305 310 315 320

Ser Ala Leu Glu Ala Lys Phe Thr Glu Ile Cys Lys Thr Glu Val Phe  
325 330 335

Cys Thr Gln Ser Trp Gly Leu Thr Glu Thr Ser Pro Met Ala Thr Ala  
340 345 350

Val Pro Asn Asp Arg Met Asp Lys Arg Asn Thr Gly Val Gly Cys Ile  
355 360 365

Ala Pro Asn Met Gln Leu Arg Phe Val Asp Pro Glu Ser Met Lys Asp

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

<210> 43  
 <211> 584  
 <212> PRT  
 <213> Penicillium chrysogenum  
 <400> 43

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

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

Glu Pro Gln Leu Leu Asp Ile Thr Leu Gly Glu Leu Leu Thr Leu Gln  
35 40 45

Ala Leu Gln Tyr Gly Arg Ile Glu Cys Leu Val Phe Pro Trp Thr Gly  
50 55 60

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

Arg Gly Met Leu Ala Ser Gly Ile Gln Lys Gly Asp Arg Val Gly Ile  
85 90 95

Met Ala Gly Asn Cys Glu Gln Tyr Ile Ser Val Phe Phe Ala Ala Ala  
100 105 110

Arg Val Gly Ala Ile Leu Val Val Leu Asn Asn Thr Tyr Thr Pro Ser  
115 120 125

Glu Leu Tyr Tyr Ala Leu Asn His Ser Glu Cys Arg Met Leu Phe Met  
130 135 140

Thr Pro Arg Ile Gly Arg His Asn Leu Glu Glu Val Leu Thr Gln Leu  
145 150 155 160

Gly Pro Asn Pro Lys Lys Ala Ala Thr Ser Glu Thr Leu Glu Glu Ile  
165 170 175

Val Ile Leu Arg Glu Ser Tyr Asn Asn Phe Pro Thr Tyr His Asp Val  
180 185 190

Met Glu Arg Gly Leu Ser Gln Ala Ala His Val Leu Gln Asp Arg Glu  
195 200 205

Ala Glu Leu Gln Pro Asp Asp Val Cys Asn Leu Gln Phe Thr Ser Gly  
210 215 220

Ser Thr Gly Asn Pro Lys Ala Ala Met Leu Thr His His Asn Leu Val  
 225 230 235 240

Asn Asn Ser Arg Phe Ile Gly Asp Arg Met Asn Leu Thr Ser Phe Asp  
 245 250 255

Val Leu Cys Cys Pro Pro Pro Leu Phe His Cys Phe Gly Leu Val Leu  
 260 265 270

Gly Met Leu Ala Val Val Thr His Gly Ala Lys Ile Val Phe Pro Ser  
 275 280 285

Glu Thr Phe Asp Pro Lys Ala Val Leu His Ala Ile Ser Asp Glu Lys  
 290 295 300

Cys Thr Ala Leu His Gly Val Pro Thr Met Phe Glu Ala Ile Leu Ser  
 305 310 315 320

Val Pro Lys Pro Ser Asn Phe Asp Thr Ser Asn Leu Arg Thr Gly Ile  
 325 330 335

Ile Ala Gly Ala Pro Val Pro Arg Pro Leu Met Lys Arg Leu Phe Ala  
 340 345 350

Glu Leu Asn Met Thr Glu Tyr Thr Ser Ser Tyr Gly Leu Thr Glu Ala  
 355 360 365

Ser Pro Thr Cys Phe Asn Ala Phe Thr Thr Asp Ser Ile His Thr Arg  
 370 375 380

Leu Thr Thr Val Gly Lys Val Leu Pro His Ala Arg Ala Lys Ile Ile  
 385 390 395 400

Asp Thr His Gly Asn Ile Val Pro Val Gly Gln Arg Gly Glu Leu Cys  
 405 410 415

Met Ala Gly Tyr Gln Leu Thr Lys Gly Tyr Trp Asn Asn Pro Glu Lys  
 420 425 430

Thr Ala Glu Thr Phe Ile Thr Asp Ala Glu Gly Val Lys Trp Leu Lys  
 435 440 445

Thr Gly Asp Glu Ala Ser Phe Asn Ala Glu Gly Tyr Cys Thr Ile Thr

450                                      455                                      460  
 Gly Arg Phe Lys Asp Ile Ile Ile Arg Gly Gly Glu Asn Ile Tyr Pro  
 465                                      470                                      475                                      480  
 Leu Glu Ile Glu Glu Arg Leu Ala Ala His Pro Ser Ile Glu Leu Ala  
                                     485                                      490                                      495  
 Ser Val Ile Gly Ile Ala Asp Pro Lys Tyr Gly Glu Val Val Gly Ala  
                                     500                                      505                                      510  
 Phe Ile Ala Ile Ala Ser Gly Ala Glu Arg Pro Thr Asp Asp Glu Leu  
                                     515                                      520                                      525  
 Arg Thr Trp Thr Arg Asp Thr Leu Gly Arg His Lys Ala Pro Gln His  
                                     530                                      535                                      540  
 Val Phe Val Phe Gly Glu Glu Gly Ala Ser Ser Thr Val Pro Val Thr  
 545                                      550                                      555                                      560  
 Gly Ser Gly Lys Val Arg Lys Val Glu Leu Arg Gln Met Ala Met Ala  
                                     565                                      570                                      575  
 Val Leu Ala Glu Arg Arg Lys Ala  
                                     580  
 <210> 44  
 <211> 525  
 <212> PRT  
 <213> Penicillium chrysogenum  
 <400> 44  
 Met Pro Ile Pro Ser Leu Pro Leu Phe Ala Ala Ala Glu Gln His Ala  
 1                                      5                                      10                                      15  
 Arg Gln Asn Pro Glu Lys Ile Ala Val Ile Asp Thr Thr Lys Gln Gln  
                                     20                                      25                                      30  
 Ser Phe Thr Phe Val Gln Leu Leu Ala Asp Ala Ala Ala Leu Arg Lys  
                                     35                                      40                                      45  
 Arg Ile Ile Glu Gln Leu Gly Leu Thr Asp Asp Leu Glu Glu Arg Arg  
                                     50                                      55                                      60

Ile Ala Phe Leu Val Pro Asn Gly Tyr Asp Tyr Val Ala Thr Gln Trp  
65 70 75 80

Ala Val Trp Ala Ala Gly Gly Val Cys Val Pro Leu Cys Ile Ser His  
85 90 95

Pro Val Lys Glu Leu Leu Tyr Thr Ile Gly Asp Ser Asp Pro Ser Leu  
100 105 110

Ile Ile Val His Pro Glu Phe Glu Lys Ile Ala Pro Ser Leu Arg Glu  
115 120 125

Gly Tyr Thr Thr Asp Ile Pro Phe Ile Gly Leu Glu Pro Phe Ser Arg  
130 135 140

Asn Glu Thr Pro Thr Leu Pro Ser Phe Ser Pro Pro Phe Ala Leu Thr  
145 150 155 160

Arg Arg Ala Leu Met Ile Tyr Thr Ser Gly Thr Thr Ser Asn Pro Lys  
165 170 175

Gly Cys Val Thr Thr His Glu Asn Ile Thr Phe Gln Ala Ser Cys Leu  
180 185 190

Val Lys Ala Trp Glu Tyr Lys Pro Ser Asp His Leu Ile His Val Leu  
195 200 205

Pro Leu His His Val His Gly Ile Ile Asn Gly Leu Ala Ala Ser Phe  
210 215 220

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

Ile Trp Gly Arg Trp Gln Asp His Ser Ser Ser Thr Leu Phe Met Ala  
245 250 255

Val Pro Thr Ile Tyr Ser Arg Leu Asn Asp Tyr Phe Asp Ala His Ile  
260 265 270

Arg Gly Thr Glu Gln Glu Asp Ala Ala Arg Ala Gly Ala Arg Ala Leu  
275 280 285



Arg Leu Val Val Ser Gly Ser Ala Ala Leu Pro Thr Pro Ile Lys Glu  
290 295 300

Lys Phe Ala Glu Ile Thr Gly Gln Val Leu Leu Glu Arg Tyr Gly Met  
305 310 315 320

Thr Glu Ile Gly Met Ala Leu Ser Cys Gly Leu Glu Val Gln Lys Arg  
325 330 335

Ile Asp Gly Ser Val Gly Trp Pro Leu Pro Gly Val Glu Val Arg Leu  
340 345 350

Thr Asp Lys Glu Thr Gly Arg Ile Val Asp Gly Val Asp Glu Asp Gly  
355 360 365

Met Ile Glu Val Lys Gly Gly Asn Val Phe Arg Glu Tyr Trp Arg Lys  
370 375 380

Pro Glu Ala Thr Ala Ser Glu Phe Thr Ala Asp Gly Trp Phe Lys Thr  
385 390 395 400

Gly Asp Val Ala Lys Arg Asp Pro Ser Gly Ala Tyr Phe Ile Gln Gly  
405 410 415

Arg Ala Ser Val Asp Leu Ile Lys Ser Gly Gly Tyr Lys Ile Ser Ala  
420 425 430

Leu Glu Val Glu Arg Lys Met Leu Ala Ile His Ala Ile Gln Glu Val  
435 440 445

Ala Val Val Gly Leu Thr Asp Gln Glu Trp Gly Gln Arg Val Ala Ala  
450 455 460

Val Val Lys Phe Arg Glu Gly Thr Ala Pro Met Glu Leu Pro Thr Leu  
465 470 475 480

Arg Ala Glu Leu Lys Asn Glu Met Ala Pro Tyr Lys Ile Pro Thr Val  
485 490 495

Leu Lys Val Val Asp Gly Ile Glu Arg Asn Ala Met Gly Lys Val Asn  
500 505 510

Lys Lys Val Ile Val Gln Lys Tyr Trp Pro Asp Lys Ala

515                                      520                                      525  
 <210> 45  
 <211> 300  
 <212> PRT  
 <213> *Penicillium chrysogenum*  
 <400> 45  
 Met Ile Phe Glu Pro Ala Glu Arg Val Leu Leu Pro Thr Lys Asp Leu  
 1                                      5                                      10                                      15  
 Leu Ser Tyr Ile Phe Asp Asp Pro Pro Tyr Asp Gln Asp Gln Pro Ile  
                                     20                                      25                                      30  
 Tyr Ile Asp Val Asn Asn Pro Ser Arg Ser Ile Ser Cys Asn Gln Ala  
                                     35                                      40                                      45  
 Lys Arg Leu Val Arg Gln Leu Ile Ala Gly Leu Arg Glu Ser Gly Leu  
                                     50                                      55                                      60  
 Gln Lys Gly Asp Cys Val Leu Ile His Ser Phe Asn Asp Ile Asn Tyr  
 65                                      70                                      75                                      80  
 Ser Ile Leu Val Leu Ala Ile Ile Gly Ala Gly Gly Cys Phe Thr Gly  
                                     85                                      90                                      95  
 Ser Asn Pro Ser Tyr Thr Pro His Glu Leu Ala His His Ile Lys Ala  
                                     100                                      105                                      110  
 Ser Glu Ser Arg Phe Leu Phe Ser Glu Pro Glu Ile Phe Asp Ser Leu  
                                     115                                      120                                      125  
 Met Arg Ala Thr Glu Gly Lys Asn Ile Pro Lys Gln Asn Ile Trp Ile  
                                     130                                      135                                      140  
 Phe Asp Asn Leu Gly Gln Ser Ile Pro Ala Gly Met Arg Ser Trp Lys  
 145                                      150                                      155                                      160  
 Gln Leu Leu Glu Val Gly Glu Glu Asp Trp Val Arg Phe Asn Asp Leu  
                                     165                                      170                                      175  
 Glu Thr Cys Gln Gln Thr Thr Ala Ala Arg Leu Phe Ser Ser Gly Thr  
                                     180                                      185                                      190

Thr Gly Leu Pro Lys Ala Val Thr Ile Thr His His Asn Leu Ile Gly  
195 200 205

Gln His Glu Leu Val His Gly Val Asn Pro Arg Ser Tyr Pro Ile Ser  
210 215 220

Arg Val Ile Ala Val Pro Ile Phe His Ala Ser Ala Ala Pro Val Ser  
225 230 235 240

His Ile Ser Thr Leu Lys Ala Gly Ser Val Ala Tyr Met Met Arg Arg  
245 250 255

Phe Asp Leu Glu Thr Tyr Leu Thr Thr Val Glu Lys Tyr Asn Val Thr  
260 265 270

Asp Leu Ala Val Val Pro Pro Ile Val Ile Ala Ile Leu Met Ser Pro  
275 280 285

Leu Ser Arg Asn Lys Pro Tyr Leu Arg Lys Ala Arg  
290 295 300

<210> 46  
<211> 502  
<212> PRT  
<213> Penicillium chrysogenum

<400> 46

Met Val Tyr Thr Ala Glu Pro Leu Glu Tyr Pro Glu Gly Thr Thr Leu  
1 5 10 15

Pro Glu Leu Leu Leu Glu Arg Asn Val Asn Asn Val Pro Pro Asp Met  
20 25 30

Pro Ala Ile Ile Asp Gly Val Ser Gly Ala Thr Val Tyr Asn Tyr Ser  
35 40 45

Ser Phe Arg Ala Thr Val Arg Arg Val Ala Asn Tyr Leu Cys Gln Asp  
50 55 60

Ile Asn Leu Pro Arg Gly Ala Val Val Gly Ile Leu Ala Ala Asn Asn  
65 70 75 80

Gly Leu Ser Arg Ala Lys Leu Asp Tyr Ser Pro Asp Leu Tyr Val Leu

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

Asp Ser Glu Gly Glu Val Val Tyr Pro Asn Arg Glu Ile Glu Cys Glu  
                                   325                                  330                                  335

Pro Asn Lys Pro Gly Glu Leu Leu Ile Gln Gly Ser Asn Leu Met Ser  
                                   340                                  345                                  350

Gly Tyr Val Gln Asn Thr Glu Ser Asn Asp Ala Phe Ile Asp Gly Tyr  
                                   355                                  360                                  365

Phe Lys Thr Gly Asp Ile Gly Tyr Val Asn Glu Ala Gly Tyr Val Phe  
                                   370                                  375                                  380

Leu Val Gly Arg Ser Lys Glu Leu Ile Lys Val Lys Gly His Gln Val  
   385                                  390                                  395                                  400

Ala Pro Ala Asp Leu Glu Ser Ile Leu Leu Ser His Pro Lys Val Cys  
                                   405                                  410                                  415

Asp Ala Ala Val Lys Gly Val Tyr Phe Pro Glu Gln Glu Thr Glu Tyr  
                                   420                                  425                                  430

Pro Ala Ala Tyr Ile Thr Ile Asp Ser Ala Gln Thr Glu Pro Gly Gln  
                                   435                                  440                                  445

Leu Gln Ala Glu Val Glu Ala Phe Val Asn Asn Gln Val Ala Lys Tyr  
   450                                  455                                  460

Lys Trp Leu Arg Ser Gly Val His Ile Ile Pro Ala Ile Pro Arg Asn  
   465                                  470                                  475                                  480

Ala Ser Gly Lys Ile Leu Arg His Gln Leu Pro Asp Leu Lys Thr Ser  
                                   485                                  490                                  495

Gln Arg Gln Thr Lys Ile  
                                   500

<210> 47  
 <211> 1619  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 47

Met Ala Asp Leu Ser Arg Ser Ser Leu Ile Glu Lys Leu Leu Tyr Leu  
1 5 10 15

Arg Ser Glu Ala Ser His Pro Asp Ser Phe His Gln Leu Ser Ala Leu  
20 25 30

Leu Ser Ser His Thr Gly Pro Trp Pro Ile Arg His Leu Ile Ser Thr  
35 40 45

Phe Gln Ala Ile Tyr Lys Ser Ile Pro Glu Ser Leu Lys Ala Asn Asn  
50 55 60

Asn Glu Ser Ile Thr Arg Leu Cys Ser Gln Val Lys Ala Ala Thr Thr  
65 70 75 80

Ser Val Ala Glu Leu Ile Gly Thr Asp Ser Arg Ala Gly Leu Ile Asp  
85 90 95

Ala Asn Thr Gly Arg His Leu Thr His Asn Ala Ile Arg Gln Phe Leu  
100 105 110

Glu Asn Phe Lys Ile Pro Val Gly Leu Ser Arg His Gly Lys Pro Arg  
115 120 125

Ile Ala Val Ile Leu Pro Asn Gly Pro Leu Met Ala Val Ala Val Leu  
130 135 140

Ala Phe Val Asn Arg Tyr Thr Ile Val Pro Met Thr Thr Asn Thr Val  
145 150 155 160

Ala Glu Gln Leu Gln Thr Asp Ile Glu Asn Ser Gln Ala Asp Ala Val  
165 170 175

Val Ala Leu Asp Ala Asp Ile Gly Lys Leu Gln Leu Asp Asn Gly Thr  
180 185 190

Arg Pro Val Phe Gly Ile Glu Gln Leu Glu Asp Leu Thr Phe Arg Val  
195 200 205

Val Ser Ala Gly Asn Thr Ser Thr Ala Tyr Asp His Pro Pro Asn Ser  
210 215 220

Gly Asp Asp Ile Ala Ile Ile Leu Phe Thr Ser Gly Thr Ser Gly Thr

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

Asp Asp Asp Asn Tyr Leu Tyr Ile Thr Gly Arg Ser Lys Glu Val Ile  
465 470 475 480

Asn Arg Gly Gly Glu Ile Ile Ser Pro Val Glu Val Glu Asn Ala Val  
485 490 495

Leu Thr Ser Ala Lys Asp Pro Glu Ser Pro Leu Tyr Gly Arg Val Thr  
500 505 510

Glu Thr Leu Ala Phe Ser Val Pro Asp Glu Val Leu Gln Glu Val Val  
515 520 525

Gly Val Val Ile Val Thr Pro Pro Gly Phe Thr Arg Pro Asp Leu Arg  
530 535 540

Gln Ile His Glu Ala Leu Gln Pro Ile Ile His Gln Pro Lys Trp Pro  
545 550 555 560

Ala Leu Val Val Tyr Met Asp Gly Val Pro Lys Ala Asn Asn Lys Ile  
565 570 575

Gln Arg Ile Lys Leu Ala Asp Arg Leu Ser Leu Asp Thr Leu Thr Thr  
580 585 590

Thr Thr Pro Leu Ala Ser Arg His Tyr Glu Ala Val Cys Pro Pro Thr  
595 600 605

Gly Ala Pro Leu Ser Ala Leu Ile Pro Lys Lys Pro Cys Val Ile Asp  
610 615 620

Glu Lys Met Ile Arg Ser Val Leu Ser Lys Lys Ala Asn Thr Pro Asp  
625 630 635 640

Val His Val Gln Ile Asn Pro Arg Asp Gly Leu Ala Gln Val Val Leu  
645 650 655

Phe Val Glu Asn Leu Asp Asp Asp His Val Thr Pro Ala Glu Leu His  
660 665 670

Asp Gln Leu Asp Gly Tyr Leu Val Pro Ser Arg Ile Ile Pro Leu Lys  
675 680 685



Gly Pro Met Pro Val Asp Phe Tyr Gly Lys Pro Asp Gln Ala Ala Ile  
690 695 700

Asn Glu Ala Ile His Ala Arg Asn Ser Asp Gly Asp Leu Ser Pro Ile  
705 710 715 720

Gln Arg Arg Val Arg Gly Ile Phe Ala Val Thr Leu Ser Cys Ser Pro  
725 730 735

Glu Glu Val Ser Ser Gly Thr Asp Phe Phe Ala Ala Gly Gly Asp Ser  
740 745 750

Leu Ser Ala Gly Arg Met Val Ser Gln Leu Arg Arg Glu Phe Gly Ile  
755 760 765

Phe Leu Ala Gly Asp Ile Leu Phe His His Ser Thr Val Gly Ala Ile  
770 775 780

Glu Gln Lys Ile Ile Glu Ala Val Asp Val Lys Ala Ala Lys Gly Glu  
785 790 795 800

Asp Gly Gly Val Glu Leu Pro Gly Cys Glu Lys Thr Tyr Ser Ser Thr  
805 810 815

Asn Pro Ile Ile Leu Val Leu His Leu Phe Pro Thr Val Phe Phe Phe  
820 825 830

Pro Met Lys Arg Ala Phe Gln Trp Met Val Phe Ala Tyr Val Val Ala  
835 840 845

Glu Cys Ser Asn Arg Phe Pro Ile Arg Glu Asn Leu Ile Ala Arg Leu  
850 855 860

Met Leu Val Val Phe Ala Val Met Ser Ala Arg Leu Cys Ser Gln Ile  
865 870 875 880

Val Ser Pro Ile Leu Ala Ile Ile Phe Lys Trp Leu Val Ile Gly Arg  
885 890 895

Tyr Lys Glu Gly Met Ser Pro Met Trp Gly Pro Tyr His Thr Arg Trp  
900 905 910

Trp Leu Thr Gln Lys Ala Thr Gln Val Cys Gly Lys Gly Leu Phe Asn  
 915 920 925

Asn Tyr Asn Trp Ser Arg Ile Leu Phe Tyr Arg Leu Met Gly Ala Lys  
 930 935 940

Ile Gly Lys Asn Val Thr Val Ser Ala Ser Ala Lys Leu Gly Glu Tyr  
 945 950 955 960

Asp Leu Ile Glu Ile Gly Asp Asn Val Val Leu Asp Thr Cys Val Cys  
 965 970 975

Arg Pro Phe Ala Val Glu Arg Asn Thr Ser Met Leu Leu Lys Arg Ile  
 980 985 990

Arg Ile Gly Lys Asp Ser Ser Val Gly Ile Lys Ser Ile Val Ala Pro  
 995 1000 1005

Gly Ala Asp Ile Pro Glu Arg Thr Cys Ile Gly Pro Asn Ser Ser  
 1010 1015 1020

Ser Trp Glu Leu Gln Asp Ala Asp Glu Ser Asn Arg Gln Leu Leu  
 1025 1030 1035

Thr Ser Gln Ile Pro Lys Pro His Trp Leu Trp Ile Leu Phe Ile  
 1040 1045 1050

Val Glu Pro Ile Lys Leu Val Thr Trp Thr Ala Thr Arg Ile Thr  
 1055 1060 1065

Trp Met Ala Gly Leu Ile Pro Met Val Leu Gln Phe Pro Thr Pro  
 1070 1075 1080

Ala Ala Asp Met Phe Arg Ser Thr Leu Asp Trp Tyr Thr Ser Asp  
 1085 1090 1095

His Arg Ile Ala Tyr His Ile Thr Ala Arg Ile Cys Arg Ala Val  
 1100 1105 1110

Gly Gly Pro Ile Val Leu Phe Ile Ala Val Leu Val Ile Lys Phe  
 1115 1120 1125

Phe Leu Asp Leu Ile Cys Gly Lys Pro Lys Pro Gly Pro Ala Ser

1130		1135		1140
Lys Gln Thr Thr Arg Gln	Lys Ile Arg Ser Ala Val	Leu Ala Gln		
1145	1150	1155		
Ile Leu Pro Ala Gly Asp	Ile His Glu Leu Thr Arg	Leu Thr Gly		
1160	1165	1170		
Arg His Tyr Glu Phe Val	Ser Met Ala Val Arg Ala	Leu Gly Gly		
1175	1180	1185		
Lys Val Gly Lys His Val	Tyr Trp Pro Ser Val Gly	Pro Val Thr		
1190	1195	1200		
Val Asp Phe Asp Leu Ile	Glu Val Gly Asn Asp Val	Val Phe Gly		
1205	1210	1215		
Ser Arg Ser Thr Leu Val	Thr Ser Asp Gly Tyr Gly	Arg Asp Arg		
1220	1225	1230		
Ile Val Ile Gly Asp Gly	Thr Met Val Gly Asp Arg	Val Val Ala		
1235	1240	1245		
Leu Pro Gly Ala Thr Ile	Gly Arg Gln Ala Met Ile	Gly Ser Gly		
1250	1255	1260		
Ala Leu Leu Arg Arg Asn	Gly Glu Tyr Pro Ser Asn	Thr Val Trp		
1265	1270	1275		
Thr Gly Ser Lys Gly Gly	Glu Ala Ile Gln Phe Pro	Ser Ser Thr		
1280	1285	1290		
Ser Thr Thr Thr Ser Thr	Ala Pro Thr Ile Ile Gly	Asp Gly Ser		
1295	1300	1305		
Ser Ser Pro Asn Ser Ser	Gly Ser Glu Asp Glu Arg	Ser Pro Thr		
1310	1315	1320		
Glu Lys Met Pro Thr Glu	Lys Gln Thr Tyr Tyr Gly	Ser Lys Asp		
1325	1330	1335		
Lys Thr Val Thr Gln Ile	Ala Glu Gln Asp Ile Asp	Thr Cys Lys		
1340	1345	1350		

Pro Phe Gly Arg Ala Phe Tyr Arg His Glu Ala Asn Tyr Tyr Val  
 1355 1360 1365

Leu Arg Met Trp Gln Ile Val Ile Tyr Ser Thr Phe Ala Val Ile  
 1370 1375 1380

Val Thr Thr Val Tyr Trp Leu Leu Thr Val Leu Phe Ser Leu Phe  
 1385 1390 1395

Ala Leu Arg Thr Val Leu Gln Tyr Ser Asp Ala Ala Gly Phe Lys  
 1400 1405 1410

Gln Gly Ala Trp Arg Pro Phe Val Leu Tyr Gly Thr Leu Ala Ser  
 1415 1420 1425

Ile Leu Ser Val Ile Thr Val Ala Gln Val Val Leu Ala Phe Ala  
 1430 1435 1440

Ile Ile Leu Cys Ile Lys Trp Ala Val Val Gly Arg Arg Lys Glu  
 1445 1450 1455

Gly Ser Tyr His Trp Asp Lys Ser Ser Tyr Asn Gln Arg Trp Gln  
 1460 1465 1470

Phe Leu Leu Ser Cys Glu Thr Leu Ile Lys Asp Cys Tyr Asp Gly  
 1475 1480 1485

Val Gly Leu Leu Pro Met Ile Ser Gly Ser Ala Tyr Ile Ser Trp  
 1490 1495 1500

Tyr Tyr Arg Leu Leu Gly Ala Lys Ile Gly Lys Asp Cys Ala Ile  
 1505 1510 1515

His Ala Asn Gly Ser Pro Ser Ile Phe Phe Thr Glu Pro Asp Leu  
 1520 1525 1530

Leu Thr Leu Gly Asp Arg Val Ala Val Asp Asp Ala Ser Leu Val  
 1535 1540 1545

Cys His Leu Asn Ser Arg Gly Gly Phe Glu Leu His Thr Leu Lys  
 1550 1555 1560

Val Gly Asp Arg Ser Ile Leu Arg Ala Gly Ser Arg Leu Met Ser  
 1565 1570 1575

Gly Ala Ser Met Gly Gln Asp Ala Cys Leu Leu Glu His Thr Leu  
 1580 1585 1590

Val Leu Ser Gly Asp His Val Glu Asp Gly Asp Thr Leu Gln Gly  
 1595 1600 1605

Trp Pro Ala Glu Gly Phe Glu Trp Lys Arg Val  
 1610 1615

<210> 48  
 <211> 634  
 <212> PRT  
 <213> *Penicillium chrysogenum*

<400> 48

Met Asp Ile Leu Ser Glu Val Gly Ala Pro Ala Val Ala Met Ala Ser  
 1 5 10 15

Ala Leu Ser Val Ala Ala Gly Ala Tyr Leu Asn Ala Lys Leu Ala Ile  
 20 25 30

Ala Thr Asp Leu Arg Thr Ile His Ser Asp Lys Ala Ala Ala Lys Arg  
 35 40 45

Leu Ser Glu Arg Ile Ala Lys Leu Asp Gly Ser Thr Thr Ile Tyr Lys  
 50 55 60

Met Leu Glu Arg Ala Val Glu Val Glu Gly Arg Ala Thr Thr Asp Ala  
 65 70 75 80

Leu Trp Phe Glu Gln Lys Thr Trp Ser Tyr Gly Gln Leu Lys Asp Leu  
 85 90 95

Val Asp Arg Met Ala Ala Leu Leu Lys Ser Arg Asp Ile Asn Pro Gly  
 100 105 110

Asp Thr Val Gly Val Phe Thr Thr Asn Ser Pro Glu Met Val Met Thr  
 115 120 125

Val Tyr Ala Leu Ser Lys Leu Gly Ala Val Ala Ala Met Ile Asn Thr

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

Arg Ser Thr Glu Gly Val Ala Lys Phe Asp Asn His Gly Val Gly Ala  
 370 375 380

Trp Gly Ala Gly Lys Val Gly Phe Ser Gly Pro Ile Arg Arg Phe Leu  
 385 390 395 400

Glu Asp Asp Thr Phe Ile Val Lys Tyr Asp Thr Asn Thr Glu Met Pro  
 405 410 415

Tyr Arg Asp Pro Ala Thr Gly Phe Cys Val Arg Ala Ala Leu Gly Gln  
 420 425 430

Glu Gly Glu Ala Ile Gly Arg Val Arg Asp Arg Gly Met Leu Ile Glu  
 435 440 445

Tyr Leu Gly Asn Glu Gly Ala Thr Glu Glu Lys Leu Leu Arg Asp Val  
 450 455 460

Phe Gln Lys Gly Asp Leu Phe Gln Arg Thr Gly Asp Leu Val Val Gln  
 465 470 475 480

Asp Glu Ser Gly Trp Val Arg Phe Gln Asp Arg Val Gly Asp Thr Phe  
 485 490 495

Arg Trp Lys Gly Glu Asn Val Ser Ala Gly Glu Ile Arg Asp His Ile  
 500 505 510

Cys Arg Ile Glu Gly Val His Asp Ala Val Val Tyr Gly Val Lys Leu  
 515 520 525

Ser Gly Tyr Asp Gly Gln Ala Gly Ala Ala Gly Ile Thr Leu Glu Ser  
 530 535 540

Pro Glu Val Glu Thr Glu Leu Met Ser Thr Leu Cys Lys Ala Leu Lys  
 545 550 555 560

Lys Lys Gly Val Pro Ser Tyr Ala Leu Pro Arg Leu Val Arg Leu Thr  
 565 570 575

Glu Lys Val Ala Thr Gly Val Thr Phe Lys Gln Ala Lys Gly Asp Leu  
 580 585 590

Ala Lys Lys Gly Trp Asn Pro Arg Gln Asp Ser Gly Gly Asp Ile Leu  
595 600 605

Tyr Trp Leu Asn Gly Thr Lys Tyr Gln Lys Leu Glu Glu Gln Ser Trp  
610 615 620

Ala Glu Ile Glu Ser Gly Lys Ala Lys Ile  
625 630

<210> 49  
<211> 595  
<212> PRT  
<213> Penicillium chrysogenum

<400> 49

Met Ser Ser Asn Asn Met Leu Pro Gln Glu Ala Tyr Ser Asp Leu Leu  
1 5 10 15

Ser Phe Thr Phe Asp Gly Pro Lys Pro Tyr Asn Gln Asn Gln Pro Leu  
20 25 30

Phe Ile Asp Ala Glu Asp Pro Ser Arg Ser Phe Thr Ala Ala Gln Phe  
35 40 45

Arg Gln Leu Val Arg Thr Leu Ile Ala Gly Leu Lys Ala His Asn Val  
50 55 60

Gln Pro Gly Asp Cys Val Leu Leu His Leu Gly Asn Ser Ile Leu Tyr  
65 70 75 80

Pro Ala Leu Phe Phe Gly Ile Ile Gly Ala Gly Gly Val Tyr Met Gly  
85 90 95

Ser Asn Pro Arg Ser His Pro Gln Glu Leu Asp His Val Leu Ser Leu  
100 105 110

Ala Glu Pro Lys Leu Ile Leu Thr Thr Arg Asp Ala Leu Pro Ser Val  
115 120 125

Leu Asp Ala Ser Ala Gly Arg Gly Ile His Pro Ala Gln Val Cys Leu  
130 135 140

Val Asp Glu His Ala Ile Asp His Cys Ala Gln Leu Phe Leu Trp Tyr



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

Val Gln Pro Asp Gly Lys Thr Val Gln Gly Asp Asn Cys Ser Gly Glu  
385 390 395 400

Leu Tyr Val Arg Gly Pro Gly Leu Leu Thr Ala Tyr Lys Gly Arg Thr  
405 410 415

Asp Ala Leu Glu Pro His Gly Trp Phe Arg Thr Gly Asp Ile Ala Tyr  
420 425 430

Val Lys Gln Gly Gln Tyr Tyr Ile Val Gly Arg Thr Lys Glu Leu Ile  
435 440 445

Lys Val Arg Gly Trp Gln Val Ala Pro Ala Glu Val Glu Gly Val Leu  
450 455 460

Leu Gln His Pro Gly Ile Leu Asp Ala Gly Val Ile Gly Val Asn Lys  
465 470 475 480

Asp Gly Val Gly Glu Val Pro Arg Ala Phe Val Val Arg Ser Arg Asp  
485 490 495

Pro Ser Val Arg Arg Leu Thr Gly Glu Gln Val Tyr Asn Tyr Ser Arg  
500 505 510

Gln Gln Leu Ala Arg Tyr Lys Ala Leu Asp Gly Gly Val Val Phe Val  
515 520 525

Glu Glu Ile Pro Arg Thr Ala Ser Gly Lys Ile Gln Arg Phe Lys Leu  
530 535 540

Ser Gln Met Asn Ser Tyr Arg Glu Met Val Ala Ser Leu Leu Ser Arg  
545 550 555 560

Phe Glu Gly Glu Gly Ser Ala Ala Ala Thr Ala Ala Arg Arg Gly Leu  
565 570 575

Pro Ala Gly Ala Glu Met Ser Pro Val Ser Leu Ile Pro Glu Gly Arg  
580 585 590

Val Ala Val  
595

<210> 50  
 <211> 300  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 50

Met Glu Ala Arg Leu Ala Leu Leu Gln Gly Ser Lys Glu Pro Ala Leu  
 1 5 10 15

Trp Phe Glu Thr Leu Gly Asn Phe Ile Asp Lys Gln Ala Ser Gln Tyr  
 20 25 30

Glu Asp Arg Val Ala Ala Ile Phe Pro Trp Gln Ser Val Arg Leu Ser  
 35 40 45

Tyr Arg Gln Leu Ala Glu Arg Ser Lys Ile Leu Ala Lys Ala Met Leu  
 50 55 60

Glu Met Gly Leu Arg Lys Gly Asp Cys Val Gly Val Met Ala Gly Asn  
 65 70 75 80

Cys Tyr Gln Tyr Ile Glu Val Phe Leu Gly Gly Gly Arg Ile Gly Cys  
 85 90 95

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

Ala Val Gln Lys Ser Ser Cys Lys Leu Val Phe Val Ala Ser Asp Ile  
 115 120 125

Gly Ser Arg Ser Leu Ser Ala His Ile Asn Ala Leu Cys Gly Asp Gln  
 130 135 140

Ser Arg Asn Pro Ala Leu Pro Glu Leu Arg Arg Val Val Asn Phe Gly  
 145 150 155 160

Asn Lys Asp Pro Ser Ser Thr Gly Val Glu Met Gln Ser Tyr Ser Ala  
 165 170 175

Phe Thr Ser Gly Ala Gln Ser Val Phe Met Lys Asp Ser Met Leu Leu  
 180 185 190

Arg Ala Glu Lys Ser Val Glu Pro Glu Asp Val Leu Asn Leu Gln Phe

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<212>	DNA
<213>	Penicillium chrysogenum
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gacgggtttt tggtacgaca agctcgcatc ctgcccataa tacaacagga gccacttttc	180
tccaaagacc aacaacaaaa cctctccaga ccggaaagggt tcaagctagg agttgcgcgc	240
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 <213> *Penicillium chrysogenum*

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 ctagacggcc aacgacttcc cggcgatatc aatccctacg agtgggatgg gttccacgat 360  
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 gtcgtgacgt tagggtaatg gttgttggag gcgggagtga agagattctg tcagagttgg 1500  
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 <211> 2083  
 <212> DNA  
 <213> *Penicillium chrysogenum*

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 gcacatgcc aagggatccta ccgaagcaaa agtcgtcttc cgggtcctaa ccgccacatc 1440  
 caaaggggtc gtgagtaaga tgtcgatggg gggcgtgcaa gaatgccagg aggctattgg 1500

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tagtgacgcg gtctatccga tctgggaggg taccacgaat gtcttggtta gtgaactcgt      1620
tcgcttcctg atgaaaggag ataacctgtc tattttgtca ggctggctcg gtcattgtgt      1680
gtctttgata cgcacaccgt ctcttgccgg tgcattgaag caggctatgg cttcatatct      1740
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agatgaacat acgcggttag attgtaagat cgcttggggg gttgaattac cgggcaagat      2040
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<211> 1451
<212> DNA
<213> Penicillium chrysogenum

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gcggagctgt tcacagacga ggaactggcc attcaggata cagcacgcca atactgccag      180
gataagcttg cgcgcgcgt tttgggtatg tctaatttgc tttgcttctg ttgtgaaatg      240
gtgaactgac gtcagtgacc cccttgacga ggcctaccgc aatgaggatt acgaccgtcg      300
aatcctagaa gagatgggcg atctgggcct tctcggcgct tcaatcgaag gatatggatg      360
cgccggtgtc agcacggtgg catcaggcct catcaccaag gaagttgagc gcgtggactc      420
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 <211> 2072  
 <212> DNA  
 <213> *Penicillium chrysogenum*

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 catctgtact tattgtactt attataatct ctaaacatta tccaggggat ctaccatctg 180  
 ctacattgca atctgtacaa ccgcatctca cccagttcgg tgccgaggct atttccgagc 240  
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 gaaaatgggg tgctcggaat aggtatcttt tataaacgcc gccttcgaga tgacgtgcat 420  
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 tcgaagaaca gttcagtatg cactgtgagt attttgtcgt cgattttcta tgctatcgct 540  
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 cgggccagtg gatgactgag agagccggtg gaagcgacgt ccaaaacact gaaacatggg 780  
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<210> 56
<211> 2254
<212> DNA
<213> Penicillium chrysogenum

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aaagtattcg ataagtctca aaatcatagt ttgggcccgtg tcgagcggct ccagcgatcg    240
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cggcgcggtg actgtgcgac aaatcaccoct gactcgcact actgccgtat tgaaactact 2040  
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 <211> 1858  
 <212> DNA  
 <213> *Penicillium chrysogenum*

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 cgaaatcatg cgtgcagata agcataggga tcacatgtta acactttttt tttttgaaca 180  
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 gtaccacaac gagggcattt tgaagaaata caagggtcag ctgcagatcg gttcgttgga 360  
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 cgagccgaag tccaccgcct ctctgtcttc cgtgacaccg cctgccaccg gagcgcccca 480  
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 ctaatctata tgtcgttcat agtatgcac cccctacttt aatgagtccc acgctgcact 660  
 gcgagacgag gttcgccaat gggtcgagtc cgagatcgag ccatatgtga ccgaatggga 720  
 cgaggccaag gaagtgcctg ctcacattta caaacagatg ggagagcgag gctacctagc 780  
 cggcctgctg ggtgtccact tcccogagaa gcacaccccg caccgctga agtctgtgtc 840  
 accagaccgg tgggatttgt tccacgagat gctgctgacc gacgagctat cgcgtgccgg 900  
 cagcgggtggt ctggtgtgga gtctgattgg tggctacgga attggctgtc cgccattggt 960  
 caagttcggc aagaagccgc tggttgaccg aatcctgccg ggtatcttgg ccggcgacaa 1020  
 gcgtatctgc ctcgccatca ccgagcccga tgcgggtagt gacgtcgcaa acttgggttg 1080  
 cgaggctaag ctcaccgagg acggcaagca ttacatcgtc aatggcgaga agaagtggat 1140  
 caccaacggt atttactccg attacttcac gaccgctgtg cgcaccggca aggacggcat 1200

gaacggtctc agcgtgctgc tcatcgagcg cgaagccggc ggcgtcagca cccgccgcat 1260  
 ggactgccag ggtgtgtggt ccagcggcac gacctacgtc acctttgagg atgtcaaggt 1320  
 gcctgtggag aacctaatacg gcaaggaaaa ccagggcttc aaggttatca tgaccaactt 1380  
 caaccacgag cgcacgcggca tcgtgattca gtgcgtgcgc ttctcccgtg tctgctacga 1440  
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 agttattcgc atgaaactcg cccatatggc acgccagatc gaggccacct acaactggct 1560  
 cgagaacatc atcttccagt gccagtccat ggaggatacg gaggctatgc tgaagctcgg 1620  
 cggtgccatc gccggactga aggcgcagtc tacgcaatgc ttcgagttct gcgctcgtga 1680  
 ggctagtcag atcttcggtg gtttgagtta cagtcgcggc ggccagggag gtaagatcga 1740  
 gagactgtac cgtgatgtgc gtgcctatgc tattcccggg gccagtgagg agattatgct 1800  
 tgatctgagt atgcgccaga gtttgcggtg ccacggcatg tttggcatga agctataa 1858

<210> 58  
 <211> 1495  
 <212> DNA  
 <213> *Penicillium chrysogenum*

<400> 58  
 atggccgaca ctctccgccc cgcaacagct ccatacagtg aacccttct cccgcaacta 60  
 gacgtccgta acccatacta tacagacctg caccacaacc tgcgcgccac cgtgcgcgaa 120  
 tacgtcgaca catacatctc cccctacgcc gcagagtggg aagaagcagg ccaagtcccc 180  
 gaagccgtac gccggcgcca ctgcaagctg ggctacagca ttgtgcatcc cctcacgagc 240  
 gaggaggact cagccggtat ctctcttccg gggaaatgtgc cgcgcgagaa gtgggatacg 300  
 tggtgctcgc tgattgtatc ggacgagctc acgcgcgttg gatatgtcgg tgttatttgg 360  
 gggcttggtg gtggtaatgg gattggatgt cctcctgttg cgcgtttcgg taatgctgag 420  
 cagaggaaga agtggcttcc tgggtgttgc aggggggata ttaggttctg tttgggaatt 480  
 acagagccgg atggtatgtg ctgcttgctt tttggtggga gtatatcttc tgcagacatg 540  
 gttcgctaac ttgccttact tttcagccgg gtctgatgtt gctaatatcc agactacggc 600  
 tcagcgggat gggaatcact acgttggtga tgggtcgaag aaatggatta ccaatggcat 660  
 ctgggctgac tattgcactg ctgctgttcg aactggcggg cctggcaggt ctggtattag 720  
 cttgcttgtt atccccttgg ctactgccgg cgtgactcgc agacgtatgc ataactcggg 780  
 cgtgaatgcc agtgggtggg gcttcttttt cagaccatgt gaatacatcg cgaattaaca 840

caacttaggt tcaaccttca tcgagtttga agatgtgcmc gtccctgtgg agaacctcgt	900
cggccaagag aacaagggat tccctottat catgtcagat gagtcttctt aagccaacag	960
gtttaattag ctgctaataa tttatccaga cttcaaccca gagcgccttg cgcttgctg	1020
tgcatccttg cgactcgccc gagtctgtgc cgaagacgcc tacaactacg ctatcaaacg	1080
cgagacgttt ggatctgcac tgattgaaaa gcaggcgatt cagtccaaga tcttcaaatt	1140
tggcctcatg atcgagccag cctatgcgtt catggaacag cttgtgaata tctcagagct	1200
aacgaaagat cgtccttccg acgatgtcaa cattggtggc atgactgcct tgcttaaagt	1260
catgtccacc agggctctgg agaaaagtgt tcgagaagcg cagcagatta tggggggtgc	1320
tggctataac aaggctggga aagggtgctc aatcgagcag attagtcgtg atgctcgggt	1380
tcatgtagtt ggtggcggaa gtgaggagat tatggcggga ttggcgctga gggaggagac	1440
aaaggctatt cgcactcggc gaaaggcgct tgagaagagg cagtccaaag tatga	1495

<210> 59  
 <211> 1454  
 <212> DNA  
 <213> *Penicillium chrysogenum*

<400> 59	
atgaatttcg acttgccagc agatctcaaa actcatttag agtctataga ttcatttatc	60
cactcaacta ttctcccact gcagcattcc aatgacaata accgcttctt cgaccaccgt	120
cgtgagtatg aacggaccga ctgggaaaaac aatgggaatc cacgaaagga atgggaagag	180
ctattaggtc cgttgaacaa aaattaagaa cgagcggaac tgatactcgg taggtgaggc	240
gcgcactctg gctgattcct cgggtcttta ccgattcgcc ctccccgag tctatggggg	300
ccagtcacat ccggacgtga acttatggat gtccgccatt cgctatcact tgcctcgaa	360
tgctgtgtac ggtggtggtt tggggctggc gaatgattta caaaatgagc attgtatcgt	420
tgggaacttc ccggatgttt tgatgctcca tcattttggc aatgaacaac aaaggaatac	480
cttgatccct gcacgtctgc gaggggagtt ccggacaaca ttcgggtctta ctgaacccga	540
ccacgggagt gatgcaacat tcatgtctac taccgcccgt ccaactcggg gagggtttga	600
aatcaagggg gcaaagaagt ggcagacagg agcgcacac tgtaccact ttctcatctt	660
tgcgcgtagt tctggcaaag ccggatcagc acaaggcatt actgcattct tagttccgcg	720
tgacacgaga ggggttcgca tcgtcagtta cgagtggacg ctgaacatgc cgaccgacca	780
cgcaacggta gaactgaata gtgtatgggt gcctgaatcg gcggttttgg gatcgatcga	840

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ccaggggcta gccatcgccc aaacattcgt gcacgagaat agaattcgtc aagcagccag      900
ctcctgcggg gctgcacgat actgcctgga ccgaagcatc gatcgcgcac gggcgcggaa      960
gatatgggga gaggggaaat cactggctga taatcaggct attcaattcc cagtggtcga     1020
gttgatgaca caggtggaga tgttgcgact gttcatattg aagacaagtt gggagatgga     1080
tcgtatcgtg gcggagtgtc agtcgtccaa ggctcagcgc gcgccgtggg ttgaaattga     1140
gggccgtctc tccgaccagg tggccatgtg taacttctgg gcaaactgat tatgctgtca     1200
agctgccgac cgagcgattc aggtaatgtc cacaccggct gattggtgcg acatggctga     1260
cgggtcagat tcacgggggt gatggatact ctcgccacta cccctttgaa cacatatatc     1320
gtcatttccg tcggtatcga atcacggaag gtgcggagga gattcaaatg cgcaagattg     1380
gggcatacat atttggattt gctggcccaa agaagaggga gatgaaacat gagcattcta     1440
aggcccgaat ctga                                     1454

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<210> 60
<211> 1499
<212> DNA
<213> Penicillium chrysogenum

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<400> 60
atggcgtaca attcaccaaa tcccattcca ttctcagagc cgccttatat tcgtggcctc      60
ccttctccct acattacgcc tgcccacogt cgcttccaac aagcatgccg taaattcgca     120
acagaaaact tgattcagca tgcgttgagg tgggagcgtg aaggaacagt tcctgagcat     180
gttttccaca cgttctgcaa gcataatatg ctggtgcccc acatgccggc cccattacct     240
gtggattggg tgaagcgcct gggaatcaat gatatcctgg gagtcaaggc cgaggattgg     300
gactacatct acaccggaat ttactgtgat gaggtatgct atgaaaatta tctgactata     360
tgtaatcgca aggtaattga ctggttatatt gcaaatagat ggcccggctc ggtctcagtg     420
gccctagtgg ctccctaaat gctgggttcg cttttggaat tgcaccaatc taaaaatttg     480
gtagcactga gttgcaagag cggttcttgc ccgaactgct cacaggtaag aaacgaggct     540
gtattgccat cacggaaccc gagggccggga gtgatgtcgc aaacatcacc acaactgctg     600
tcaagagtgc cgatgggtcaa cactacatcc tgaacggatc caagaagtgg tgagagacaa     660
ttctgcaata ataataaagc tgccagctga tcgcaatatc caggatcacg aatggtatatt     720
ggtcggacta tgctaccatg gcggtgcgca ccggtggacc aggagccgca ggtctttccg     780
ttctggttgt gcctttgaag ggccaccccg gcgtctcgat gcgccgactt aaagtctcag     840

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gtcagatcac aggcgggacc acatacattg agctcgacga cgtcaagggt cctgtgtcaa      900
acatcattgg caaagaaggg gacggcatgc gtatcatcat gaccaacttc aaccacgagc      960
gacttgttat tgccgttggg gtcactcgcc aagctcgtgt ggccctttct gccgctttct    1020
cgtactgtct gaagcgtgag gctttcggaa agacgctcat ggaccaaccc gtggtccgcc    1080
accgtcttgc caaggcaggc gctgaacttg aatctatgtg ggcgtaggggt gagcagatct    1140
tgtaccaatt agttcacctc agcaaagagg aaggagatcg tcaactcggg ggattgacgg    1200
cattggctaa agcaaagtct gctatggttt tgaacgagtg tgcccaaaca gccgttttgt    1260
tgtttggggg caatggattt actaaaactg gtcaggggtga attggtcgaa ggtatgctca    1320
caggagtatc agtatgcatg tgaaacaagc taaccacgtc tctagctatt cttcgcgatg    1380
ttcctgggtg ccgtattcca ggtggctcag aagacgtgct gctcgatctg tctgtgcgcc    1440
aattgggtcaa gctctatcag gctgaagaga agaagctctc caagaacgcc aaaatttga    1499

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<210> 61
<211> 1377
<212> DNA
<213> Penicillium chrysogenum

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<400> 61
atgtaccgat cacaaattca acgcgctcta cggtcgcaat ggccctgcact tcggcaactt      60
caatgtcgga cggggttgtc ccctcgagct cgtgcggcat tctccacctc agggcggcgc    120
gacattatgg ggatgactgg ctttaccgac gagcagctca cagttcgtga agctatctcg    180
cacatttgtt ccagattccc aaatacgtat tggcaggagc gtgatcaaca agaaaaagac    240
ccgaaggaat tccatgctgc gttggcgaaa gatggatggc ttggcattgc tttgcccgaa    300
tcctcggggg gcgccggtct aggtacagtt gcgcagacgt tttgttttgt tcttacatag    360
actactaacc gcctttcagg tatctctgag gccacgatga tgatgcagac gattacacaa    420
tctggcgcag gtatggccgg tgctcaggct attcacgcca acgtttatgc cacacagcca    480
ttggccaagt ttggcaccaa ggaacagctg gagactacca tcccaaatat tataaacggc    540
acatggcgca catgcttttg tgtcaccgaa ccaaactcgc gcctagagac tctcaagctc    600
acgaccttgg ctagcaaaaac cgatgatgga tattcagtcg ctggtcagaa gatctggatc    660
acatgtgcgc aagtggcatc gaaaatgatc ctcttgccc gaaccacgcc tcttgaagaa    720
gtcaaaaagt ccagcgaggg tctctcctta ttttgtattg acatcgaccg cgaaaaccct    780
ggcttggatc tgcgcaagat caagaagatg ggcgagcgcg ctgtggacgc caacgaggtc    840

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ttctttgatc attataagat tcctgcaaac acgttaattg gcgaggagaa ccaaggcttt      900
aagattatcc tccacggcat gaacgcagag cgatgccttc tggctggtga ggcacttgg      960
cttggctatg ccgccctgga aaaggcctca cagtacgcta aggacagagt ggtcttcggc    1020
cgaccgatcg gtcagaatca ggggtgtggcg catccgttgg ctgatgcgtt catgaaactg    1080
gaggcggcga agctggctac ctaccacgca gcacgtctct atgataccaa tgatggatcg    1140
gtgcctttcc atgaaatcgg tgtcgcatgc aacagtgcc aagtatttggc tgcggaggct    1200
gctttcacgg cgtgtgagcg ggcagttctg gcgcatggtg gtatgggata tgcggttgag    1260
tacgatgtcg aacggtatat gcgcgaatgt ttcgtaacct gcattgcgcc tgtgagtcgg    1320
gagatgatct tgaattatgt gagcgagaag gtccttgatt tacctagaag ctattaa      1377

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<210> 62
<211> 1580
<212> DNA
<213> Penicillium chrysogenum

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<400> 62
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cggacccttg acttggtaac tcattcccaa taccctgccc attacagcac aggtttgttt    120
ttattaacac tcagcgctaa catgcctcca ggtcgaggaa ttcggtgaaa aggactgcat    180
ccccgccgac acagtcttct cggcccagct cggcgaagggt gagaagcgat ggaccaccac    240
ccccaccgtt ttggaggggcc tgaaggagaa ggccaagaag ctcggtctgt ggaacatgtt    300
cctgcctaag aaccacttca ctcagggcgc tggattctca aacctggagt atggattgat    360
ggctgaattg ctcggaaga gcaagggtgc ctcgagggtg ggttatcata ttctttgcct    420
ggcgcatgtt ttcactcgtc gggagaccct gccaatgat atcgatcgct gaccaacatt    480
cctttcgtca ccaggctacc aacaatgctg cccagatac cggtaacatg gaggtgttcg    540
ccaagtacgg caatgacgca caaaagaagc agtggcttgc acccctgctg gagggcaaaa    600
tccgctctgc tttcctgatg accgagccag acgtcgcgtc cagtgatgcg accaatattg    660
agcttaacat ccgccgggag ggcaatgaat acgtgctgaa tggctcggtg tgtacctctc    720
taatcccaa cccgcaaact agtcccaatc gactcctaac aaccaacta tagaaatggt    780
ggcctccgg cgcgggcgat ccccgctgtg caatttacct agtaatgggc aagaccgacc    840
ccaccaacc agacacctac aagcagcaat ccgtcatcct cgtgcccgcc ggactcccag    900
gcatcacagt gcaccgcatg ttgacagtat acgggtatga tgacgcgcc cacggccacg    960

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gccacatcac attcaaggac gtgcgtgtcc ccgcatcaaa catggtcctc ggccaaggcc 1020  
 gcggcttcga gatcatccag ggccgtctgg gtcccggtcg catccaccac gccatgcggg 1080  
 cgattggcgc cgcggagcgc gcgctcgagt ggctgattgc ccgcgtcaac gacgagcgca 1140  
 agatgacctt cggcaagcct ttagtcgcgc acggcgtgat cctcgagtgg attgccaagt 1200  
 cgcgcatcga ggttgatgct gcgcgtttga ttgtcttgaa cgctgctatc aagatcgatc 1260  
 aggggtgatgc taagagcgcg ctcaaggaaa ttgctcaggc aaaggttctt gttccccaga 1320  
 ctgcgcttac tatcattgat cgggcccgtgc aggcttatgg tgctgctggg gtttgtcagg 1380  
 ataccccgcct tgcgtacttg tgggctggta ttcgtaccct gcgtattgcg gatggtcctg 1440  
 atgaggtaca cttgcagcag ctgggtaaga gggagaacaa ggctcgcaag gatgccgtta 1500  
 ctgctaagtt gaactggcag cgcgaggagg ctgatcgctt gcttgctgct tccgggttca 1560  
 agcctaagag ccatctttga 1580

<210> 63  
 <211> 1647  
 <212> DNA  
 <213> *Penicillium chrysogenum*

<400> 63  
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 tgggtgcatca tcgaccacca agtctatgat ctgaccgatt tcgtcgacgc ccaccccggc 120  
 ggtggcgtcg tgcttgctca ggtagctggc aaggacgcaa catccgattt ctacaacctg 180  
 caccgccagg aggtactgga gaaataccgt gaccagctct gcattgggtg tgtcgaaggc 240  
 gaaaagccgg aggtcatccg gccgttcctt ggagctctga gcccgtgcc ctacgcagaa 300  
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 caaaaggcca tccgggagtt cacggataaa tacgtgacgc ccgaagcgca agagaaggag 420  
 caggatggca gctacatcag ccaagagcta atcaaccgca tggcggagac gaatatcctg 480  
 gctatgcgac tgggtcctgg aaagcatttg catggccgca ccttgctcgg cggggttgtg 540  
 gatggaaagg agtttgatta tcttcatgat atgatcattg tacaggagat ggtccgtgcc 600  
 aatgccagag gcttcaggga cggcaacatg gccggtatgg ctattagttt gacagctgta 660  
 cagcaatggt tgcgatgatcc tgtactcaag gagcgctca atgacgaggt cttgtcgggc 720  
 cggaagaaga tgtgtttggc tatcacggag gcctttgctg gtagcgatgt ggcgggtctg 780  
 aagactactg cagagaagac tcctgatggg aaacactata ttgtcaacgg aacaaagtta 840

gttgggtcac atttgttggg ttaataagtg atttgcgcta actacgtcta ggaaatggat 900  
 cacgaacggc atgttcgccg actactttgt cactggctgc cgtaccgaga agggattctc 960  
 ggtgcttttg attcctcgcg gcgagggcgt ggagaccaag caaatcaaga cctcatattc 1020  
 gaccgctgct gctactgctt tcgtggagtt tgacaacgtc aagggtcccgg ttcagaacct 1080  
 cctgggtgag gagcacaagg gtttcatcgt tatcatgagc aatttcaacc acgagcgctt 1140  
 tatgatgggt gctgccgtgg tccgcatgtc aatgatgggt gtggaagaga ccatgaaatg 1200  
 gtctaaccag cgcacgtctt ttggcaagaa gttgattgaa caaccagtta ttgcgcaaaa 1260  
 gtaagtcttt taatcattca ctgccgatct tctcttctaa cactcgacag gattgctcgc 1320  
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 aacatgacat acgcccagca agcgaagctt ctgggtggac ctatcggatt gctcaagtca 1440  
 cactgtaccc aagccgcagg cgagattgcc agcctcgcta cgaacatctt tgggtggtcgc 1500  
 ggctcactc agtcgggaat gggcaagggtg attgagatgt tccatcgcac gtacaagttc 1560  
 gatgccatct tgggtggaac tgaggagatt ttggcagatt tgggcgtgcg gcaggcaatg 1620  
 aagaatttcc ctaagtcgat gttatag 1647

<210> 64  
 <211> 1437  
 <212> DNA  
 <213> *Penicillium chrysogenum*

<400> 64  
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 ggcaagcgac ttgctgccgg ccggcccgta cagaggtacc gtctagccca ggagcgcattg 120  
 ctattggaat gtatttgcta acaagtttta ccattacag cgcatatgca ttctcaacca 180  
 cccccgcgg gcgggaggtc gacctctccg agctcacccc gacgccgatc acccttttgt 240  
 ccgagacgga atccctgatg gccgactcgg tatccaagtt cgcagtggag cagatcggcc 300  
 cgaaggtgcg ggaaatggac gaagccgaga ctatggacgc aaaggttgtg gagcagctct 360  
 tcgagcaggg cctgatgggc attgaggtgc cagaggagtt tggcggtgcc gggatgaact 420  
 tcaccgcggc gatcgtcgca atcgaggagc tggcacgcgt cgaccccagc gtcagcgtgc 480  
 tggttgatgt tcacaacaca ctcgtcaaca ccgcgatcat gaagtacggg gatgccaagg 540  
 cccagcgtac ctggctaccc aagctgacta ccggcactgt cggctcgttc tgtctctccg 600  
 agcctgcgtc tggctctgat gccttcgcgc tccagaccaa ggctgagaag accgccgatg 660

gttataaaact caatggctct aagatgtgga tcactaactc tatggaggct ggtgtcttca	720
ttgtctttgc caacattgac cccagcaagg gttacaaggg tatcactgct ttcattgtcg	780
agaaggatac ccccggttc tcaattgcta agaaggagaa gaagcttgga attcgtgcta	840
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aggaggggca aggatataag tacgccatca gcgtattgaa cgagggtcgt attggtatcg	960
ccgctcaaat gaccggtctg gccctcggcg catgggagaa cgccgctagg tgagatttcc	1020
tgtccatctt acaccgcgcat atgaattoga tcggctgacc acaaccaaag atacgtctgg	1080
aacgaccgcc gccaatattg cgagctcatc ggaaacttcc agggcatgca gcaccagatt	1140
gcgcaggcct aactgagat tgccgctgcc cgcgctctcg tctacaacgc tgctcgcaag	1200
aaggaggctg gccaggactt cgtccaggac gccgccatgg ctaagctgta cgctcccag	1260
gtcgccggcc ggggtgtctag ctctgctggt gagtggatgg gtggcatggg ctttgtccgt	1320
gagggatttg ctgagaagat gttccgcgat agcaagatcg gcgctatcta cgagggtagc	1380
agcaacatcc agttgcagac cattgccaaag cttctccaga agcagtagac gaactag	1437

&lt;210&gt; 65

&lt;211&gt; 1584

&lt;212&gt; DNA

<213> *Penicillium chrysogenum*

&lt;400&gt; 65

atggcttctt taaccctccc ttctctctt cgcacatcaa cgcgagcggg gcggctaaac	60
cgcacccccg cactcaccac atgtttccgc tccatctcaa caaacacccc caagggttc	120
atacctccgt ccgaggatga tcttctagag ctgcgagagc gcgtgcaaga tttcacaagt	180
acgctaccca tgctcttgcc caagccgtca tttctaacct tgctgtaggg cgagagatcc	240
cagccgatgt tgctgcgcgg acagatgaac agaattgagtt cccagcagaa atgtggagga	300
agatgggtga tgctgggtat gggttctgaa atgggttgact ctcttcttca agaaggaggt	360
gtgttatgca gcgcatgcta acaaggacga aggtttctcg gtgtgacagc caacgaggag	420
tacggtggct tgggtatggg ctaccaagca cattgcgtgg tgatggaaga gatcagccga	480
gcatccggta tgtcccctag tatatggcag tctgaaaatc gatctaacga ttctgataaa	540
aaggaagcat cggactctct tacgccgcc actcccagct ctgcgtgaac cagctctccc	600
ttaatggctc gacagaacaa aaggagcgca ttcttcccgg tctcctatcc ggcgagaagg	660
tcgggtgctt tgcaatgtcg gagcaactcag ctgggtccga tgtagtcagc atgaagacca	720

cggcgaagga agttgatgga ggctggctct tgaacggaac caagatgtgg attaccaacg 780  
 taagttgttt cggatatagat gagatggacg ttccgaactc gtcgctcaca ctttattaca 840  
 gggccccgat gccgattaca ttgtcgtgta cgccaagaca gagcctgaat taggctcgaa 900  
 aggtatcacg gcgttcctgg ttgagaagga cttcaagggc ttctcgtgcg cacgtaagct 960  
 agacaagctg ggtatgcgtg gctctaacac aggcgagctc atcttcgagg atgtcttcgt 1020  
 tccccgggag aacctcctgg gcgaagtcaa ccgcggtgtt cgcgtattga tggaggtct 1080  
 ggacttgag cgactagtcc tgagtgcagg accactaggg tgagccatcc cgcaccacaa 1140  
 cacacgtctc tcattctaac actctctaga atcatgcaag ccgcacttga cctggtcctt 1200  
 ccttacacac acgtgcgcaa gcaattcggg gcaccgatcg cccacaacca gctggtcctt 1260  
 ggcaagcttg cggacatgta cactaagcta gctgcctcgc gtgcatacac ctacgccacg 1320  
 gcacggcagg tagacaacgc cgccgtggaa cctggcgagt tgaccgtccg caccaggac 1380  
 tgtgcgggtg cgatccttta cgccgctgaa cgtgcgactg aatgcacgct tgacgccatc 1440  
 cagctcatgg ggggcagtgg atatatcaat gagatccctg ctgggctct tctgcgggac 1500  
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<210> 66  
 <211> 1463  
 <212> DNA  
 <213> *Penicillium chrysogenum*

<400> 66  
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 tggatggcatc acgtgatgtc acgtgatcca cccaacataa tgccaccagc tgcgccagta 120  
 aagggtttcc ggcgagttgg aattgtcttc gcccgactta ttgtttccgg tgaagatcgt 180  
 ggtatcgac cctttatcac ttggctcagc gatggagagc atatgtgcga cgggtgaacc 240  
 gctaagtacg tatggcaatt caatactcat attgataggg ctgacctaca tattcacttc 300  
 cgtttaggct gctccccaga cgagcagcat caaagccggg agatcatgcc attacgactt 360  
 ttactcatgt ccgcctaccc aagtccgccc tottaggaag cctggataaa ccgaaagata 420  
 tgcgaaagga gtttctatca tcgatctggc gcacagggg ttgtagtgct gcgttgccac 480  
 tacagatgat tgcagggatg aaacgggggtg ttttcgtcgc aggaaagtat agccagcgtc 540  
 ggcatatatt tgggccagac cagaaacctt agcccattat ctctttccgg actcaacatg 600

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gtcccatact gcatgcattg gctcagctct ccgttttcga cgcctatgct cagcatagca      660
tccagtactt caaacacccc aacgtggcag ccccggtcca acatgcgatt ggggctatgt      720
tgaaggctgt tttgtacaaa acatctcaag cctgtctttt tactctctcc gagcgatgcg      780
gagcgcaggg tttatttgag aacaatcata ttattgaggc catggttgaa acccgtgcga      840
tgtcgatcgc cgagggagat accctagtgt tgagtattcg tatggggcct tctttcatat      900
cattttacgt catgtactaa cgaagataaa ttctaggatt gacatcggag attctcctca      960
atcgatacaa catgccgcct gcaaaggacc caacctccct tttagcaaag cacgaacaag     1020
gactacttga tgagcttcgc gggatgacca ggaccatttc aggaggccac cgcggagaag     1080
gttttgaccg gttggtcttg ccaagatccc aggaattcgt cgaggctatg ggacatcgca     1140
tcgcctatga agccgctata gaggcaggag ttcatctctga cttagtggca ctgtatgaaa     1200
tctgggtcat attgcagaat cagggtcggg ttgtccagca tacgagtcta acccgggagc     1260
gcatgttcca ggtagaagca gatagactca gcgttgtgtt gcctcagttg gatacgttgc     1320
tggaacgtac tggcgtgag ccgtactgca gtgcgcctat tgcacccag gcacatggg      1380
accatttcgt cgaccagttg gagaccaaga caggaagtcg tactacaaac atcgatctct      1440
taaggggcgg ggccatgctg taa                                              1463

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<210> 67
<211> 2035
<212> DNA
<213> Penicillium chrysogenum

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<400> 67
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ggcagacacc atggttagtt gaaaaatacc aaactaccaa atcgggacta acaacatcat     180
agggctcacg attgacgata tcctctccct cccccaaaag ttctggaaat cccatatgga     240
tgcaataata atccgggata tcgtggctca tattctgttt tcgatccaat ataatttggg     300
tgctggcacg atcgcccctt ataccctgaa gaggcgggac ctacgacctg tgatggagaa     360
aatcctgaac tttgatgtct cgtaacgatgc atccaacaac cattttaaga agccctctca     420
ctaaacatcc tacagtgctt gctttatgct caacgaggtt gaccatggct gtgatgcaaa     480
gaatctggaa accactgcga ccttgacgtc cgatggcagt tttgtccttc acagtcttac     540
gcctggagca gcaaagtaag ctgaaacccc aagagagcag aaaggaatac tatactaact     600

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cttctagatt tatgccacca tcaatgccc tagctggtat gcctcgcatt gcgctcgttt 660
tcgcacgtct catgattgaa ggcgacgata gagggattcg tcccttcata gttggactcg 720
gggatggaaa ggagatgtgc acaggggtaa cgacaacgtg agtgagatag aaaatccaaa 780
aagcaaatag ttgaactccg actaatgatg ccgtttaggc tactccctcc catcgcttgc 840
ggacgaactc tcgaccactc catcaacttca ttcaacaaag tccgcctccc atcaactgcc 900
atgctaggca gtcaccgaaa gcctgacgac atgcgaactc aattcttgat ggccatcaac 960
cgtctagggt tcggaacact ctctttgagc ctttcagcaa taccgggcct gaaatgtgcg 1020
gttctcatag cgggaaaagta caacctccgt cgaatggttc atggccccga aggatctccg 1080
aagcccatca tctccttccg tactcagcaa ctgcccattt tgcatgcctt ggcggagagt 1140
gcagttgtgg aaccgtttgc aaactggatc acaactaaat ttagtgatac ttcacttgac 1200
ttttctgtta gacatgggct agcagttatc ttcaagggag ctgttctgca atacaccag 1260
aaaagctttg caaatctcgt tgagcgatgt ggtgctcagg gtgtgtttat ccacaatcag 1320
ctggtggaga tggaggtaag ccgatccaag aacaacccaa aagaacatac aagaagtact 1380
gaccgccctg ttaggctct gaatcgttgc aatggcatcg cggaagggtga aatttcggtc 1440
ctttgcattc gtaatgtccc cacaccccag aatacacata ttacacagct aacacagtat 1500
aggactggcc actgaaatcc tcatcggtcg gtacgaaatc ccgaatgcca tcaagccgaa 1560
ttcgtaatt gcaaagcacg aggaaggcta cattgcggga ctgaagaagc tcctggggac 1620
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cctgattctg gcaataggcc atcgcatggc atatgaggca gcggtgcata tgggagttga 1740
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tcttgtaacc cgggtgggtg agcttttgaa tggactgggt acggtggagc cgtatatcac 1920
agccccgata ctttcagcgg agaggtggga gacgttcgtt gctggctgcg agactattga 1980
gggagatgca tcctgtgata tcatcgacaa ggaagatatg cgggccaaac tttga 2035

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<210> 68
<211> 1275
<212> DNA
<213> Penicillium chrysogenum

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```

<400> 68
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 gacagttact gggcccagat agacgagtcg caccaattcc cgaccgaact ctatgaggcg 240  
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 ggtgcctcgt ctatccatat gaacatcttt ggccttgagc cagtcgcca gtatggaacc 420  
 gaggagcaga aagatcgctg gctcactccc ctaattgctg gtcgccagag ggctcgcttt 480  
 ggagtcactg agcccaatac tgggtctagat accctgcaat tgcaggcaac tgcacgccgg 540  
 tcgagggatg gctatgtgct gtcgggacaa aaggtctgga tttccactgc ccagcgggct 600  
 gacaaaatcc ttatacttgt gcgcacgaca ccacgcgacc gagtgaaaa gccatcacag 660  
 ggctgtcac ttttctacac agatctacaa gttcccgagg tccaaatcac tgaaattcca 720  
 aagatgggtc gggctgccgt tgacaccaat tcccttttct tcgataactg gcatgtctca 780  
 atggaggacc gtgtcggaga agaaaacgaa gggttccgca tgattcttca tgggatgaat 840  
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 caggctgctc ggctttacga tcagggctac accggtggag agtatgccaa cgcgggaaaa 1080  
 tacctggctg cagaggcagc ctttgagggt tgtgagcgag ccatactaac acatgggtggg 1140  
 atgggatacg ccaaagaata tcatgttgag cgatatcttc gagaagtttt cattcctcgc 1200  
 attgcacctg ttagtaggga aatgattctg aactacatag gggaacgggt gcttggctctc 1260  
 ccaaggtcgt actaa 1275

<210> 69  
 <211> 1950  
 <212> DNA  
 <213> *Penicillium chrysogenum*

<400> 69  
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 ccatggcttt gcggtcttcc atccccctat attcgggatt cgcacgcgaa gctgcaaagg 120  
 gcaatgcgcg actgggttga gaaagtaagt acagcagcat ttgcctgggc ttgttttact 180  
 ccttggcctt gataatacag catottaccc ottggcatct tagaacctca tctcgaacgc 240



ttcagactgg	gaaaaaaagc	agcagggttc	cacaagatct	gtacaaagcc	tgtgctgaag	300
ctggtattct	gatgcccattg	gcagccggcg	ccacaatacc	acaagaatgg	cggaactcgt	360
atccaattat	gggggatatc	gaagcaagtg	aatgggatgg	attccatgac	ttcatcattc	420
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agcaagactt	gcctcttcca	tgattaatgt	gggtgggata	gtgactaacc	atagacagga	720
tgattgggga	agcgttttcc	ggttaaagtc	aattctcact	agccataaca	ggacccgagg	780
ccgggtctga	tgtccagggc	atcacaacta	ctgctgttct	cagcgcggac	ggaaccaaat	840
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gccgtcctct	aatgaggcat	tttaagacta	accaagcgct	ccagtggata	acgggagggg	960
cgtatgcgaa	atacttcctc	accctgactc	gaactgcaga	tcaaggggtc	actctcctgg	1020
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ctggcacagc	atttgttgag	tttgatgaca	ccgttgtccc	cgtgacgaat	cgtgtcggcg	1140
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cttgagtatt	ttatatgtgt	gtgtgggata	agtctgacta	aactgatcta	gcggctattt	1260
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ctgacactat	cccagccgtt	gtccgccata	aactggccaa	tatggctcgt	gaggtggagg	1560
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gagcgtgtag	ttagccaggg	aattcagctt	atgggaggac	tgggattaac	ccgggggtgt	1800
cggggcgaac	ggctagagcg	aatctggagg	gacgtcaagg	ctattacgat	tcccggagga	1860
agtgaagata	tcctcctcga	tttgtccatt	cgccggggcca	ttcgcgggct	tactagccca	1920
acggagcctc	gaaagagcgc	gaagatttga				1950

<210> 70  
 <211> 689  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 70

Met Pro Asp Phe Thr Asp Asn Leu Arg Pro Ser Gln Pro Asp Gly Pro  
 1 5 10 15

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

Leu Gly Gln His Leu Leu Gly Ser Asp Gly Phe Leu Val Arg Gln Ala  
 35 40 45

Arg Ile Leu Pro Ile Ile Gln Gln Glu Pro Leu Phe Ser Lys Asp Gln  
 50 55 60

Gln Gln Asn Leu Ser Arg Pro Glu Arg Phe Lys Leu Gly Val Ala Arg  
 65 70 75 80

Ala Lys Leu Leu Arg Gln Met Lys Asp Thr His Lys Trp Ser His Leu  
 85 90 95

Glu Tyr Gln Met Ala Glu Tyr Leu Val Asp Asp Val Ser Pro Tyr Phe  
 100 105 110

Leu His Met Glu Met Phe Ile Thr Thr Ile Arg Glu Gln Ala Ser Glu  
 115 120 125

Glu Gln Gln Ala His Trp Leu Pro Leu Ile Glu Leu Trp Lys Ile Ile  
 130 135 140

Gly Ala Tyr Ala Gln Thr Glu Leu Gly His Gly Ser Asn Val Arg Gly  
 145 150 155 160

Leu Glu Leu Glu Ala Arg Trp Asp Asn Arg Thr Lys Glu Phe Val Leu  
 165 170 175

His Ser Pro Thr Leu Thr Ala Ser Lys Trp Trp Asn Gly Ser Leu Gly  
 180 185 190

Arg Leu Ala Asn His Ala Ile Val Val Ala Gln Leu Leu Leu Pro Asp  
 195 200 205

Pro Ser Ser Pro Asp Gln Tyr Val Ser His Gly Pro His Pro Phe Ile  
 210 215 220

Val Gln Val Arg Asp Met Lys Thr His Gln Pro Leu Asn Gly Ile Val  
 225 230 235 240

Val Gly Asp Ile Gly Pro Lys Tyr Gly Tyr Ile Thr Met Asp Asn Ala  
 245 250 255

Tyr Met Leu Phe Asp Gln Phe Arg Ile Pro His Ser Ala Met Leu Ser  
 260 265 270

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

Lys Pro Ala Leu Val Tyr Gly Ser Leu Thr Tyr Val Arg Ser Asn Met  
 290 295 300

Val His Arg Ala Arg Leu Val Leu Ala Arg Ala Val Thr Val Ala Val  
 305 310 315 320

Arg Tyr Ser Ser Val Arg Arg Gln Phe Gln Asp Arg Asp Gly Asp Lys  
 325 330 335

Thr Gly Pro Glu Met Ser Val Leu Asp Tyr Pro Thr Val Gln Ile Arg  
 340 345 350

Ile Leu Pro Leu Leu Ala Thr Thr Phe Ala Leu His Tyr Thr Gly Leu  
 355 360 365

Ala Met Gln Thr Val Tyr Lys Asn Ala Arg Gln Asp Ile Glu Glu Gly  
 370 375 380

Asn Phe Asn Ser Leu Ala His Met His Ser Met Ser Ser Gly Leu Lys  
 385 390 395 400

Ser Leu Cys Thr Ile Phe Ala Ala Asp Gly Ile Glu Thr Cys Arg Arg  
 405 410 415

Ala Met Gly Gly His Gly Phe Gly Gly Gly Ser Gly Leu Ile Gln Val

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

Leu Asn Pro Leu Asn Arg Ile Thr Phe Asn Pro Asn Tyr Trp Glu Asp  
 660 665 670

Glu Ile Val Lys Gly Ser Gly Asp Asn Gly Arg Gly Ile Leu Ser Lys  
 675 680 685

Leu

<210> 71  
 <211> 425  
 <212> PRT  
 <213> *Penicillium chrysogenum*

<400> 71

Met Ser Val Ser Asn Val Pro Phe Ala Asp Pro Leu Trp Leu Asn Arg  
 1 5 10 15

Lys His Ser Pro Tyr Tyr Lys Asp Ser His Arg Lys Leu Gln Lys Glu  
 20 25 30

Val Arg Gln Tyr Val Asp Glu His Ile Ser Pro Phe Cys Glu Glu Trp  
 35 40 45

Glu Lys Gln Gly Phe Val Pro Pro Glu Ala Gln Lys Arg His Ala Glu  
 50 55 60

Leu Gly Tyr Thr Ala Val Ala Ser Phe Pro Leu Ala Ala Asp Tyr Leu  
 65 70 75 80

Asp Gly Gln Arg Leu Pro Gly Asp Ile Asn Pro Tyr Glu Trp Asp Gly  
 85 90 95

Phe His Asp Ile Val Val Ile Asp Glu Leu Ala Arg Cys Gly Tyr Leu  
 100 105 110

Gly Ile Val Trp Ala Leu Gly Cys Gly Asn Ser Ile Gly Gly Pro Pro  
 115 120 125

Ile Ile Asn Phe Gly Asn Glu Glu Gln Lys Arg Arg Phe Leu Pro Asp  
 130 135 140

Met Leu Lys Gly Lys Ile Arg Phe Cys Leu Gly Val Thr Glu Pro Asp  
145 150 155 160

Ala Gly Ser Asp Val Ala Gly Ile Thr Thr Val Ala Glu Arg Lys Gly  
165 170 175

Asp Ala Tyr Ile Val Asn Gly Ala Lys Lys Trp Ile Thr Asn Gly Ile  
180 185 190

Phe Ala Asp Phe Cys Thr Ala Ala Val Arg Thr Gly Gly Ser Gly Thr  
195 200 205

His Gly Ile Ser Ala Leu Val Ile Pro Met Lys Ala Pro Gly Val Ile  
210 215 220

Cys Arg Lys Ile Glu Asn Ser Gly Val His Ala Ser Gly Ser Thr Tyr  
225 230 235 240

Ile Glu Phe Asp Gln Val Glu Val Pro Val Asp Asn Leu Leu Gly Glu  
245 250 255

Glu Asn Lys Gly Phe Pro Val Ile Met Asn Asn Phe Asn His Glu Arg  
260 265 270

Leu Trp Leu Ala Cys Thr Ser Leu Arg Met Ala Arg Val Cys Ala Glu  
275 280 285

Asp Ala Tyr Gln His Ala Ile Thr Arg Glu Thr Phe Gly Lys Arg Leu  
290 295 300

Ile Glu Asn Gln Ile Ile Arg Ser Lys Phe Ser Ala Met Ala Arg Ser  
305 310 315 320

Leu Asp Ser Asn Tyr Ala Trp Met Glu Gln Leu Val Tyr Ile Ala Glu  
325 330 335

Ile Ala Lys Lys Glu Gly Thr Asp Ala Gly Thr Gly Gly Leu Phe Ala  
340 345 350

Asn Leu Lys Val Leu Ala Gly Gln Thr Leu Glu Lys Val Asn Arg Glu  
355 360 365

Ser Gln Gln Val Met Gly Gly Leu Gly Tyr Ser Lys Asn Gly Arg Gly

370                                      375                                      380  
 Ser Arg Ile Glu Gln Val Ser Arg Asp Val Arg Val Met Val Val Gly  
 385                                      390                                      395                                      400  
  
 Gly Gly Ser Glu Glu Ile Leu Ser Glu Leu Ala Val Asn Gln Glu Ile  
                                     405                                      410                                      415  
  
 Lys Ala Met Lys Lys Gln Ser Lys Leu  
                                     420                                      425  
  
 <210> 72  
 <211> 605  
 <212> PRT  
 <213> Penicillium chrysogenum  
  
 <400> 72  
  
 Met Ala Ala Gln Ser Arg Val Pro Ala Thr Ala Glu Ser Gly Thr Phe  
 1                                      5                                      10                                      15  
  
 Thr Gln Leu Gly Pro Leu Pro Asn Thr Tyr Thr Ser Asp Ile Ser Leu  
                                     20                                      25                                      30  
  
 Gln Arg Met Leu Gly Trp Tyr Leu Pro Ala Gln Thr Leu Lys Leu Ile  
                                     35                                      40                                      45  
  
 Glu Pro His Leu Ala Gln Leu Gly Glu Glu Ala Val Ser Pro Gln Val  
                                     50                                      55                                      60  
  
 Phe Ala Trp Asn Ala Asp Ala Glu Thr Asn Leu Pro Tyr Val Lys Lys  
 65                                      70                                      75                                      80  
  
 Tyr Asn Val Trp Gly Gln Arg Tyr Ala Tyr Asp Arg Leu Val Thr Thr  
                                     85                                      90                                      95  
  
 Asp Gly Trp Lys Gln Leu Gly Lys Trp Gly Ala Lys His Gly Val Val  
                                     100                                      105                                      110  
  
 Ser Leu Gly Tyr Asp His Thr Tyr Gly Val Tyr Arg Arg Thr Ala Gln  
                                     115                                      120                                      125  
  
 Tyr Ala Ala Val Tyr Leu Tyr Ala Pro Ser Ser Ala Met Tyr Arg Cys  
                                     130                                      135                                      140

Pro Met Ser Met Ser Asp Gly Ala Ala Leu Thr Ser Gly Gln Trp Met  
 145 150 155 160

Thr Glu Arg Ala Gly Gly Ser Asp Val Gln Asn Thr Glu Thr Trp Ala  
 165 170 175

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

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

Asp Ala Asn Val Ala Phe Leu Leu Ala Lys Thr Asp Ser Gly Lys Leu  
 210 215 220

Ser Thr Phe Ile Ala Pro Leu Arg Lys Thr Ser Ile Gly Ala Asp Gly  
 225 230 235 240

Lys Pro Glu Glu Thr Ser Asn Gly Val Arg Ile His Arg Phe Lys Asn  
 245 250 255

Lys Leu Gly Thr Lys Glu Leu Pro Thr Ala Glu Leu Glu Leu Lys Gly  
 260 265 270

Met Arg Ala His Leu Val Gly Glu Leu Asp Gln Gly Ile Val Thr Ile  
 275 280 285

Ala Pro Leu Leu Asn Thr Thr Arg Ile Gln Thr Leu Leu Gly Thr Leu  
 290 295 300

Ser Thr Trp Arg Arg Ala Ile Ser Ile Thr Lys Asn Phe Ala Lys Ser  
 305 310 315 320

Arg Thr Thr Val Gly Glu Pro Leu Trp Leu Ile Pro Met His Leu Arg  
 325 330 335

Leu Leu Ala Asp Val Glu Val Lys His Arg Gly Ala Ile Asn Leu Ala  
 340 345 350

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



Ala Arg His Ala His Met Pro Arg Asp Pro Thr Glu Ala Lys Val Val  
370 375 380

Phe Arg Val Leu Thr Ala Thr Ser Lys Gly Val Val Ser Lys Met Ser  
385 390 395 400

Met Val Gly Val Gln Glu Cys Gln Glu Ala Ile Gly Gly Val Gly Tyr  
405 410 415

Ile Asp Glu Pro Asp Glu Pro Glu Phe Asn Ile Ser Arg Leu Leu Arg  
420 425 430

Ser Ala Ala Val Tyr Pro Ile Trp Glu Gly Thr Thr Asn Val Leu Ala  
435 440 445

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

Ser Gly Trp Leu Gly His Val Val Ser Leu Ile Arg Thr Pro Ser Leu  
465 470 475 480

Ala Gly Ala Leu Lys Gln Ala Met Ala Ser Tyr Leu Ser Arg Val Thr  
485 490 495

Ser Thr Arg Pro Gln Ala Ala Leu Leu Ala Asp Ala Arg Arg Val Met  
500 505 510

Phe Thr Phe Ala Trp Ile Leu Ser Gly Ala Leu Leu Thr Leu Asp Ala  
515 520 525

Glu Arg Asp Glu Asp Glu Val Ala Met Glu Ile Ala Arg Arg Trp Val  
530 535 540

Leu Leu Gly Glu Gly Gly Val Gly Glu Phe Val Tyr Arg Asp Ile Ala  
545 550 555 560

Lys Pro Tyr Gln Cys Phe Asn Leu Arg Ser Gly Arg Asp Glu His Thr  
565 570 575

Arg Leu Asp Cys Lys Ile Ala Trp Gly Val Glu Leu Pro Gly Lys Ile  
580 585 590

Val Phe Gly His Arg Ser Leu Ser Glu Ser Ser Lys Leu

595                                      600                                      605  
 <210> 73  
 <211> 425  
 <212> PRT  
 <213> *Penicillium chrysogenum*  
 <400> 73  
 Met Met Asn Arg Ser Leu Leu Arg Ala Ala Ala Arg Ser Ile Gln Ala  
 1                                      5                                      10                                      15  
 Gly Pro Thr Ser Val Ala Gly Arg Arg Tyr Ala Ser Ser Ala Val Phe  
                                     20                                      25                                      30  
 Asn Trp Glu Asp Pro Leu Ala Ala Ala Glu Leu Phe Thr Asp Glu Glu  
                                     35                                      40                                      45  
 Leu Ala Ile Gln Asp Thr Ala Arg Gln Tyr Cys Gln Asp Lys Leu Ala  
                                     50                                      55                                      60  
 Pro Arg Val Leu Glu Ala Tyr Arg Asn Glu Asp Tyr Asp Arg Arg Ile  
 65                                      70                                      75                                      80  
 Leu Glu Glu Met Gly Asp Leu Gly Leu Leu Gly Ala Ser Ile Glu Gly  
                                     85                                      90                                      95  
 Tyr Gly Cys Ala Gly Val Ser Thr Val Ala Ser Gly Leu Ile Thr Lys  
                                     100                                      105                                      110  
 Glu Val Glu Arg Val Asp Ser Gly Tyr Arg Ser Gly Met Ser Val Gln  
                                     115                                      120                                      125  
 Ser Ser Leu Ala Met Thr Gly Ile Tyr Glu Phe Gly Thr Glu Glu Gln  
                                     130                                      135                                      140  
 Lys Gln Arg Phe Leu Pro Ser Leu Ala Lys Gly Thr Leu Ala Gly Cys  
 145                                      150                                      155                                      160  
 Phe Gly Leu Thr Glu Pro Asn His Gly Ser Asp Pro Gly Ser Met Glu  
                                     165                                      170                                      175  
 Thr Val Ala Arg Glu His Pro Thr Gln Lys Gly Met Tyr Leu Leu Ser  
                                     180                                      185                                      190

Gly Ser Lys Thr Trp Ile Thr Asn Ser Pro Ile Ala Asp Val Ala Leu  
 195 200 205

Val Trp Ala Lys Leu Glu Ser Thr Gly Lys Ile Arg Gly Phe Ile Val  
 210 215 220

Glu Arg Glu Arg Ala Thr Pro Gly Ser Tyr Glu Thr Pro Ala Ile Lys  
 225 230 235 240

Asn Lys Ser Ala Leu Arg Ala Ser Ile Thr Gly Met Ile Gln Met Asp  
 245 250 255

Asn Cys Pro Val Pro Ala Glu Asn Met Leu Pro Glu Val Glu Gly Leu  
 260 265 270

Lys Gly Pro Phe Thr Cys Leu Asn Ser Ala Arg Leu Gly Ile Ala Phe  
 275 280 285

Gly Ala Met Gly Ala Leu Glu Asp Cys Leu Ala Arg Ala Arg Glu Tyr  
 290 295 300

Ser Leu Glu Arg Lys Gln Phe Lys Gly Asn Pro Leu Ala Lys Tyr Gln  
 305 310 315 320

Leu Ile Gln Met Lys Leu Ala Asn Ala Ala Thr Asp Ala Ala Tyr Gly  
 325 330 335

Thr Leu Ala Ala Val Gln Val Ala Arg Leu Lys Asp Ala Gly Lys Ala  
 340 345 350

Thr Pro Glu Met Ile Ser Met Ile Lys Arg Gln Asn Cys Asp Arg Ala  
 355 360 365

Leu Ala Asn Ser Arg Ile Leu Gln Glu Val Phe Gly Gly Asn Ala Ala  
 370 375 380

Ser Asp Glu Tyr His Ile Ala Arg His Val Ala Asn Leu Phe Val Val  
 385 390 395 400

Gln Thr Tyr Glu Gly Gln Ser Asp Ile His Ala Leu Ile Leu Gly Arg  
 405 410 415

Ala Ile Thr Gly Lys Gln Ala Phe Val  
 420 425

<210> 74  
 <211> 633  
 <212> PRT  
 <213> *Penicillium chrysogenum*

<400> 74

Met Ser Ser Ser Gln Pro Ala Thr Ala Asp Ser Gly Tyr Ile Thr Asp  
 1 5 10 15

Pro Gly Pro Leu Glu Asn Thr Tyr Thr Ser Asp Pro Ser Leu Gln Arg  
 20 25 30

Ala Leu Ala Trp Tyr Leu Pro Ser Ala Thr Leu Gln Ser Val Gln Pro  
 35 40 45

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

Trp Ser Ala Asp Ala Glu Arg Asn Val Pro Tyr Val Lys Ser His Asn  
 65 70 75 80

Val Trp Gly Lys Arg Tyr Asp Tyr Asp Arg Leu Val Thr Thr Glu Gly  
 85 90 95

Trp Lys Gln Leu Gly Lys Trp Gly Ala Arg Asn Arg Ile Val Ser Ala  
 100 105 110

Gly Tyr Asp Lys Ser Leu Gly Val Asp Arg Arg Thr Val Gln Tyr Ala  
 115 120 125

Leu Asn Tyr Leu Tyr Ser Pro Ser Ser Gly Leu Tyr Ser Cys Pro Ile  
 130 135 140

Ser Met Thr Asp Gly Ala Ala Phe Ile Leu Ser Ser Arg Ile Asn Lys  
 145 150 155 160

Leu Pro Ser Thr His Pro Phe His Thr Ala Phe Gln Gly Leu Ile Ser  
 165 170 175

Glu Lys Asp Asp His Trp Thr Ser Gly Gln Trp Met Thr Glu Arg Ala  
 180 185 190

Gly Gly Ser Asp Val Gln Asn Thr Glu Thr Trp Ala Thr Tyr Ser Pro  
 195 200 205

Leu Ala Ser Ser Ser Gly Ser Glu Pro Leu Gly Asp Gly Asp Tyr Leu  
 210 215 220

Ile Ser Gly Phe Lys Phe Phe Ser Ser Ala Thr Asp Ala Asn Leu Ala  
 225 230 235 240

Leu Leu Leu Ala Lys Thr Pro Ser Gly Lys Leu Ser Thr Phe Leu Ala  
 245 250 255

Pro Leu Arg Arg Thr Val Val Gly Gly Asp Gly Val Ser Arg Val Val  
 260 265 270

Ser Asn Gly Val Arg Ile His Arg Leu Lys Asn Lys Leu Gly Thr Lys  
 275 280 285

Glu Leu Pro Thr Ala Glu Leu Glu Leu Lys Asp Met Arg Ala His Leu  
 290 295 300

Ile Gly Glu Ile Asp Gln Gly Ile Val Thr Ile Ala Pro Leu Leu Asn  
 305 310 315 320

Val Thr Arg Leu His Thr Phe Val Gly Ser Leu Ala Gly Trp Arg Arg  
 325 330 335

Ala Ile Ser Ile Thr Lys Ser Phe Ala Lys Ala Arg Thr Thr Val Gly  
 340 345 350

Glu Pro Leu Trp Leu Ile Pro Met His Leu Arg Leu Leu Ala Asp Met  
 355 360 365

Glu Val Lys His Arg Gly Ala Met Asn Leu Ala Trp Phe Thr Val Ala  
 370 375 380

Leu Phe Gly Val Val Glu Asp Arg Thr Pro Ser Ser Asn Lys Ile Ala  
 385 390 395 400

His Leu Pro Gln Pro Gly Lys Glu Ala Glu Val Val Phe Arg Thr Leu  
 405 410 415

Thr Ala Thr Ala Lys Ala Val Ile Ser Lys Met Ala Thr Ala Gly Ile  
 420 425 430

Gln Glu Cys Gln Glu Ser Met Gly Gly Val Gly Tyr Met Asp Glu Ala  
 435 440 445

Asp Glu Pro Glu Phe Asn Ile Ser Arg Ile Leu Arg Asn Asn Ala Val  
 450 455 460

Asn Ser Ile Trp Glu Gly Thr Thr Asn Val Leu Ala Ser Glu Phe Val  
 465 470 475 480

Arg Phe Leu Ile Lys Lys Asp Asn Leu Lys Ile Phe Gly Thr Trp Leu  
 485 490 495

Asp Arg Thr Leu Ala Leu Ile Gln Ser Val Asp Leu Arg Asn Ala Leu  
 500 505 510

Thr Ala Ala Trp Leu Ala Leu His Ala Arg Phe Met Thr Gln Asp Pro  
 515 520 525

Ala Thr Thr Val Ala Asp Gly Arg Arg Phe Met Phe Thr Val Ala Trp  
 530 535 540

Ile Leu Ser Gly Ala Leu Leu Ala Leu Asp Thr Glu Arg Asp Asn Asp  
 545 550 555 560

Pro Val Thr Ala Glu Ile Ala Arg Arg Trp Ile Leu Ser Ala Glu Gly  
 565 570 575

Gly Val Gly Glu Gln Val Phe His Asp Ile Val Thr Val Ser Gly Thr  
 580 585 590

Ala Ser Ala Thr Ser Gly Gly Glu Glu His Leu Gln Trp Asp Cys Arg  
 595 600 605

Ile Ala Trp Gly Val Asp Leu Pro Ala Asn Arg Ala Ser Gly His Arg  
 610 615 620

Ser Leu Gln Lys Ala Gly Ser Lys Leu  
 625 630

<210> 75  
 <211> 695  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 75

Met Pro Ser Pro Pro Pro Asp Trp Val Lys Ala Leu Lys Pro Ser Gly  
 1 5 10 15

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

Asp Val Glu Arg Leu Ser Glu Leu Leu His Thr Lys Glu Thr Leu Glu  
 35 40 45

Arg Arg Ala Ser Leu Leu Ala Leu Leu Gln Pro Glu Lys Val Phe Asp  
 50 55 60

Lys Ser Gln Asn His Ser Leu Gly Arg Val Glu Arg Leu Gln Arg Ser  
 65 70 75 80

Leu Ala Lys Ala Lys Arg Leu Gln Gln Leu Ala Glu Glu His Lys Trp  
 85 90 95

Ser Met Gln Glu Leu His Ala Ala Asn Asp Leu Ile Gly Glu Pro Thr  
 100 105 110

Pro Tyr Gly Leu His Ala Ser Met Phe Leu Val Thr Leu Arg Glu Gln  
 115 120 125

Gly Thr Pro Glu Gln His Lys Leu Phe Leu Glu Arg Ala Glu Lys Tyr  
 130 135 140

Glu Ile Ile Gly Cys Tyr Ala Gln Thr Glu Leu Gly His Gly Ser Asn  
 145 150 155 160

Val Arg Gly Leu Glu Thr Thr Ala Thr Trp Asn Ser Asn Asp Lys Thr  
 165 170 175

Phe Thr Ile Asn Ser Pro Thr Leu Thr Ala Ser Lys Trp Trp Ile Gly  
 180 185 190

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

Ile Asp Gly Lys Asn Tyr Gly Pro His Pro Phe Val Val Gln Val Arg  
 210 215 220

Asp Leu Glu Thr His Gln Pro Leu Asp Asn Val Tyr Val Gly Asp Ile  
 225 230 235 240

Gly Pro Lys Phe Gly Tyr Asn Thr Met Asp Asn Gly Phe Leu Leu Phe  
 245 250 255

Asn Asn Val Lys Ile Pro His Val Asn Met Leu Ala Arg Phe Cys Gln  
 260 265 270

Val Asp Lys Glu Thr Asn Gln Tyr Ala Lys Pro Ala Met Pro Ser Leu  
 275 280 285

Val Phe Gly Thr Met Thr Trp Val Arg Ala Asn Ile Val Leu Asp Ala  
 290 295 300

Gly Gly Val Leu Ala Arg Gly Val Thr Ile Ala Thr Arg Tyr Cys Ala  
 305 310 315 320

Val Arg Arg Gln Phe Gln Asp Arg Asp Ala Asp Pro His Ala Gly Glu  
 325 330 335

Thr Gln Val Leu Asn Tyr Lys Met Val Gln Val Arg Leu Leu Pro Leu  
 340 345 350

Leu Ala Ser Met Tyr Ala Leu His Phe Thr Gly Arg Gly Met Met Arg  
 355 360 365

Leu Tyr Glu Glu Asn Gln Ser Arg Met Lys Ala Ala Ser Ser Pro Asp  
 370 375 380

Gln Glu Ser Arg Gly Ala Gly Pro Glu Gln Leu Arg Ala Gly Ala Asn  
 385 390 395 400

Leu Leu Ala Asp Leu His Ala Thr Ser Cys Gly Leu Lys Ala Leu Ala  
 405 410 415

Ser Thr Thr Ala Gly Glu Gly Leu Glu Ile Cys Arg Arg Ala Cys Gly  
 420 425 430



Gly His Gly Tyr Ser Ser Tyr Ser Gly Ile Gly Pro Ala Tyr Ala Asp  
 435 440 445

Tyr Leu Pro Thr Leu Thr Trp Glu Gly Asp Asn Tyr Met Leu Thr Gln  
 450 455 460

Gln Val Ala Arg Tyr Leu Leu Lys Ser Ala Arg Ala Val Leu Ala Gly  
 465 470 475 480

Lys Pro Ala Arg Asn Asp Thr Ser Gln Ile Leu Gln Ala Tyr Leu Asp  
 485 490 495

Arg Arg Asp Lys Gly Ala Ser Phe Asp Val Leu Asp Glu Asp Lys Asp  
 500 505 510

Ile Val Ala Ala Phe Gly Trp Arg Thr Ala His Leu Thr Phe Glu Ala  
 515 520 525

Leu Lys His Arg Asp Ala Glu Gln Arg Ser Trp Asn Ser Leu Leu Val  
 530 535 540

Asp Phe Trp Arg Leu Ser Thr Ala His Ser Gln Tyr Leu Met Val Lys  
 545 550 555 560

Asn Phe Tyr Glu Ala Val Ser Ser Pro Glu Leu Ser Gly Ala Leu Asp  
 565 570 575

Pro Glu Thr Lys Gly Leu Met His Gln Leu Phe Arg Leu Phe Ser Leu  
 580 585 590

His Thr Leu Glu Arg Glu Ala Ala Glu Phe Phe Ser Ser Gly Ala Val  
 595 600 605

Thr Val Arg Gln Ile Thr Leu Thr Arg Thr Thr Ala Val Leu Lys Leu  
 610 615 620

Leu Asp Asp Ile Arg Pro His Ala Val Arg Leu Val Asp Ala Trp Ala  
 625 630 635 640

Ile Pro Asp Trp Gln Leu Asp Ser Ser Leu Gly Arg Tyr Asp Gly Lys  
 645 650 655

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

Glu Leu Val Phe Asp Pro Tyr Pro Trp Asn Ser Ala Leu Leu Lys Asn  
675 680 685

Glu Pro Ala Lys Ser Lys Leu  
690 695

<210> 76  
<211> 542  
<212> PRT  
<213> Penicillium chrysogenum

<400> 76

Met Ala Lys Thr Phe Ser Lys Glu Asp Val Ala Ser His Ser Lys Gly  
1 5 10 15

Asp Ser Pro Trp Ile Ile Ile Asp Glu Asp Val Tyr Asp Val Ser Lys  
20 25 30

Phe Gln Glu Glu His Pro Val Leu Gln Arg Val Ala Gly Lys Asp Ala  
35 40 45

Ser Lys Gln Phe Trp Lys Tyr His Asn Glu Gly Ile Leu Lys Lys Tyr  
50 55 60

Lys Gly Gln Leu Gln Ile Gly Ser Leu Asp Thr Lys Lys Ala Ala Pro  
65 70 75 80

Ala Pro Pro Thr Pro Ala Pro Ala Pro Lys Lys Ala Ala Pro Glu Pro  
85 90 95

Lys Ser Thr Ala Ser Ser Ser Ser Val Thr Pro Pro Ala Thr Gly Ala  
100 105 110

Pro Gln Asp Pro Tyr Gly Glu Leu Ile Pro Phe Ala Asp Pro Ser Trp  
115 120 125

Tyr Gln Gly Tyr Ala Ser Pro Tyr Phe Asn Glu Ser His Ala Ala Leu  
130 135 140

Arg Asp Glu Val Arg Gln Trp Val Glu Ser Glu Ile Glu Pro Tyr Val  
145 150 155 160

Thr Glu Trp Asp Glu Ala Lys Glu Val Pro Ala His Ile Tyr Lys Gln  
165 170 175

Met Gly Glu Arg Gly Tyr Leu Ala Gly Leu Leu Gly Val His Phe Pro  
180 185 190

Glu Lys His Thr Pro His Arg Val Lys Ser Val Ser Pro Asp Arg Trp  
195 200 205

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

Ser Gly Gly Leu Val Trp Ser Leu Ile Gly Gly Tyr Gly Ile Gly Cys  
225 230 235 240

Pro Pro Leu Val Lys Phe Gly Lys Lys Pro Leu Val Asp Arg Ile Leu  
245 250 255

Pro Gly Ile Leu Ala Gly Asp Lys Arg Ile Cys Leu Ala Ile Thr Glu  
260 265 270

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

Thr Glu Asp Gly Lys His Tyr Ile Val Asn Gly Glu Lys Lys Trp Ile  
290 295 300

Thr Asn Gly Ile Tyr Ser Asp Tyr Phe Thr Thr Ala Val Arg Thr Gly  
305 310 315 320

Lys Asp Gly Met Asn Gly Leu Ser Val Leu Leu Ile Glu Arg Glu Ala  
325 330 335

Gly Gly Val Ser Thr Arg Arg Met Asp Cys Gln Gly Val Trp Ser Ser  
340 345 350

Gly Thr Thr Tyr Val Thr Phe Glu Asp Val Lys Val Pro Val Glu Asn  
355 360 365

Leu Ile Gly Lys Glu Asn Gln Gly Phe Lys Val Ile Met Thr Asn Phe  
370 375 380

Asn His Glu Arg Ile Gly Ile Val Ile Gln Cys Val Arg Phe Ser Arg  
385 390 395 400

Val Cys Tyr Glu Glu Ser Met Lys Tyr Ala His Lys Arg Lys Thr Phe  
405 410 415

Gly Lys Arg Leu Ile Asp His Pro Val Ile Arg Met Lys Leu Ala His  
420 425 430

Met Ala Arg Gln Ile Glu Ala Thr Tyr Asn Trp Leu Glu Asn Ile Ile  
435 440 445

Phe Gln Cys Gln Ser Met Glu Asp Thr Glu Ala Met Leu Lys Leu Gly  
450 455 460

Gly Ala Ile Ala Gly Leu Lys Ala Gln Ser Thr Gln Cys Phe Glu Phe  
465 470 475 480

Cys Ala Arg Glu Ala Ser Gln Ile Phe Gly Gly Leu Ser Tyr Ser Arg  
485 490 495

Gly Gly Gln Gly Gly Lys Ile Glu Arg Leu Tyr Arg Asp Val Arg Ala  
500 505 510

Tyr Ala Ile Pro Gly Gly Ser Glu Glu Ile Met Leu Asp Leu Ser Met  
515 520 525

Arg Gln Ser Leu Arg Val His Gly Met Phe Gly Met Lys Leu  
530 535 540

<210> 77

<211> 438

<212> PRT

<213> *Penicillium chrysogenum*

<400> 77

Met Ala Asp Thr Leu Arg Pro Ala Thr Ala Pro Tyr Ser Glu Pro Leu  
1 5 10 15

Leu Pro Gln Leu Asp Val Arg Asn Pro Tyr Tyr Thr Asp Leu His His  
20 25 30

Asn Leu Arg Ala Thr Val Arg Glu Tyr Val Asp Thr Tyr Ile Ser Pro

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

Asn Pro Glu Arg Leu Ala Leu Ala Cys Ala Ser Leu Arg Leu Ala Arg  
 275 280 285

Val Cys Ala Glu Asp Ala Tyr Asn Tyr Ala Ile Lys Arg Glu Thr Phe  
 290 295 300

Gly Ser Ala Leu Ile Glu Lys Gln Ala Ile Gln Ser Lys Ile Phe Lys  
 305 310 315 320

Phe Gly Leu Met Ile Glu Pro Ala Tyr Ala Phe Met Glu Gln Leu Val  
 325 330 335

Asn Ile Leu Glu Leu Thr Lys Asp Arg Pro Ser Asp Asp Val Asn Ile  
 340 345 350

Gly Gly Met Thr Ala Leu Leu Lys Val Met Ser Thr Arg Ala Leu Glu  
 355 360 365

Lys Ser Val Arg Glu Ala Gln Gln Ile Met Gly Gly Ala Gly Tyr Asn  
 370 375 380

Lys Ala Gly Lys Gly Ala Arg Ile Glu Gln Ile Ser Arg Asp Ala Arg  
 385 390 395 400

Val His Val Val Gly Gly Gly Ser Glu Glu Ile Met Ala Gly Leu Ala  
 405 410 415

Leu Arg Glu Glu Thr Lys Ala Ile Arg Thr Arg Arg Lys Ala Leu Glu  
 420 425 430

Lys Arg Gln Ser Lys Val  
 435

<210> 78  
 <211> 453  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 78

Met Asn Phe Asp Leu Pro Ala Asp Leu Lys Thr His Leu Glu Ser Ile  
 1 5 10 15

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

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                245                250                255

Glu Ser Ala Val Leu Gly Ser Ile Asp Gln Gly Leu Ala Ile Ala Gln
                260                265                270

Thr Phe Val His Glu Asn Arg Ile Arg Gln Ala Ala Ser Ser Cys Gly
                275                280                285

Ala Ala Arg Tyr Cys Leu Asp Arg Ser Ile Asp Arg Ala Arg Ala Arg
                290                295                300

Lys Ile Trp Gly Glu Gly Lys Ser Leu Ala Asp Asn Gln Ala Ile Gln
305                310                315                320

Phe Pro Val Val Glu Leu Met Thr Gln Val Glu Met Leu Arg Leu Phe
                325                330                335

Ile Leu Lys Thr Ser Trp Glu Met Asp Arg Ile Val Ala Glu Cys Gln
                340                345                350

Ser Ser Lys Ala Gln Arg Ala Pro Trp Val Glu Ile Glu Gly Arg Leu
                355                360                365

Ser Asp Gln Val Ala Met Cys Asn Phe Trp Ala Asn Arg Leu Cys Cys
                370                375                380

Gln Ala Ala Asp Arg Ala Ile Gln Ile His Gly Gly Asp Gly Tyr Ser
385                390                395                400

Arg His Tyr Pro Phe Glu His Ile Tyr Arg His Phe Arg Arg Tyr Arg
                405                410                415

Ile Thr Glu Gly Ala Glu Glu Ile Gln Met Arg Lys Ile Gly Ala Tyr
                420                425                430

Ile Phe Gly Phe Ala Gly Pro Lys Lys Arg Glu Met Lys His Glu His
                435                440                445

Ser Lys Ala Arg Ile
                450

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<210> 79
<211> 441

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&lt;212&gt; PRT

<213> *Penicillium chrysogenum*

&lt;400&gt; 79

Met Ala Tyr Asn Ser Pro Asn Pro Ile Pro Phe Ser Glu Pro Pro Tyr  
 1 5 10 15

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

Gln Gln Ala Cys Arg Lys Phe Ala Thr Glu Asn Leu Ile Gln His Ala  
 35 40 45

Leu Glu Trp Glu Arg Glu Gly Thr Val Pro Glu His Val Phe His Thr  
 50 55 60

Phe Cys Lys His Asn Met Leu Leu Pro Asn Met Pro Ala Pro Leu Pro  
 65 70 75 80

Val Asp Trp Leu Lys Arg Leu Gly Ile Asn Asp Ile Leu Gly Val Lys  
 85 90 95

Val Glu Asp Trp Asp Tyr Ile Tyr Thr Gly Ile Tyr Cys Asp Glu Met  
 100 105 110

Ala Arg Ser Gly Leu Ser Gly Pro Ser Gly Ser Leu Asn Ala Gly Phe  
 115 120 125

Ala Phe Gly Ile Ala Pro Ile Tyr Lys Phe Gly Ser Thr Glu Leu Gln  
 130 135 140

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

Ala Ile Thr Glu Pro Glu Ala Gly Ser Asp Val Ala Asn Ile Thr Thr  
 165 170 175

Thr Ala Val Lys Ser Ala Asp Gly Gln His Tyr Ile Leu Asn Gly Ser  
 180 185 190

Lys Lys Trp Ile Thr Asn Gly Ile Trp Ser Asp Tyr Ala Thr Met Ala  
 195 200 205

Val Arg Thr Gly Gly Pro Gly Ala Ala Gly Leu Ser Val Leu Val Val  
210 215 220

Pro Leu Lys Gly His Pro Gly Val Ser Met Arg Arg Leu Lys Val Ser  
225 230 235 240

Gly Gln Ile Thr Gly Gly Thr Thr Tyr Ile Glu Leu Asp Asp Val Lys  
245 250 255

Val Pro Val Ser Asn Ile Ile Gly Lys Glu Gly Asp Gly Met Arg Ile  
260 265 270

Ile Met Thr Asn Phe Asn His Glu Arg Leu Val Ile Ala Val Gly Val  
275 280 285

Thr Arg Gln Ala Arg Val Ala Leu Ser Ala Ala Phe Ser Tyr Cys Leu  
290 295 300

Lys Arg Glu Ala Phe Gly Lys Thr Leu Met Asp Gln Pro Val Val Arg  
305 310 315 320

His Arg Leu Ala Lys Ala Gly Ala Glu Leu Glu Ser Met Trp Ala Trp  
325 330 335

Val Glu Gln Ile Leu Tyr Gln Leu Val His Leu Ser Lys Glu Glu Gly  
340 345 350

Asp Arg Gln Leu Gly Gly Leu Thr Ala Leu Ala Lys Ala Lys Ser Ala  
355 360 365

Met Val Leu Asn Glu Cys Ala Gln Thr Ala Val Leu Leu Phe Gly Gly  
370 375 380

Asn Gly Phe Thr Lys Thr Gly Gln Gly Glu Leu Val Glu Ala Ile Leu  
385 390 395 400

Arg Asp Val Pro Gly Ala Arg Ile Pro Gly Gly Ser Glu Asp Val Leu  
405 410 415

Leu Asp Leu Ser Val Arg Gln Leu Val Lys Leu Tyr Gln Ala Glu Glu  
420 425 430

Lys Lys Leu Ser Lys Asn Ala Lys Ile

435

440

&lt;210&gt; 80

&lt;211&gt; 439

&lt;212&gt; PRT

<213> *Penicillium chrysogenum*

&lt;400&gt; 80

Met Tyr Arg Ser Gln Ile Gln Arg Ala Leu Arg Ser Gln Trp Pro Ala  
 1 5 10 15

Leu Arg Gln Leu Gln Cys Arg Thr Gly Leu Ser Pro Arg Ala Arg Ala  
 20 25 30

Ala Phe Ser Thr Ser Gly Arg Arg Asp Ile Met Gly Met Thr Gly Phe  
 35 40 45

Thr Asp Glu Gln Leu Thr Val Arg Glu Ala Ile Ser His Ile Cys Ser  
 50 55 60

Arg Phe Pro Asn Thr Tyr Trp Gln Glu Arg Asp Gln Gln Glu Lys Asp  
 65 70 75 80

Pro Lys Glu Phe His Ala Ala Leu Ala Lys Asp Gly Trp Leu Gly Ile  
 85 90 95

Ala Leu Pro Glu Ser Leu Gly Gly Ala Gly Leu Gly Ile Ser Glu Ala  
 100 105 110

Thr Met Met Met Gln Thr Ile Thr Gln Ser Gly Ala Gly Met Ala Gly  
 115 120 125

Ala Gln Ala Ile His Ala Asn Val Tyr Ala Thr Gln Pro Leu Ala Lys  
 130 135 140

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

Gly Thr Trp Arg Thr Cys Phe Gly Val Thr Glu Pro Asn Thr Gly Leu  
 165 170 175

Glu Thr Leu Lys Leu Thr Thr Leu Ala Ser Lys Thr Asp Asp Gly Tyr  
 180 185 190

Ser Val Thr Gly Gln Lys Ile Trp Ile Thr Cys Ala Gln Val Ala Ser  
 195 200 205

Lys Met Ile Leu Leu Ala Arg Thr Thr Pro Leu Glu Glu Val Lys Lys  
 210 215 220

Ser Ser Glu Gly Leu Ser Leu Phe Cys Ile Asp Ile Asp Arg Glu Asn  
 225 230 235 240

Pro Gly Leu Asp Leu Arg Lys Ile Lys Lys Met Gly Gly Arg Ala Val  
 245 250 255

Asp Ala Asn Glu Val Phe Phe Asp His Tyr Lys Ile Pro Ala Asn Thr  
 260 265 270

Leu Ile Gly Glu Glu Asn Gln Gly Phe Lys Ile Ile Leu His Gly Met  
 275 280 285

Asn Ala Glu Arg Cys Leu Leu Ala Gly Glu Ala Leu Gly Leu Gly Tyr  
 290 295 300

Ala Ala Leu Glu Lys Ala Ser Gln Tyr Ala Lys Asp Arg Val Val Phe  
 305 310 315 320

Gly Arg Pro Ile Gly Gln Asn Gln Gly Val Ala His Pro Leu Ala Asp  
 325 330 335

Ala Phe Met Lys Leu Glu Ala Ala Lys Leu Ala Thr Tyr His Ala Ala  
 340 345 350

Arg Leu Tyr Asp Thr Asn Asp Gly Ser Val Pro Phe His Glu Ile Gly  
 355 360 365

Val Ala Cys Asn Ser Ala Lys Tyr Leu Ala Ala Glu Ala Ala Phe Thr  
 370 375 380

Ala Cys Glu Arg Ala Val Leu Ala His Gly Gly Met Gly Tyr Ala Val  
 385 390 395 400

Glu Tyr Asp Val Glu Arg Tyr Met Arg Glu Cys Phe Val Pro Arg Ile  
 405 410 415

Ala Pro Val Ser Arg Glu Met Ile Leu Asn Tyr Val Ser Glu Lys Val  
 420 425 430

Leu Asp Leu Pro Arg Ser Tyr  
 435

<210> 81  
 <211> 446  
 <212> PRT  
 <213> *Penicillium chrysogenum*

<400> 81

Met Ser Ala Ser Ser Arg Ile Pro Pro Ile Ala Gln Pro Phe Val Ser  
 1 5 10 15

Glu His Ala Lys Arg Thr Leu Asp Leu Val Glu Glu Phe Val Glu Lys  
 20 25 30

Asp Cys Ile Pro Ala Asp Thr Val Phe Ser Ala Gln Leu Gly Glu Gly  
 35 40 45

Glu Lys Arg Trp Thr Thr Thr Pro Thr Val Leu Glu Gly Leu Lys Glu  
 50 55 60

Lys Ala Lys Lys Leu Gly Leu Trp Asn Met Phe Leu Pro Lys Asn His  
 65 70 75 80

Phe Thr Gln Gly Ala Gly Phe Ser Asn Leu Glu Tyr Gly Leu Met Ala  
 85 90 95

Glu Leu Leu Gly Lys Ser Lys Val Ala Ser Glu Ala Thr Asn Asn Ala  
 100 105 110

Ala Pro Asp Thr Gly Asn Met Glu Val Phe Ala Lys Tyr Gly Asn Asp  
 115 120 125

Ala Gln Lys Lys Gln Trp Leu Ala Pro Leu Leu Glu Gly Lys Ile Arg  
 130 135 140

Ser Ala Phe Leu Met Thr Glu Pro Asp Val Ala Ser Ser Asp Ala Thr  
 145 150 155 160

Asn Ile Glu Leu Asn Ile Arg Arg Glu Gly Asn Glu Tyr Val Leu Asn  
 165 170 175

Gly Ser Lys Trp Trp Ser Ser Gly Ala Gly Asp Pro Arg Cys Ala Ile  
 180 185 190

Tyr Leu Val Met Gly Lys Thr Asp Pro Thr Asn Pro Asp Thr Tyr Lys  
 195 200 205

Gln Gln Ser Val Ile Leu Val Pro Ala Gly Leu Pro Gly Ile Thr Val  
 210 215 220

His Arg Met Leu Thr Val Tyr Gly Tyr Asp Asp Ala Pro His Gly His  
 225 230 235 240

Gly His Ile Thr Phe Lys Asp Val Arg Val Pro Ala Ser Asn Met Val  
 245 250 255

Leu Gly Glu Gly Arg Gly Phe Glu Ile Ile Gln Gly Arg Leu Gly Pro  
 260 265 270

Gly Arg Ile His His Ala Met Arg Ala Ile Gly Ala Ala Glu Arg Ala  
 275 280 285

Leu Glu Trp Leu Ile Ala Arg Val Asn Asp Glu Arg Lys Met Thr Phe  
 290 295 300

Gly Lys Pro Leu Val Ala His Gly Val Ile Leu Glu Trp Ile Ala Lys  
 305 310 315 320

Ser Arg Ile Glu Val Asp Ala Ala Arg Leu Ile Val Leu Asn Ala Ala  
 325 330 335

Ile Lys Ile Asp Gln Gly Asp Ala Lys Ser Ala Leu Lys Glu Ile Ala  
 340 345 350

Gln Ala Lys Val Leu Val Pro Gln Thr Ala Leu Thr Ile Ile Asp Arg  
 355 360 365

Ala Val Gln Ala Tyr Gly Ala Ala Gly Val Cys Gln Asp Thr Pro Leu  
 370 375 380

Ala Tyr Leu Trp Ala Gly Ile Arg Thr Leu Arg Ile Ala Asp Gly Pro  
 385 390 395 400

Asp Glu Val His Leu Gln Gln Leu Gly Lys Arg Glu Asn Lys Ala Arg  
 405 410 415

Lys Asp Ala Val Thr Ala Lys Leu Asn Trp Gln Arg Glu Glu Ala Asp  
 420 425 430

Arg Leu Leu Ala Ala Ser Gly Phe Lys Pro Lys Ser His Leu  
 435 440 445

<210> 82  
 <211> 513  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 82

Met Pro Ser Glu Thr Leu Thr Arg Ala Glu Val Ala Lys His Asn Thr  
 1 5 10 15

Glu Asp Ser Leu Trp Cys Ile Ile Asp His Gln Val Tyr Asp Leu Thr  
 20 25 30

Asp Phe Val Asp Ala His Pro Gly Gly Gly Val Val Leu Ala Gln Val  
 35 40 45

Ala Gly Lys Asp Ala Thr Ser Asp Phe Tyr Asn Leu His Arg Gln Glu  
 50 55 60

Val Leu Glu Lys Tyr Arg Asp Gln Leu Cys Ile Gly Val Val Glu Gly  
 65 70 75 80

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

Pro Tyr Ala Glu Pro Leu Trp Leu Arg Pro Gln Phe Lys Ser Pro Tyr  
 100 105 110

Tyr Lys Glu Thr His Arg Asn Leu Gln Lys Ala Ile Arg Glu Phe Thr  
 115 120 125

Asp Lys Tyr Val Thr Pro Glu Ala Gln Glu Lys Glu Gln Asp Gly Ser  
 130 135 140

Tyr Ile Ser Gln Glu Leu Ile Asn Arg Met Ala Glu Thr Asn Ile Leu

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



Gln Arg Ile Val Phe Gly Lys Lys Leu Ile Glu Gln Pro Val Ile Arg  
 385 390 395 400

Gln Lys Ile Ala Arg Met Ile Ser Leu Ala Glu Ser Asn Gln Ala Trp  
 405 410 415

Leu Glu Ser Ile Ala Tyr Gln Met Cys Asn Met Thr Tyr Ala Gln Gln  
 420 425 430

Ala Lys Leu Leu Gly Gly Pro Ile Gly Leu Leu Lys Ser His Cys Thr  
 435 440 445

Gln Ala Ala Gly Glu Ile Ala Ser Leu Ala Thr Asn Ile Phe Gly Gly  
 450 455 460

Arg Gly Leu Thr Gln Ser Gly Met Gly Lys Val Ile Glu Met Phe His  
 465 470 475 480

Arg Thr Tyr Lys Phe Asp Ala Ile Leu Gly Gly Thr Glu Glu Ile Leu  
 485 490 495

Ala Asp Leu Gly Val Arg Gln Ala Met Lys Asn Phe Pro Lys Ser Met  
 500 505 510

Leu

<210> 83  
 <211> 436  
 <212> PRT  
 <213> *Penicillium chrysogenum*

<400> 83

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

Val Arg Leu Ala Gly Lys Arg Leu Ala Ala Gly Arg Pro Val Gln Ser  
 20 25 30

Ala Tyr Ala Phe Ser Thr Thr Pro Arg Arg Arg Glu Val Asp Leu Ser  
 35 40 45

Glu Leu Thr Pro Thr Pro Ile Thr Leu Leu Ser Glu Thr Glu Ser Leu  
50 55 60

Met Ala Asp Ser Val Ser Lys Phe Ala Val Glu Gln Ile Gly Pro Lys  
65 70 75 80

Val Arg Glu Met Asp Glu Ala Glu Thr Met Asp Ala Lys Val Val Glu  
85 90 95

Gln Leu Phe Glu Gln Gly Leu Met Gly Ile Glu Val Pro Glu Glu Phe  
100 105 110

Gly Gly Ala Gly Met Asn Phe Thr Ala Ala Ile Val Ala Ile Glu Glu  
115 120 125

Leu Ala Arg Val Asp Pro Ser Val Ser Val Leu Val Asp Val His Asn  
130 135 140

Thr Leu Val Asn Thr Ala Ile Met Lys Tyr Gly Asp Ala Lys Ala Gln  
145 150 155 160

Arg Thr Trp Leu Pro Lys Leu Thr Thr Gly Thr Val Gly Ser Phe Cys  
165 170 175

Leu Ser Glu Pro Ala Ser Gly Ser Asp Ala Phe Ala Leu Gln Thr Lys  
180 185 190

Ala Glu Lys Thr Ala Asp Gly Tyr Lys Leu Asn Gly Ser Lys Met Trp  
195 200 205

Ile Thr Asn Ser Met Glu Ala Gly Val Phe Ile Val Phe Ala Asn Ile  
210 215 220

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

Asp Thr Pro Gly Phe Ser Ile Ala Lys Lys Glu Lys Lys Leu Gly Ile  
245 250 255

Arg Ala Ser Ser Thr Cys Val Leu Asn Phe Asp Asp Cys Val Ile Pro  
260 265 270

Lys Ser Asn Leu Leu Gly Glu Glu Gly Gln Gly Tyr Lys Tyr Ala Ile

275                                      280                                      285  
 Ser Val Leu Asn Glu Gly Arg Ile Gly Ile Ala Ala Gln Met Thr Gly  
     290                                      295                                      300  
 Leu Ala Leu Gly Ala Trp Glu Asn Ala Ala Arg Tyr Val Trp Asn Asp  
     305                                      310                                      315                                      320  
 Arg Arg Gln Phe Gly Glu Leu Ile Gly Asn Phe Gln Gly Met Gln His  
                                     325                                      330                                      335  
 Gln Ile Ala Gln Ala Tyr Thr Glu Ile Ala Ala Ala Arg Ala Leu Val  
                                     340                                      345                                      350  
 Tyr Asn Ala Ala Arg Lys Lys Glu Ala Gly Gln Asp Phe Val Gln Asp  
                                     355                                      360                                      365  
 Ala Ala Met Ala Lys Leu Tyr Ala Ser Gln Val Ala Gly Arg Val Ser  
     370                                      375                                      380  
 Ser Ser Ala Val Glu Trp Met Gly Gly Met Gly Phe Val Arg Glu Gly  
     385                                      390                                      395                                      400  
 Ile Ala Glu Lys Met Phe Arg Asp Ser Lys Ile Gly Ala Ile Tyr Glu  
                                     405                                      410                                      415  
 Gly Thr Ser Asn Ile Gln Leu Gln Thr Ile Ala Lys Leu Leu Gln Lys  
                                     420                                      425                                      430  
 Gln Tyr Thr Asn  
     435  
  
 <210> 84  
 <211> 429  
 <212> PRT  
 <213> Penicillium chrysogenum  
  
 <400> 84  
 Met Ala Ser Leu Thr Leu Pro Ser Leu Leu Arg Thr Ser Thr Arg Ala  
     1                                      5                                      10                                      15  
 Val Arg Leu Asn Arg Thr Pro Ala Leu Thr Pro Cys Phe Arg Ser Ile  
     20                                      25                                      30

Ser Thr Lys His Pro Lys Gly Phe Ile Pro Pro Ser Glu Asp Asp Leu  
35 40 45

Leu Glu Leu Arg Glu Arg Val Gln Asp Phe Thr Arg Arg Glu Ile Pro  
50 55 60

Ala Asp Val Ala Ala Arg Thr Asp Glu Gln Asn Glu Phe Pro Ala Glu  
65 70 75 80

Met Trp Arg Lys Met Gly Asp Ala Gly Phe Leu Gly Val Thr Ala Asn  
85 90 95

Glu Glu Tyr Gly Gly Leu Gly Met Gly Tyr Gln Ala His Cys Val Val  
100 105 110

Met Glu Glu Ile Ser Arg Ala Ser Gly Ser Ile Gly Leu Ser Tyr Ala  
115 120 125

Ala His Ser Gln Leu Cys Val Asn Gln Leu Ser Leu Asn Gly Ser Thr  
130 135 140

Glu Gln Lys Glu Arg Ile Leu Pro Gly Leu Leu Ser Gly Glu Lys Val  
145 150 155 160

Gly Ala Leu Ala Met Ser Glu His Ser Ala Gly Ser Asp Val Val Ser  
165 170 175

Met Lys Thr Thr Ala Lys Glu Val Asp Gly Gly Trp Leu Leu Asn Gly  
180 185 190

Thr Lys Met Trp Ile Thr Asn Gly Pro Asp Ala Asp Tyr Ile Val Val  
195 200 205

Tyr Ala Lys Thr Glu Pro Glu Leu Gly Ser Lys Gly Ile Thr Ala Phe  
210 215 220

Leu Val Glu Lys Asp Phe Lys Gly Phe Ser Cys Ala Arg Lys Leu Asp  
225 230 235 240

Lys Leu Gly Met Arg Gly Ser Asn Thr Gly Glu Leu Ile Phe Glu Asp  
245 250 255

Val Phe Val Pro Arg Glu Asn Leu Leu Gly Glu Val Asn Arg Gly Val  
260 265 270

Arg Val Leu Met Glu Gly Leu Asp Leu Glu Arg Leu Val Leu Ser Ala  
275 280 285

Gly Pro Leu Gly Ile Met Gln Ala Ala Leu Asp Leu Val Leu Pro Tyr  
290 295 300

Thr His Val Arg Lys Gln Phe Gly Ala Pro Ile Ala His Asn Gln Leu  
305 310 315 320

Val Gln Gly Lys Leu Ala Asp Met Tyr Thr Lys Leu Ala Ala Ser Arg  
325 330 335

Ala Tyr Thr Tyr Ala Thr Ala Arg Gln Val Asp Asn Ala Ala Val Glu  
340 345 350

Pro Gly Glu Leu Thr Val Arg Thr Gln Asp Cys Ala Gly Ala Ile Leu  
355 360 365

Tyr Ala Ala Glu Arg Ala Thr Glu Cys Thr Leu Asp Ala Ile Gln Leu  
370 375 380

Met Gly Gly Ser Gly Tyr Ile Asn Glu Ile Pro Ala Gly Arg Leu Leu  
385 390 395 400

Arg Asp Ala Lys Leu Tyr Glu Ile Gly Ala Gly Thr Ser Glu Ile Arg  
405 410 415

Arg Met Val Ile Gly Arg Ala Phe Asn Lys Glu Tyr Ala  
420 425

<210> 85  
<211> 447  
<212> PRT  
<213> Penicillium chrysogenum

<400> 85

Met Asp Arg Glu Gly Lys Glu Glu Thr Glu Gly Glu Arg Leu Ser Gly  
1 5 10 15

Thr Ile Tyr Leu Trp Trp His His Val Met Ser Arg Asp Pro Pro Asn  
20 25 30

Ile Met Pro Pro Ala Ala Pro Val Lys Gly Phe Arg Arg Val Gly Ile  
                   35                                  40                                  45

Val Phe Ala Arg Leu Ile Val Ser Gly Glu Asp Arg Gly Ile Arg Pro  
       50                                  55                                  60

Phe Ile Thr Trp Leu Ser Asp Gly Glu His Met Cys Asp Gly Val Thr  
   65                                  70                                  75                                  80

Ala Lys Leu Leu Pro Arg Arg Ala Ala Ser Lys Pro Val Asp His Ala  
                                   85                                  90                                  95

Ile Thr Thr Phe Thr His Val Arg Leu Pro Lys Ser Ala Leu Leu Gly  
                   100                                  105                                  110

Ser Leu Asp Lys Pro Lys Asp Met Arg Lys Glu Phe Leu Ser Ser Ile  
           115                                  120                                  125

Trp Arg Ile Arg Val Gly Ser Val Ala Leu Pro Leu Gln Met Ile Ala  
       130                                  135                                  140

Gly Met Lys Arg Gly Val Phe Val Ala Gly Lys Tyr Ser Gln Arg Arg  
   145                                  150                                  155                                  160

His Ile Phe Gly Pro Asp Gln Lys Pro Lys Pro Ile Ile Ser Phe Arg  
                   165                                  170                                  175

Thr Gln His Gly Pro Ile Leu His Ala Leu Ala Gln Leu Ser Val Phe  
                   180                                  185                                  190

Asp Ala Tyr Ala Gln His Ser Ile Gln Tyr Phe Lys His Pro Asn Val  
       195                                  200                                  205

Ala Ala Pro Val Gln His Ala Ile Gly Ala Met Leu Lys Ala Val Leu  
       210                                  215                                  220

Tyr Lys Thr Ser Gln Ala Cys Leu Phe Thr Leu Ser Glu Arg Cys Gly  
   225                                  230                                  235                                  240

Ala Gln Gly Leu Phe Glu Asn Asn His Ile Ile Glu Ala Met Leu Glu  
                   245                                  250                                  255

Thr Arg Ala Met Ser Ile Ala Glu Gly Asp Thr Leu Val Leu Ser Ile  
 260 265 270

Arg Leu Thr Ser Glu Ile Leu Leu Asn Arg Tyr Asn Met Pro Pro Ala  
 275 280 285

Lys Asp Pro Thr Ser Leu Leu Ala Lys His Glu Gln Gly Leu Leu Asp  
 290 295 300

Glu Leu Arg Gly Met Thr Arg Thr Ile Ser Gly Gly His Arg Gly Glu  
 305 310 315 320

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

Met Gly His Arg Ile Ala Tyr Glu Ala Ala Ile Glu Ala Gly Val His  
 340 345 350

Ser Asp Leu Val Ala Leu Tyr Glu Ile Trp Val Ile Leu Gln Asn Gln  
 355 360 365

Gly Trp Phe Val Gln His Thr Ser Leu Thr Arg Glu Arg Met Phe Gln  
 370 375 380

Val Glu Ala Asp Arg Leu Ser Val Val Leu Pro Gln Leu Asp Thr Leu  
 385 390 395 400

Leu Asp Ala Thr Gly Ala Glu Pro Tyr Cys Ser Ala Pro Ile Ala Ser  
 405 410 415

Gln Ala Ser Trp Asp His Phe Val Asp Gln Leu Glu Thr Lys Thr Gly  
 420 425 430

Ser Arg Thr Thr Asn Ile Asp Leu Leu Arg Gly Gly Ala Met Leu  
 435 440 445

<210> 86  
 <211> 568  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 86

Met Gln Val Pro Thr Glu Ser Ser Leu Pro Leu Leu Ser Thr Pro Leu

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



Thr Gln Phe Leu Met Ala Ile Asn Arg Leu Gly Phe Gly Thr Leu Ser  
                   245                                  250                                  255

Leu Ser Leu Ser Ala Ile Pro Gly Leu Lys Cys Ala Val Leu Ile Ala  
                   260                                  265                                  270

Gly Lys Tyr Asn Leu Arg Arg Met Val His Gly Pro Glu Gly Ser Pro  
                   275                                  280                                  285

Lys Pro Ile Ile Ser Phe Arg Thr Gln Gln Leu Pro Ile Leu His Ala  
                   290                                  295                                  300

Leu Ala Glu Ser Ala Val Val Glu Pro Phe Ala Asn Trp Ile Thr Thr  
   305                                  310                                  315                                  320

Lys Phe Ser Asp Thr Ser Leu Asp Phe Ser Val Arg His Gly Leu Ala  
                   325                                  330                                  335

Val Ile Phe Lys Gly Ala Val Leu Gln Tyr Thr Gln Lys Ser Phe Ala  
                   340                                  345                                  350

Asn Leu Val Glu Arg Cys Gly Ala Gln Gly Val Phe Ile His Asn Gln  
                   355                                  360                                  365

Leu Val Glu Met Glu Ala Leu Asn Arg Cys Asn Gly Ile Ala Glu Gly  
   370                                  375                                  380

Glu Ile Ser Val Leu Cys Ile Arg Leu Ala Thr Glu Ile Leu Ile Gly  
   385                                  390                                  395                                  400

Arg Tyr Glu Ile Pro Asn Ala Ile Lys Pro Asn Ser Leu Ile Ala Lys  
                   405                                  410                                  415

His Glu Glu Gly Tyr Ile Ala Gly Leu Lys Lys Leu Leu Gly Thr Ile  
                   420                                  425                                  430

Glu Glu Gly His Arg Ser Glu Ala Tyr Asn Ser Arg Met Leu Pro His  
                   435                                  440                                  445

Cys Arg Ser Leu Ile Leu Ala Ile Gly His Arg Met Ala Tyr Glu Ala  
   450                                  455                                  460

Ala Val His Met Gly Val Asp Pro Asp Leu Leu Ala Leu Phe Glu Ala  
465 470 475 480

Gly Val Ile Lys Thr Asp Ser Ser Trp Tyr Val Glu Asn Leu Gly Leu  
485 490 495

Ser Arg Ala Asp Gln Phe Glu Met Glu Ser Lys Ala Ala Asp Ala Leu  
500 505 510

Val Pro Arg Val Gly Glu Leu Leu Asn Gly Leu Gly Thr Val Glu Pro  
515 520 525

Tyr Ile Thr Ala Pro Ile Leu Ser Ala Glu Arg Trp Glu Thr Phe Val  
530 535 540

Ala Gly Cys Glu Thr Ile Glu Gly Asp Ala Ser Cys Asp Ile Ile Asp  
545 550 555 560

Lys Glu Asp Met Arg Ala Lys Leu  
565

<210> 87  
<211> 424  
<212> PRT  
<213> *Penicillium chrysogenum*

<400> 87

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

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

Phe Leu Gln Ser Gln Asp Pro Asp Leu Ser Glu Ser Gln Arg Thr Val  
35 40 45

Arg Glu Ala Ile Ser Lys Ile Cys Ser Asp Phe Pro Asp Ser Tyr Trp  
50 55 60

Ala Gln Ile Asp Glu Ser His Gln Phe Pro Thr Glu Leu Tyr Glu Ala  
65 70 75 80

Leu Ala Arg Arg Gly Trp Leu Gly Ile Cys Leu Pro Gln Arg Tyr Gly



Ile Gln His Pro Leu Ala Asp Ser Trp Met Lys Leu Glu Ala Ala Arg  
                   325                  330                  335

Met Met Ile Tyr Gln Ala Ala Arg Leu Tyr Asp Gln Gly Tyr Thr Gly  
                   340                  345                  350

Gly Glu Tyr Ala Asn Ala Gly Lys Tyr Leu Ala Ala Glu Ala Ala Phe  
                   355                  360                  365

Glu Gly Cys Glu Arg Ala Ile Leu Thr His Gly Gly Met Gly Tyr Ala  
                   370                  375                  380

Lys Glu Tyr His Val Glu Arg Tyr Leu Arg Glu Val Phe Ile Pro Arg  
                   385                  390                  395                  400

Ile Ala Pro Val Ser Arg Glu Met Ile Leu Asn Tyr Ile Gly Glu Arg  
                   405                  410                  415

Val Leu Gly Leu Pro Arg Ser Tyr  
                   420

<210> 88  
 <211> 445  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 88

Met Gly Ala Thr Arg Val Glu Thr Lys Asp Phe Gly Ser Gln Ile Pro  
   1                  5                  10                  15

Tyr Ala Glu Pro Pro Trp Leu Cys Gly Leu Pro Ser Pro Tyr Ile Arg  
                   20                  25                  30

Asp Ser His Arg Lys Leu Gln Arg Ala Met Arg Asp Trp Val Glu Lys  
                   35                  40                  45

His Leu Thr Pro Trp His Leu Arg Thr Ser Ser Arg Thr Leu Gln Thr  
                   50                  55                  60

Gly Lys Lys Ser Ser Arg Leu Pro Gln Asp Leu Tyr Lys Ala Cys Ala  
   65                  70                  75                  80

Glu Ala Gly Ile Leu Met Pro Met Ala Ala Gly Ala Thr Ile Pro Gln  
85 90 95

Glu Trp Arg Asn Ser Tyr Pro Ile Met Gly Asp Ile Glu Ala Ser Glu  
100 105 110

Trp Asp Gly Phe His Asp Phe Ile Ile His Asp Glu Met Thr Arg Val  
115 120 125

Gly Gly Ile Gly Ile Pro Asn Gly Leu Ile Gly Gly Leu Val Gly His  
130 135 140

Arg Pro Ser Ala Tyr Gln His Ser Lys Asn Thr Ala Arg Val Gln Gln  
145 150 155 160

Leu Thr Gly Thr Ala Arg Leu Ala Ser Ser Met Ile Asn Val Ala Glu  
165 170 175

Ala Gly Ser Asp Val Gln Gly Ile Thr Thr Thr Ala Val Leu Ser Ala  
180 185 190

Asp Gly Thr Gln Tyr Thr Val Asn Gly Gln Lys Lys Trp Ile Thr Gly  
195 200 205

Gly Thr Tyr Ala Lys Tyr Phe Leu Thr Leu Thr Arg Thr Ala Asp Gln  
210 215 220

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

Pro Met Glu Met Cys Gly Ser Ala Cys Ala Gly Thr Ala Phe Val Glu  
245 250 255

Phe Asp Asp Thr Val Val Pro Val Thr Asn Arg Val Gly Glu Gln Gly  
260 265 270

Gly Gly Leu Ala Cys Val Met Ser Asn Phe Asn His Glu Arg Leu Phe  
275 280 285

Ile Ser Phe Gln Ala Met Arg Cys Ala Arg Met Cys Leu Glu Asp Ala  
290 295 300

Ile Ser His Ala Ile Thr Arg Glu Thr Phe Gly Gln Glu Leu Ala Ser

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<210>      89
<211>     1011
<212>      DNA
<213>    Penicillium chrysogenum
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<400>	89						
atgtccctcc	taacaaccta	cacaacccag	aacaccacca	aatagcaca	cctaacaatc		60
ttccacgccc	aaaaactaaa	ctctttaaca	acccccctcc	taacaagcct	aaccagacc		120
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 ccgaacccaa acaaagcata atactaacia acataccagg tccgactcgg tattccctcc 600  
 gtcgtcgaag cagcactcct accaggacta ataggctggg gccgtacaag acaactgcta 660  
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 gttgaggacg aggagcttga tttagctgtt ggggagtga cgtcggagat agggaggaat 780  
 gggccgcttg ctgtgcgcag acagaaggct ttgatttcga ggtgggagga gctttctctg 840  
 gcgggtggga tagaagctgg gattgaggct ttcggggagt gttttgatgg ggattgcggg 900  
 actgaaccgg ggaggatgat tggggagttt tttagggaga aggagaggtc gaaggcagg 960  
 attgaggctc ggaataaggt tgttgctggc agcaaggag aggaggggtg a 1011

<210> 90  
 <211> 935  
 <212> DNA  
 <213> *Penicillium chrysogenum*

<400> 90  
 atgacagaaa tcccaacttt ccacaatctc tccctcgaga ggcattggga tgtattcgtc 60  
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 cgggcctatc gcagcgtaga aaggattctg ggatccgatt cgggaaggggc agtaattacg 180  
 cgaggcaatg atgccaaatt ctggtgcact gtacattgaa cgaagcccta aaaccgaaca 240  
 aaatcggaag gactgacaga ataaccacca gggactcgag cttgatgaat cagacagcaa 300  
 cccctttgcc aatacagatg gcttctatcc agtgagaaca gtcctgagc cagcgttaaa 360  
 cagagacgct ggcataatcat atatgagacc gcactaacga ccaacacgca gctcatccac 420  
 acgatcctcg acttcccctt cccaactgtc gcccttttga cggggcacac cttcggcggt 480  
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 gaagcgtctg aagatgggat tgtggatgct gttgcggagc cggaggacat gctgaatgtt 720  
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 ccaagtcttc ctgactgaaa gaatgtctgc tgatgctgtg cagggtttat gctttgcttc 840  
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 gggtgacttc ggcgcctgct aaggtaaga tttga 935

<210> 91  
 <211> 1153  
 <212> DNA  
 <213> *Penicillium chrysogenum*

<400> 91  
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 cgactattcg caaacgaagg cgcaaaggtc gtagtcgccg atatcgactc cagtacgaga 180  
 cccataatta cacattgaca tctgtgtccct ttacaatacc gacatatcta acaaacaaac 240  
 agaaaaggcc aacgccgtcg ctgacgcgat caactccgca aaggccggcc gcgccctcgc 300  
 cgtcgtcggc gatgtcctcg atagcaacta catcaccgag ctggtaaaga aaaccgccga 360  
 gttcggcaat ggcaaaatcc acattatcgt gaacaatgcc gggttcacat gggatggtgt 420  
 tattcacaag gtgagacagg tctcggcttt aacatatact accagctagc agtgcactaa 480  
 caatccaaat tccccacaga tgacagacaa gcaatgggag accatgctag cagtgcacaa 540  
 caccgcgccc ttccagctcg tgcgcgcgcg agcgccctac ttccgagtga aagaccaaga 600  
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 cgaagtccca gtcccagccc cagtccccac tctttatctc tgccaacgcc caacactaag 720  
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 aggcaagcag cttgcgacta agaaggggtc cgcggaccag gagaagaagg ctgctccgac 1020  
 ttaccctgat attccgctgg gcagacctgc gacccccgag gaggctgcgc gggcagttct 1080  
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 gcggaatatg tag 1153

<210> 92  
 <211> 1162  
 <212> DNA  
 <213> *Penicillium chrysogenum*

<400> 92  
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gtatgccaca agctatatat acctgtgtag ataccataat ctaactatat ccaggaactc	180
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agcgactttc ggacaattgc actaactccg aaaccattag cattcaaact cactgatcag	300
gaggtgactg atttctatgc ccgccagaag gcagtccaca ttccaggcgt ccccgacttg	360
gaccatcgtc atggcgctcga tggccagcgt aagatcacga tcctgaagcc gctccctacc	420
actagtgcag gccgcaagtt tgagctgcgc aataagggtca ttggtgtcta tgataaaggc	480
aagcctggta ccgtcatcga gaccgagcag tctattgtgg ataaggagag cggcgagggtg	540
tacagcaagg tcgtgtctag cggtttcctg gtcggacagg gtggctgggg tggccgaag	600
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taccaagaat gacaagggtc gggttgtgtt gagcaatggc cgttgcctgt tgaaggtgac	1140
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<210> 93  
 <211> 2875  
 <212> DNA  
 <213> *Penicillium chrysogenum*

<400> 93	
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ctggcggtaa ggccgtcgcc aactacgaca gcgtcgagaa cggtgacgct atcatcgaga	300
ccgctattaa ggcctttggc cgcattgaca ttctgcttaa taatgctggg atcctacggg	360
atattagctt taagaacatg aaggatgccg actgggatct gatcaacaga gttcacacct	420

acggtgcata	caaggtgaga	atcctcggac	aaatacaaac	aagcctttga	agcagggact	480
gatagcccat	tctcttgata	gtgcgcaaga	gctgctggc	ctcacttccg	caaacaaaag	540
ttcggccgtg	ttattaacac	tgcctcggct	gctggctctat	ttggcagctt	cggccaggcc	600
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gccaaagtaca	acattattgc	caatgttatt	gccccattg	gtaagcaagc	tggaaacccc	720
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 caagaacctg aaggttcgct tcgcgggtgt tgtcctgcct ggccagacct tcaagactga 2760  
 gatgtggaag gagggcaaca ccgtcctctt ccaggccacc gtcgttgaga ctggcaagcc 2820  
 tgccatcacc ggcgcgggtg ccgagctctt ggaaggcgtc aaggccaagc tgtaa 2875

<210> 94  
 <211> 1104  
 <212> DNA  
 <213> *Penicillium chrysogenum*

<400> 94  
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 tcgaccccca agcccgtgt gggattgagt atgtaacatc tgtcaatata ctacaggacc 180  
 aattctcatt gctattatag ttacccttaa ccgccctaag gccctcaacg cactatgctc 240  
 tccattgttc aaggagctta atgaagccct gagcaactac gacaatgaca agagcatcgg 300  
 cgcgattatt ataactggaa gcgagaaggc ctttgccggg aggtacatgc tctacttgca 360  
 cttattcact atatcctttc cggctcactcc ctcggtccaa tccctaatat gcctcaacaa 420  
 tattaaccaa acaaaccgc agccggggcc gacatcaaag aaatggcccc tctaagcttc 480  
 tccgcgcct acagcgacaa cttcattgag ccctgggtccc acctcgccac ctccatccgc 540  
 accccagtca tcgccgcgt ctctggctac gccctcggcg gcggctgcga gctagccctg 600  
 atgtgcgaca tcctgtactg ctccgaaaat gccacgttcg gccagccgga gatcaagctc 660  
 ggcacgatcc ccggcgcagg cggtctcag cgctgacct gtgcgatcgg caagagcaag 720

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gccatggagc ttatccttac cggcaagaac ttcagcggta aggaggctgg tgagtggggt      780
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aagagtcagg agttgtcgct caaggagggt gttgagtatg agagacgggt gttccatgcg      960
ctctttggca gcaaggatca gaagattggg gagttgacac tttggtctgc tgaattactg     1020
ggtttgagat gtgggttgct aacgattatt ctaggtatga ctgcctttgc ggagaagaag     1080
aagcctgagt ggtcccatga atag                                             1104

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<210> 95
<211> 278
<212> PRT
<213> Penicillium chrysogenum

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<400> 95

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

```

```

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

```

```

Leu Leu Thr Ser Leu Thr Gln Thr Leu Ser Lys Leu Ser Asn Thr Asn
          35          40          45

```

```

Leu His Ala Ile Thr Leu Thr Gly Ala Gly Gln Lys Ser Phe Ile Gly
          50          55          60

```

```

Gly Ala Asp Leu Asn Glu Leu Ser Thr Leu Arg Asn Ala Pro Thr Ala
65          70          75          80

```

```

Arg Lys Phe Ile Thr Ser Val His Glu Thr Cys Thr Ala Ile Arg Thr
          85          90          95

```

```

Cys Pro Val Pro Val Ile Ala Arg Ile Asn Gly Phe Ala Leu Gly Ala
          100          105          110

```

```

Gly Leu Glu Ile Ala Ala Ala Cys Asp Leu Arg Val Ala Ala Lys Gly
          115          120          125

```

```

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

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Glu Ala Ala Leu Leu Pro Gly Leu Ile Gly Trp Gly Arg Thr Arg Gln  
145 150 155 160

Leu Leu Leu Leu Gly Gly Met Ile Ser Ala Ser Glu Ala Leu Arg Trp  
165 170 175

Gly Leu Val Glu Arg Val Val Glu Asp Glu Glu Leu Asp Leu Ala Val  
180 185 190

Ala Glu Trp Thr Ser Glu Ile Gly Arg Asn Gly Pro Leu Ala Val Arg  
195 200 205

Arg Gln Lys Ala Leu Ile Ser Arg Trp Glu Glu Leu Ser Leu Ala Gly  
210 215 220

Gly Ile Glu Ala Gly Ile Glu Ala Phe Gly Glu Cys Phe Asp Gly Asp  
225 230 235 240

Cys Gly Thr Glu Pro Gly Arg Met Ile Gly Glu Phe Phe Arg Glu Lys  
245 250 255

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

Ser Lys Gly Glu Glu Gly  
275

<210> 96  
<211> 244  
<212> PRT  
<213> Penicillium chrysogenum

<400> 96

Met Thr Glu Ile Pro Thr Phe His Asn Leu Ser Leu Glu Arg His Gly  
1 5 10 15

Asn Val Phe Val Leu Thr Met Gln Lys Pro Pro Glu Asn Arg Leu Asn  
20 25 30

Ser Ser Tyr Cys Gln Glu Met Ile Arg Ala Tyr Arg Ser Val Glu Arg  
35 40 45

Ile Leu Gly Ser Asp Ser Glu Gly Ala Val Ile Thr Arg Gly Asn Asp

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

Lys Val Lys Ile

<210> 97  
 <211> 300  
 <212> PRT  
 <213> Penicillium chrysogenum  
 <400> 97

Met Ala Pro Ser Asp Arg Leu Thr Gln Val Asn Glu His Leu Asn Tyr  
 1 5 10 15

Pro Ala Gly Leu Leu Ala Gly Gln Val Ala Ile Ile Thr Gly Ala Gly  
 20 25 30

Gln Gly Ile Gly Ala Glu Ala Ala Arg Leu Phe Ala Asn Glu Gly Ala  
 35 40 45

Lys Val Val Val Ala Asp Ile Asp Ser Lys Lys Ala Asn Ala Val Ala  
 50 55 60

Asp Ala Ile Asn Ser Ala Lys Ala Gly Arg Ala Leu Ala Val Val Gly  
 65 70 75 80

Asp Val Leu Asp Ser Asn Tyr Ile Thr Glu Leu Val Lys Lys Thr Ala  
 85 90 95

Glu Phe Gly Asn Gly Lys Ile His Ile Ile Val Asn Asn Ala Gly Phe  
 100 105 110

Thr Trp Asp Gly Val Ile His Lys Met Thr Asp Lys Gln Trp Glu Thr  
 115 120 125

Met Leu Ala Val His Asn Thr Ala Pro Phe Gln Leu Val Arg Ala Ala  
 130 135 140

Ala Pro Tyr Phe Arg Val Lys Asp Gln Glu Pro Arg Val Val Ile Asn  
 145 150 155 160

Ile Ser Ser Thr Ser Gly Val His Gly Asn Ala Gly Gln Ala Asn Tyr  
 165 170 175

Ala Val Ala Lys Ala Gly Val Val Gly Leu Thr Arg Thr Ile Ala Lys  
 180 185 190

Glu Trp Gly Pro Ser Phe Gly Val Arg Ser Asn Thr Ile Ala Phe Gly  
 195 200 205

Phe Val Thr Thr Arg Leu Thr Ala Ala Lys Glu Glu Gly Ala Phe Ile  
 210 215 220

Thr Thr Pro Asp Gly Thr Lys Val Ala Leu Gly Ile Pro Gly Lys Gln  
225 230 235 240

Leu Ala Thr Lys Lys Gly Ser Ala Asp Gln Glu Lys Lys Ala Ala Pro  
245 250 255

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

Ala Arg Ala Val Leu Gly Val Ala Ser Pro Trp Phe Ser Tyr Val Asn  
275 280 285

Gly Glu Thr Ile Arg Val Thr Gly Gly Arg Asn Met  
290 295 300

<210> 98  
<211> 327  
<212> PRT  
<213> Penicillium chrysogenum

<400> 98

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

Trp Gln Lys Arg Asp Val Leu Leu Phe Ala Asn Ser Ile Gly Val Lys  
20 25 30

Ala Asp Glu Leu His Phe Leu Tyr Glu Leu His Pro Asn Phe Ala Val  
35 40 45

Phe Pro Thr Tyr Ser Leu Ile Leu Arg Met Ser Lys Asn Thr Ser Asp  
50 55 60

Phe Arg Thr Ile Ala Leu Thr Pro Lys Pro Leu Ala Phe Lys Leu Thr  
65 70 75 80

Asp Gln Glu Val Thr Asp Phe Tyr Ala Arg Gln Lys Ala Val His Ile  
85 90 95

Pro Gly Val Pro Asp Leu Asp His Arg His Gly Val Asp Gly Gln Arg  
100 105 110

Lys Ile Thr Ile Leu Lys Pro Leu Pro Thr Thr Ser Ala Gly Arg Lys  
115 120 125



Phe Glu Leu Arg Asn Lys Val Ile Gly Val Tyr Asp Lys Gly Lys Pro  
 130 135 140

Gly Thr Val Ile Glu Thr Glu Gln Ser Ile Val Asp Lys Glu Ser Gly  
 145 150 155 160

Glu Val Tyr Ser Lys Val Val Ser Ser Gly Phe Leu Val Gly Gln Gly  
 165 170 175

Gly Trp Gly Gly Pro Lys Gly Pro Ser Thr Val Asn Tyr Ala Pro Pro  
 180 185 190

Glu Gly Arg Ala Pro Asp Ala Thr His Val Val Gln Ser Asn Ser Glu  
 195 200 205

Thr Ala His Leu Tyr Arg Leu Asn Gly Asp Tyr Asn Pro Leu His Ala  
 210 215 220

Thr Pro Glu Pro Gly Gln Lys Met Gly Phe Gly Gly Ile Ile Ile His  
 225 230 235 240

Gly Leu Phe Ser Trp Asn Ser Ala Ala His Gly Ile Leu Arg Glu Phe  
 245 250 255

Gly Gly Ser Asn Pro Ala Asn Met Lys Glu Phe Gln Ala Arg Phe Ala  
 260 265 270

Ser Pro Val Arg Pro Gly Asp Lys Leu Thr Thr Glu Ile Trp Arg Met  
 275 280 285

Gly Asn Ile Gln Asp Gly Tyr Glu Glu Ile Arg Phe Val Thr Lys Asn  
 290 295 300

Asp Lys Gly Arg Val Val Leu Ser Asn Gly Arg Cys Leu Leu Lys Val  
 305 310 315 320

Thr Gly Val Lys Ser Lys Leu  
 325

<210> 99  
 <211> 901  
 <212> PRT

<213> Penicillium chrysogenum

<400> 99

Met Ser Glu Leu Arg Phe Asp Asn Gln Thr Val Val Val Thr Gly Ala  
1 5 10 15

Gly Gly Gly Leu Gly Lys Ala Tyr Ala Leu Phe Phe Ala Ser Arg Gly  
20 25 30

Ala Asn Val Val Val Asn Asp Leu Gly Ala Ser His Lys Gly Glu Gly  
35 40 45

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

Gly Gly Lys Ala Val Ala Asn Tyr Asp Ser Val Glu Asn Gly Asp Ala  
65 70 75 80

Ile Ile Glu Thr Ala Ile Lys Ala Phe Gly Arg Ile Asp Ile Leu Leu  
85 90 95

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

Ala Asp Trp Asp Leu Ile Asn Arg Val His Thr Tyr Gly Ala Tyr Lys  
115 120 125

Cys Ala Arg Ala Ala Trp Pro His Phe Arg Lys Gln Lys Phe Gly Arg  
130 135 140

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

Ala Asn Tyr Ser Ala Ala Lys Leu Gly Gln Val Gly Phe Thr Glu Thr  
165 170 175

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

Pro Ile Ala Ala Ser Arg Met Thr Ala Thr Val Met Pro Pro Asp Val  
195 200 205

Leu Glu Asn Leu Lys Pro Asp Trp Val Val Pro Leu Val Ala Ala Leu



Tyr Gly Asn Phe Gly Gln Ala Asn Tyr Ala Ala Ala Lys Leu Gly Ile  
 450 455 460

Leu Gly Leu Ser Arg Thr Leu Ala Leu Glu Gly Ala Lys Tyr Asn Ile  
 465 470 475 480

Lys Val Asn Thr Ile Ala Pro Asn Ala Gly Thr Asn Met Thr Arg Thr  
 485 490 495

Ile Met Pro Glu Glu Met Val Gln Ala Phe Lys Pro Asp Tyr Val Ala  
 500 505 510

Pro Leu Val Val Leu Leu Cys Ser Asp Met Ala Pro Glu Pro Ser Thr  
 515 520 525

Lys Gly Leu Phe Glu Cys Gly Ser Gly Trp Phe Gly Arg Thr Arg Trp  
 530 535 540

Gln Arg Thr Gly Gly His Gly Phe Pro Val Asp Val Lys Leu Thr Pro  
 545 550 555 560

Glu Glu Val Val Arg Asn Trp Lys Gln Ile Ile Asn Phe Asp Asp Gly  
 565 570 575

Arg Ala Asp His Pro Glu Asp Gly Gln Ala Gly Ala Glu Lys Ile Met  
 580 585 590

Ala Asn Met Ser Asn Arg Val His Gly Asp Thr Ser Thr Glu Asn Glu  
 595 600 605

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

Pro Phe Asn Tyr Glu Asp Arg Asp Val Ile Leu Tyr Asn Leu Ser Leu  
 625 630 635 640

Gly Ala Lys Arg Thr Asp Leu Pro Leu Val Tyr Glu Asn Asn Asp Gln  
 645 650 655

Phe Gln Ala Leu Pro Ser Tyr Gly Val Val Pro Trp Phe Asn Thr Ala  
 660 665 670

Thr Pro Trp Asn Met Asp Asp Leu Val Lys Asp Phe Ser Pro Met Met  
675 680 685

Leu Leu His Gly Glu Gln Tyr Met Glu Val Arg Lys Phe Pro Ile Pro  
690 695 700

Thr Thr Ala Asn Thr Leu Thr Tyr Pro Lys Leu Ile Asp Val Ile Asp  
705 710 715 720

Lys Gly Asn Ala Ala Ile Val Val Ala Gly Tyr Thr Thr Lys Asp Ala  
725 730 735

Lys Thr Gly Glu Asp Leu Phe Tyr Asn Glu Ser Ser Val Phe Ile Arg  
740 745 750

Gly Ser Gly Gly Phe Gly Gly Ser Pro Lys Pro Thr Ala Val Arg Pro  
755 760 765

Lys Ala Ala Thr Ala Ala Tyr Lys Ala Pro Gln Arg Gln Pro Asp Ala  
770 775 780

Val Val Glu Glu Lys Thr Ser Glu Asp Gln Ala Ala Leu Tyr Arg Leu  
785 790 795 800

Asn Gly Asp Arg Asn Pro Leu His Ile Asp Pro Glu Phe Ser Lys Val  
805 810 815

Gly Gly Phe Lys Thr Pro Ile Leu His Gly Leu Cys Ser Leu Gly Val  
820 825 830

Ser Ala Lys Ala Val Phe Ser Lys Tyr Gly Pro Tyr Lys Asn Leu Lys  
835 840 845

Val Arg Phe Ala Gly Val Val Leu Pro Gly Gln Thr Leu Lys Thr Glu  
850 855 860

Met Trp Lys Glu Gly Asn Thr Val Leu Phe Gln Ala Thr Val Val Glu  
865 870 875 880

Thr Gly Lys Pro Ala Ile Thr Gly Ala Gly Ala Glu Leu Leu Glu Gly  
885 890 895

Ala Lys Ala Lys Leu  
900

<210> 100  
<211> 293  
<212> PRT  
<213> *Penicillium chrysogenum*

<400> 100

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Pro Leu Thr Ser Tyr Leu Ala Arg Val Arg Gly Tyr Ser Ser Ala Ala  
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Gly Ser Tyr Glu His Ile Leu Thr Ser Thr Pro Lys Pro Gly Val Gly  
35 40 45

Leu Ile Thr Leu Asn Arg Pro Lys Ala Leu Asn Ala Leu Cys Ser Pro  
50 55 60

Leu Phe Lys Glu Leu Asn Glu Ala Leu Ser Asn Tyr Asp Asn Asp Lys  
65 70 75 80

Ser Ile Gly Ala Ile Ile Ile Thr Gly Ser Glu Lys Ala Phe Ala Ala  
85 90 95

Gly Ala Asp Ile Lys Glu Met Ala Pro Leu Ser Phe Ser Ala Ala Tyr  
100 105 110

Ser Asp Asn Phe Ile Ala Pro Trp Ser His Leu Ala Thr Ser Ile Arg  
115 120 125

Thr Pro Val Ile Ala Ala Val Ser Gly Tyr Ala Leu Gly Gly Gly Cys  
130 135 140

Glu Leu Ala Leu Met Cys Asp Ile Leu Tyr Cys Ser Glu Asn Ala Thr  
145 150 155 160

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

Ser Gln Arg Leu Thr Arg Ala Ile Gly Lys Ser Lys Ala Met Glu Leu  
180 185 190

Ile Leu Thr Gly Lys Asn Phe Ser Gly Lys Glu Ala Gly Glu Trp Gly  
 195 200 205

Val Ala Ala Lys Val Val Pro Gly Gly Lys Glu Glu Leu Leu Glu Gln  
 210 215 220

Ala Tyr Lys Thr Ala Glu Thr Ile Ala Ser Tyr Ser Arg Val Ala Val  
 225 230 235 240

Val Ala Gly Lys Glu Val Val Asn Lys Ser Gln Glu Leu Ser Leu Lys  
 245 250 255

Glu Gly Val Glu Tyr Glu Arg Arg Leu Phe His Ala Leu Phe Gly Ser  
 260 265 270

Lys Asp Gln Lys Ile Gly Met Thr Ala Phe Ala Glu Lys Lys Lys Pro  
 275 280 285

Glu Trp Ser His Glu  
 290

<210> 101  
 <211> 1076  
 <212> DNA  
 <213> Penicillium chrysogenum

<400> 101  
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 ggccaaatgg tgtgtaactc ggaatataca accacgctgc aggtctaaca cttttcaggg 180  
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 aggacgtagc aaagcagcgt ctcaactcggg aggcagccga tgaagctcgt gggctaattt 420  
 ctacaagttt gacgctcgac ggtctctccg cagttgactt cgtcattgag gctgtgcctg 480  
 agatcccaga tctgaagaca aagatctttg ccagcttggc ccagatcgct ccgaagcatg 540  
 ccatcctcgc aacaaacacc tcctocatct ccataaccaa gatcgctgct gccaccagcg 600  
 cggacccac cgaccttcag gcttctctcc gggatgactc aaccacttc atgaacctg 660

ttcccatcca	gaagggtggt	gagattatct	gcgggctcca	aacatccgag	gagaccatgg	720
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ctggcttcct	cgccaaccgt	atcttgatgc	cttacattaa	cgaagccgtg	atctgtctgg	840
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ccatggggcc	ccttgctctg	gctgatttca	ttggcctcga	cacatgcctt	gcaatcatga	960
acgttcttca	ccaggacact	ggtgacagca	agtacagacc	tgctggctct	ctgcgtcgca	1020
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<210> 102

<211> 1008

<212> DNA

<213> *Penicillium chrysogenum*

<400> 102

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aactacgaat	cccagatccg	gagcacactc	ccctccctcc	tgcattgtcc	cgaatcaacc	180
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gccatccaaa	acgcaaacat	catccaagaa	cagagcccgg	aagtcacagc	ctcgaaacaa	300
gctctctgga	aggaagttgc	cggctctca	ggcccggatg	tccacttggt	gagtagttca	360
tctggaattt	cagcctcggg	acaagcatcc	gggtgtgagg	ccgcggaccg	tgttgctgag	420
cggttgctcg	tggcgcaccc	gttcaaccgc	ccgcatctga	tgcgccttat	tgaaatcgtg	480
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ctacacaagg	agattcccgg	gtttgtgggg	aatagacttg	cttttgact	gctgagggag	660
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cagactgaag	atgcctatgg	gccttatacc	cctgagacga	ggaagaagaa	agaggagatg	960
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<210> 103  
 <211> 855  
 <212> DNA  
 <213> *Penicillium chrysogenum*

<400> 103  
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 ctgtgctgaga aagcagtcga ctacggcggc gcagtgggct acgtccagga acacgaagcc 180  
 gagcaagccg ccaaacaacg cacggatccc ggccaactga aagcaacaaa caacctagaa 240  
 gaagccgtca gggacgcatg gatggtcacg gagggcgtcc cggagaaact ggagctgaag 300  
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 tcgtcgtcgc tgaagtccag ccagatgacg gtcaagacgg agaagaatta ccgtatctgc 420  
 aatggtcact actacatgcc gcctgagcag ttgttctttg aggttatggg gtgcggctac 480  
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 cgtgagattt tgcttgatc ggctgagggc gttagtgatg ctcataccat tgatgagatg 660  
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 gatactgtgt acaatattga ggctgtatat gccagcagc gtggcgtgga taccagggcc 780  
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<210> 104  
 <211> 1055  
 <212> DNA  
 <213> *Penicillium chrysogenum*

<400> 104  
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 ctgatggcaa acttcgtgat tatctgctaa agcattggtc agccataccc aatgccaagg 180  
 tgacacaaga ccaatacttg aacaacttca aattcgtcaa agatatcgac actcatcttg 240  
 gggatataga tttcatacaa gaagtgagtg ggccatcgca aaaggagctt agggttgctg 300  
 ctgatcgtcc tttcaatatt agaattggacc ggagaggcta gacttcaaac gccatctttt 360  
 cgctcatttg gacgcaaata ccccgagca cgtgggttatc gcacgtcat cctccggact 420

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cccttcacgc gaatttatca ctgaatgcac gaaaagcaca gcccgtattc tgatcgcca 480
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tgatgcgtac gccacagctg cgctcgagtt ctaccgatgc ctagggaaaag atccggtgct 600
cgtcaagaag gagacccccg ggtttattgc gaacaggctt caagccgctg tttgtgctga 660
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gtttgatgga atatgtgtgt cttggcctga ttctattaga caaaaccgtg acatctggcc 780
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accagcatga atttgacatc gattcccgag atgccgacgt tctcgaagat aaagtgaagg 960
attggatatc ccgtgtcaac ttgaaagaga ttgaagaaag acgggatgaa cttttggttg 1020
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<210> 105
<211> 1928
<212> DNA
<213> Penicillium chrysogenum

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<400> 105
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gttcgcgacc ctagcccca acaacgtgcc gactgtgtta cctacgtcga gggaaatgtt 240
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aagtccgttg tcggaaatgc ttggctcgtt attgaagctg tcccggagaa aatccagttg 360
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cagatcctga acatgcatta ttacatgcct ccgtcctgca tgattgttga acttatgacc 540
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gccgtcaagc gcgaggtcat gactattcta tcagaggag tctccattcc ggaggaaatt 720
gacgccatgt ggaaggagat gtttgtcaag ggtcgcgccc tcccttgcca gatgatggac 780
agtgagtaca gctccaactt gtcaattgog attgaaagct aaaattcatg tggctagacg 840

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tcggccttga taccgttgcg tttattgagg gtcactacat tcacgaacgc ggctgtctt	900
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ctaagaacgg tcacatttac atgaccgac ttgggtggcag catctaccag tgcgacctag	1860
aaggcaagaa gaagaaggtc atctactcog atgagactcg tgctttcact ggaattagtc	1920
tcctatag	1928

&lt;210&gt; 106

&lt;211&gt; 1135

&lt;212&gt; DNA

<213> *Penicillium chrysogenum*

&lt;400&gt; 106

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cgacctaaac agtgtgtgcc agagaacctg aagctaaagc gaaaagtgat cactgaactt 420  
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 gagatcctcg agggcatgag cttgaaaaat aacaaaagag ttatgagcgc gcaactgctgt 540  
 aggtgactat ccaatccaga tagaatactt cgctaatact ctgtcagatt ggccaccaga 600  
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 gtcagcaatt gaaatcatgg gccacaagga tagcgatcct aagctgattg ccctggtcct 720  
 ggaacaatgt aaagaacatg gtttctcacc tttctacgtc agagaaaact ctatcggtta 780  
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 gcccaaggaa attgatgcca ttttcaaaga cgtcctaaag acgcctaagg gccctgtga 960  
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 tcggagtggg attcctactg agccgcggga ctaccttcgg agaatgattc aaggtggaag 1080  
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<210> 107

<211> 1946

<212> DNA

<213> *Penicillium chrysogenum*

<400> 107

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 agctgacaaa attcttgctt taggatgtat ctgggcttca gccggcttcg acgtcaatat 180  
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 atcatactcc gccaaagacca accaagtccc cggatcattc gaagccgtcg aagatatgaa 300  
 acaagcgggt cgaaatgcct ggcttgtcat tgaagctgtt cccgagaagc tcgagctcaa 360  
 gatcgccact ttcgctgaat tggaggccct cgttcccgat gactgcatcc tggcttccaa 420  
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 aagtccatat gtcgcaagaa aggagtccac tggattcatc ttcaatcggc tgtgggtgtc 660  
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ttggtctgaa gttggattcc atcaattctt atatctatct cactgatcta ggtggatcta     1860
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<210> 108

<211> 2003

<212> DNA

<213> *Penicillium chrysogenum*

<400> 108

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ccggtggctc tccgcgatgc agaggactac atcgataaac acaaagtcga gttctccttg     180
atgccgcgca ttcaaaaagat gcgtgaagaa gataacgagg gcgaccctgg cgatcccaag     240

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ggtcagacct ccatttccca ggttgacctc gagtcgtata cggccgcgcc ctacggcaac	300
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gtgcctgaga tactgcggtt gaagattgac actttggcag acttgaaaa gtacgctccg	420
gccgattgtt acatcggctc caacagctcc tctatcaagt caaacttgat gcttgtcaag	480
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ccccgtcgt cgtcggccag aatctgctg acggtatcga cgtggcacta gagacgcagc	1260
gcatcttctg gacgaatatg ggccgcagca cggcagcatg tgatggctcc gtctggctcg	1320
ctgatatgga cggcggcgat gtgatgtgtg ttgtcaccgt tggccagggtg catacaccca	1380
agcagatctc ggttatcgag tcacgtaagc aggtttactt ctgcgaccgt gagggcttag	1440
gtgtgcaccg ctgtgatttt gatggcagta accacgttgt tctgggtcag cgccgtgcgg	1500
agccgggcat gagtctgttg gagcagatga ccctttggtg tgtgggtgtt gctatcgatg	1560
ccgagcgtgg tctcttgtag tggaccaga agggaccttg caaggctggg cttggtcaga	1620
tctactgcgc tggcttgggt attcctgccg gtgagactgc tgagaatcgg actgatatcc	1680
ggtgtctgtg gagccacctg cccgagocca ttgatactga gatagatagc gacactcgga	1740
ccctgtactg gacggaccgt ggtgagcacc ctttcggttg cacactgaat cgtgcctatg	1800
ttgggtgtga agagatagac tttgagaagg ttattctggc acgtcacttc cacgagccta	1860
ttggcttgaa gttggataag gcgaacaata ttgtgtatgt ggctgacctg ggtggtagct	1920
tgtactcggg atcgttgga gatggactca agactgagct tgtgcgcaac gatgtttgct	1980

acactgggttt ggctctcggtt tag

2003

<210> 109

<211> 319

<212> PRT

<213> *Penicillium chrysogenum*

<400> 109

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

Val Ala Arg Asn Phe Cys Ser Thr Ser Ala Val Arg Ala Ala Glu Val  
20 25 30

Lys Ser Leu Gly Val Val Gly Ala Gly Gln Met Gly Leu Gly Ile Ala  
35 40 45

Leu Val Ala Ala Gln Lys Ala Asn Val Pro Val Thr Leu Val Asp Thr  
50 55 60

Ser Gln Ala Ser Leu Asp Lys Gly Leu Lys Phe Ala Asp Lys Leu Leu  
65 70 75 80

Glu Lys Asp Val Ala Lys Gln Arg Leu Thr Arg Glu Ala Ala Asp Glu  
85 90 95

Ala Arg Gly Leu Ile Ser Thr Ser Leu Thr Leu Asp Gly Leu Ser Ala  
100 105 110

Val Asp Phe Val Ile Glu Ala Val Pro Glu Ile Pro Asp Leu Lys Thr  
115 120 125

Lys Ile Phe Ala Ser Leu Ala Gln Ile Ala Pro Lys His Ala Ile Leu  
130 135 140

Ala Thr Asn Thr Ser Ser Ile Ser Ile Thr Lys Ile Ala Ala Ala Thr  
145 150 155 160

Ser Ala Asp Pro Thr Asp Leu Gln Ala Ser Ser Arg Val Ile Ser Thr  
165 170 175

His Phe Met Asn Pro Val Pro Ile Gln Lys Gly Val Glu Ile Ile Arg  
180 185 190

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

Gln Arg Met Gly Lys Val Ala Ser Val Ser Ala Asp Thr Pro Gly Phe  
 210 215 220

Leu Ala Asn Arg Ile Leu Met Pro Tyr Ile Asn Glu Ala Val Ile Cys  
 225 230 235 240

Leu Glu Thr Gly Val Gly Gln Arg Glu Asp Ile Asp Asn Ile Met Lys  
 245 250 255

Thr Gly Thr Asn Val Pro Met Gly Pro Leu Val Leu Ala Asp Phe Ile  
 260 265 270

Gly Leu Asp Thr Cys Leu Ala Ile Met Asn Val Leu His Gln Asp Thr  
 275 280 285

Gly Asp Ser Lys Tyr Arg Pro Ala Gly Leu Leu Arg Arg Met Val Asp  
 290 295 300

Ala Gly Trp Leu Gly Lys Lys Ser Gly Lys Gly Phe Tyr Asp Tyr  
 305 310 315

<210> 110

<211> 335

<212> PRT

<213> *Penicillium chrysogenum*

<400> 110

Met Ala Thr Glu Tyr Pro His Arg Ile Ala Leu Leu Gly Leu Gly Thr  
 1 5 10 15

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

Ile Thr Val Tyr Asp Pro Arg Pro Asn Tyr Glu Ser Gln Ile Arg Ser  
 35 40 45

Thr Leu Pro Ser Leu Leu Asp Cys Pro Glu Ser Thr Thr Leu Ile Asp  
 50 55 60



Asp Leu Leu Arg Thr Ser Arg Leu Lys Leu Ala Ser Thr Val Ala Glu  
65 70 75 80

Ala Ile Gln Asn Ala Asn Ile Ile Gln Glu Gln Ser Pro Glu Val Thr  
85 90 95

Ala Ser Lys Gln Ala Leu Trp Lys Glu Val Ala Gly Leu Thr Gly Pro  
100 105 110

Asp Val His Leu Trp Ser Ser Ser Ser Gly Ile Ser Ala Ser Val Gln  
115 120 125

Ala Ser Gly Cys Glu Ala Ala Asp Arg Val Ala Glu Arg Leu Leu Val  
130 135 140

Ala His Pro Phe Asn Pro Pro His Leu Met Pro Leu Ile Glu Ile Val  
145 150 155 160

Pro Gly Pro Glu Thr Asn Pro Glu Arg Val Glu Phe Val Arg Lys Tyr  
165 170 175

Phe Gly Asp Val Pro Gly Pro Arg Ala Ser Gly Gly Asp Gln Ser Ala  
180 185 190

Ser Gln His Tyr Arg Pro Ile Thr Leu His Lys Glu Ile Pro Gly Phe  
195 200 205

Val Gly Asn Arg Leu Ala Phe Ala Leu Leu Arg Glu Ala Cys Tyr Leu  
210 215 220

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

Ala Ser Leu Gly Pro Arg Trp Ala Gly Ser Gly Val Phe Glu Ser Tyr  
245 250 255

His Ala Gly Gly Gly Glu Gly Gly Ile Gly Ala Phe Leu Gln Lys Leu  
260 265 270

Thr Pro Thr Ile Gln Asp Val Trp Gly Glu Leu Gly Gln Ile Asp Ile  
275 280 285

Gln Gly Glu Gln Thr Trp Lys Asp Val Val Val Lys Gln Thr Glu Asp

290                                      295                                      300  
 Ala Tyr Gly Pro Tyr Thr Pro Glu Thr Arg Lys Lys Lys Glu Glu Met  
 305                                      310                                      315                                      320  
  
 Leu Arg Asp Val Val Glu Leu Gln Lys Lys Lys Trp Gly Glu Leu  
                                     325                                      330                                      335  
  
 <210> 111  
 <211> 284  
 <212> PRT  
 <213> Penicillium chrysogenum  
  
 <400> 111  
 Met Pro Ser Ser Pro Trp Thr Lys Pro Asp Thr Ser Lys Arg Pro Ile  
 1                                      5                                      10                                      15  
  
 Ala Val Ile Gly Gly Gly Val Met Gly Arg Arg Ile Ala Met Met Trp  
                                     20                                      25                                      30  
  
 Ile Ala Ala Asn Phe Pro Val Met Leu Cys Glu Lys Ala Val Asp Tyr  
                                     35                                      40                                      45  
  
 Gly Gly Ala Val Gly Tyr Val Gln Glu His Glu Ala Glu Gln Ala Ala  
                                     50                                      55                                      60  
  
 Lys Gln Arg Thr Asp Pro Gly Glu Leu Lys Ala Thr Asn Asn Leu Glu  
 65                                      70                                      75                                      80  
  
 Glu Ala Val Arg Asp Ala Trp Met Val Ile Glu Ala Val Pro Glu Lys  
                                     85                                      90                                      95  
  
 Leu Glu Leu Lys Ile Asp Leu Phe Glu Gln Leu Asp Lys Leu Ala Pro  
                                     100                                      105                                      110  
  
 Pro Asp Cys Ile Ile Ala Ser Asn Ser Ser Ser Leu Lys Ser Ser Gln  
                                     115                                      120                                      125  
  
 Met Ile Val Lys Thr Glu Lys Asn Tyr Arg Ile Cys Asn Gly His Tyr  
                                     130                                      135                                      140  
  
 Tyr Met Pro Pro Glu Gln Leu Phe Phe Glu Val Met Gly Cys Gly Tyr  
 145                                      150                                      155                                      160

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

Gly Leu Ser Pro Val His Ala Lys Val Glu Ser Thr Gly Phe Val Phe  
 180 185 190

Asn Arg Ile Trp Ala Ser Leu Lys Arg Glu Ile Leu Leu Val Met Ala  
 195 200 205

Glu Gly Val Ser Asp Ala His Thr Ile Asp Glu Met Phe Lys Ser Trp  
 210 215 220

Phe Lys Ala Thr Lys Gly Pro Cys Leu Met Met Asp Thr Val Gly Leu  
 225 230 235 240

Asp Thr Val Tyr Asn Ile Glu Ala Val Tyr Ala Gln Gln Arg Gly Val  
 245 250 255

Asp Thr Arg Ala Met Asp Trp Leu Lys Glu Asn Phe Val Asp Lys Gly  
 260 265 270

Asn Leu Gly Ala Lys Ala Gly Lys Gly Leu Leu Gly  
 275 280

<210> 112  
 <211> 314  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 112

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

Ile Gly Ala Ser Trp Thr Ala Leu Phe Leu Ala Arg Gly Leu Lys Val  
 20 25 30

Ile Val Thr Asp Pro Ala Pro Gly Ala Asp Gly Lys Leu Arg Asp Tyr  
 35 40 45

Leu Leu Lys His Trp Ser Ala Ile Pro Asn Ala Lys Val Thr Gln Asp  
 50 55 60

Gln Tyr Leu Asn Asn Phe Lys Phe Val Lys Asp Ile Asp Thr His Leu

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

Leu Ile Arg Ser Lys Lys Glu Arg Ser Pro  
 305 310

<210> 113  
 <211> 596  
 <212> PRT  
 <213> *Penicillium chrysogenum*

<400> 113

Met Thr Leu Ser Trp Gln Ala Pro Thr Asp Tyr Val Asn Arg Pro Val  
 1 5 10 15

Ala Ile Leu Gly Ala Ala Cys Ile Trp Ala Ser Ala Gly Tyr Asp Val  
 20 25 30

Arg Val Arg Asp Pro Ser Pro Gln Gln Arg Ala Asp Cys Val Thr Tyr  
 35 40 45

Val Glu Gly Asn Val Ala Ser Tyr Ala Glu Lys Thr Gly Thr Ser Pro  
 50 55 60

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

Trp Leu Val Ile Glu Ala Val Pro Glu Lys Ile Gln Leu Lys Ile Asp  
 85 90 95

Thr Phe Ala Glu Leu Asp Ala Leu Thr Pro Ala Asp Cys Ile Leu Ala  
 100 105 110

Ser Asn Ser Ser Ser Tyr Lys Ser Ser Glu Met Leu Glu Lys Val Ser  
 115 120 125

Pro Ala Arg Lys His Gln Ile Leu Asn Met His Tyr Tyr Met Pro Pro  
 130 135 140

Ser Cys Met Ile Val Glu Leu Met Thr Asp Gly Phe Thr Ala Pro Glu  
 145 150 155 160

Ile Phe Pro Phe Leu Val Glu Arg Thr Lys Glu Gly Ala Thr Ser Pro  
 165 170 175

Tyr Val Ala Arg Lys Glu Ser Thr Gly Phe Ile Phe Asn Arg Leu Trp  
 180 185 190

Ala Ala Val Lys Arg Glu Val Met Thr Ile Leu Ser Glu Gly Val Ser  
 195 200 205

Ile Pro Glu Glu Ile Asp Ala Met Trp Lys Glu Met Phe Val Lys Gly  
 210 215 220

Arg Ala Leu Pro Cys Gln Met Met Asp Asn Val Gly Leu Asp Thr Val  
 225 230 235 240

Ala Phe Ile Glu Gly His Tyr Ile His Glu Arg Gly Leu Ser Ser Glu  
 245 250 255

His Thr Val Asp Phe Leu Lys Lys Asn Tyr Leu Asp His Asn Lys Leu  
 260 265 270

Gly Asn Lys Cys Ala Asn Gly Gly Leu Tyr Pro Pro Val Asp Thr Thr  
 275 280 285

Ala Ala Pro Lys Glu Pro Arg Ile Val Val Leu Asp Ile Gly Leu Ala  
 290 295 300

Ser Asp Thr Ile Ser Pro Thr Ala Gly Glu Ile Leu Glu Ile Thr Leu  
 305 310 315 320

Glu Gly Lys Leu Lys Gln Val Leu Val Ser Asp Gln Asn Tyr Pro Asp  
 325 330 335

Gly Ile Asp Ile Asp Tyr Glu Ser Gly Arg Met Phe Trp Thr Thr Met  
 340 345 350

Gly Val Pro Gly Lys Asp Asp Gly Ser Val Tyr Ser Ala Lys Thr Asp  
 355 360 365

Gly Thr Asp Val Arg Gln Ile Val Pro Val Gly Ala Val Asn Thr Pro  
 370 375 380

Lys Gln Leu Val Val Val Thr Glu His Lys Lys Ile Tyr Phe Cys Asp  
 385 390 395 400

Arg Glu Gly Leu Arg Val Phe Arg Cys Asn Tyr Asp Gly Ser Ser Leu

405                                      410                                      415  
 Gly Leu Leu Ile Asp Asn Arg Gly Ser Gly Phe Ser Gln Glu Ala Pro  
    420                                      425                                      430  
 Asp His Ser Lys Trp Cys Val Gly Ile Thr Val Ser Pro Lys Leu Gly  
    435                                      440                                      445  
 Lys Phe Phe Trp Thr Gln Lys Gly Val Ser Lys Gly Gly Lys Gly Arg  
    450                                      455                                      460  
 Ile Phe Thr Ala Asn Ile Glu Met Pro Val Gly Gln Thr Pro Lys Thr  
 465                                      470                                      475                                      480  
 Arg Asp Asp Val Lys Cys Leu Val Ala Gly Leu Pro Glu Pro Val Asp  
    485                                      490                                      495  
 Leu Glu Leu Glu Glu Glu Thr Leu Gln Leu Tyr Trp Thr Asp Arg Gly  
    500                                      505                                      510  
 Glu Leu Pro Phe Gly Asn Thr Leu Asn Arg Val Gln Leu Thr Lys Ser  
    515                                      520                                      525  
 Gly Leu Leu Met Glu Ala Ser Gln Lys His Glu Val Leu Thr Lys His  
    530                                      535                                      540  
 Leu His Glu Ala Ile Gly Leu Lys Leu Asp Thr Lys Asn Gly His Ile  
 545                                      550                                      555                                      560  
 Tyr Met Thr Asp Leu Gly Gly Ser Ile Tyr Gln Cys Asp Leu Glu Gly  
    565                                      570                                      575  
 Lys Lys Lys Lys Val Ile Tyr Ser Asp Glu Thr Arg Ala Phe Thr Gly  
    580                                      585                                      590  
 Ile Ser Leu Leu  
    595

<210> 114  
 <211> 264  
 <212> PRT  
 <213> Penicillium chrysogenum  
 <400> 114

Met Glu Gly Val Gln Lys Pro Gln Gly Ser Val Val Ile Ile Gly Ala  
1 5 10 15

Gly Thr Gln Gly Arg Arg Leu Ala His Met Trp Ser Ser Arg Gly Gly  
20 25 30

Thr Val Arg Leu Val Asp Leu Gln Glu Gln Gln Leu Glu Asp Gly Leu  
35 40 45

Lys Tyr Val Glu Gln Leu Arg Ala Asp Ala Thr Asp His Glu Gly Asp  
50 55 60

Trp Gly Arg Ile Glu Thr Ser Gln Pro Ala Ser Leu Gln Ser Thr Leu  
65 70 75 80

Lys Asp Ser Trp Leu Val Val Glu Leu Ala Pro Glu Ser Thr Ile Ile  
85 90 95

Ala Ser Asn Ser Ser Ser Tyr Gly Ile Phe Glu Ile Leu Glu Gly Met  
100 105 110

Ser Leu Lys Asn Asn Lys Arg Val Met Ser Ala His Cys Ser Ile Glu  
115 120 125

Ile Met Gly His Lys Asp Ser Asp Pro Lys Leu Ile Ala Leu Val Leu  
130 135 140

Glu Gln Cys Lys Glu His Gly Phe Ser Pro Phe Tyr Val Arg Glu Asn  
145 150 155 160

Ser Ile Gly Tyr Ile Tyr Asn Arg Ile Trp Ala Ala Ile Lys Arg Glu  
165 170 175

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

Ala Ile Phe Lys Asp Val Leu Lys Thr Pro Lys Gly Pro Cys Glu Gln  
195 200 205

Met Asp Val Val Gly Leu Asp Val Val Leu Asp Ile Glu Asn His Tyr  
210 215 220



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

Arg Met Ile Gln Gly Gly Ser Leu Gly Val Lys Asn Gly Arg Gly Phe  
245 250 255

Tyr Asp Tyr Glu Asp Gln Asn Lys  
260

<210> 115

<211> 607

<212> PRT

<213> Penicillium chrysogenum

<400> 115

Met Ser Ser His Trp Val Pro Pro Arg Asn Tyr Arg Ser Arg Pro Val  
1 5 10 15

Ala Ile Leu Gly Ala Gly Val Leu Gly Arg Arg Val Gly Cys Ile Trp  
20 25 30

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

Arg Ala Asp Gly Val Ala Tyr Ile Glu Lys Asn Val Gln Ser Tyr Ser  
50 55 60

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

Lys Gln Ala Val Arg Asn Ala Trp Leu Val Ile Glu Ala Val Pro Glu  
85 90 95

Lys Leu Glu Leu Lys Ile Ala Thr Phe Ala Glu Leu Glu Ala Leu Val  
100 105 110

Pro Asp Asp Cys Ile Leu Ala Ser Asn Ser Ser Ser Tyr Lys Thr Ser  
115 120 125

Glu Met Ile Ser Gln Ile Ser Asp Ser Thr Lys Thr Arg Val Leu Asn  
130 135 140

Met His Tyr Tyr Met Pro Pro Ala Cys Met Ile Val Glu Leu Met Thr  
145 150 155 160

Asp Gly Tyr Thr Ser Pro Glu Ile Phe Pro Phe Met Val Glu Arg Cys  
                                   165                                  170                                  175

Lys Glu Ala Ala Thr Ser Pro Tyr Val Ala Arg Lys Glu Ser Thr Gly  
                                   180                                  185                                  190

Phe Ile Phe Asn Arg Leu Trp Ala Ala Val Lys Arg Glu Val Leu Thr  
                                   195                                  200                                  205

Ile Leu Ala Glu Gly Val Ser Val Pro Glu Glu Ile Asp Ser Met Trp  
                                   210                                  215                                  220

Thr Glu Leu Phe Leu Lys Gly Lys Ser Leu Pro Cys Arg Thr Met Asp  
   225                                  230                                  235                                  240

Asp Val Gly Leu Asp Thr Val Ala Phe Ile Glu Gly His Tyr Val Asp  
                                   245                                  250                                  255

Glu Arg Gly Leu Ser Pro Glu Lys Thr Val Asp Phe Leu Lys Ser Asn  
                                   260                                  265                                  270

Tyr Leu Asp His Gly Lys Leu Gly Thr Lys Cys Ser Lys Gly Gly Leu  
                                   275                                  280                                  285

Tyr Ala Ile Ser His Ser Thr Pro Ile Lys Ala Asp Ser Lys Glu Gln  
                                   290                                  295                                  300

Asp Ile Leu Val Leu Asp Ile Gly Leu Ser Ala Asn Pro Pro Ser Met  
   305                                  310                                  315                                  320

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

Pro Ile Leu Lys Gly Gln Pro Leu Pro Asp Gly Leu Ala Val Asp Thr  
                                   340                                  345                                  350

Thr Ser Gly Arg Met Phe Trp Thr Cys Met Gly Val Pro Gly Lys Thr  
                                   355                                  360                                  365

Asp Gly Ala Val Phe Ser Ala Asn Val Asp Gly Thr Asp Ile Lys Thr  
                                   370                                  375                                  380

Leu Val Ala Pro Gly Thr Val Asn Thr Pro Lys Gln Leu Ala Leu Asp  
385 390 395 400

Ser Thr Ala Gln Ser Val Tyr Phe Ser Asp Arg Glu Gly Cys Arg Val  
405 410 415

Tyr Arg Cys Ala Phe Asp Gly Ser Asn Leu Glu Val Leu Ile Asp Asn  
420 425 430

Thr Gly Arg Asp Leu Thr Pro Ala Lys Arg Val Ser Lys Trp Cys Val  
435 440 445

Gly Val Ala Val Ser Pro Arg Gln Gly Lys Phe Tyr Trp Thr Gln Lys  
450 455 460

Gly Pro Ser Lys Gly Gly Glu Gly Arg Ile Leu Cys Ala Asp Ile Ala  
465 470 475 480

Thr Pro Lys Gly Gln Ser Thr Ala Ala Arg Gly Asp Ile Gln Cys Ile  
485 490 495

Leu Ser Gly Leu Pro Glu Pro Ile Asp Leu Glu Val Asp Glu Thr Ser  
500 505 510

Arg Ile Leu Tyr Trp Thr Asp Arg Gly Glu Ile Pro Trp Gly Asn Ser  
515 520 525

Leu Asn Arg Ala Arg Leu Gly Lys Asp Gly Leu Pro Leu Ser Thr Ser  
530 535 540

Ser Pro Arg Gly Tyr Glu Ile Leu Thr Arg Gly Leu Asn Glu Ala Ile  
545 550 555 560

Gly Leu Lys Leu Asp Ser Ile Asn Ser Tyr Ile Tyr Leu Thr Asp Leu  
565 570 575

Gly Gly Ser Ile Tyr Arg Cys Asp Leu Asp Gly Asn His Lys Glu Lys  
580 585 590

Val Tyr Ser Glu Glu His Arg Ala Phe Thr Gly Ile Thr Leu Leu  
595 600 605

<210> 116  
 <211> 601  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 116

Met Gly Val Lys Pro Arg Thr Asp Arg Pro Val Ala Val Ile Gly Ala  
 1 5 10 15

Gly Val Leu Gly Arg Arg Ile Gly Cys Val Phe Ile Ala Ala Gly Tyr  
 20 25 30

His Val His Ile Arg Asp Pro Ser Pro Val Ala Leu Arg Asp Ala Glu  
 35 40 45

Asp Tyr Ile Asp Lys His Lys Ser Tyr Thr Ala Ala Pro Tyr Gly Asn  
 50 55 60

Cys Lys Thr Phe Thr Glu Leu Glu Pro Ala Ile Ser Asn Ala Trp Leu  
 65 70 75 80

Ile Val Glu Ala Val Pro Glu Ile Leu Arg Leu Lys Ile Asp Thr Leu  
 85 90 95

Ala Asp Leu Glu Lys Tyr Ala Pro Ala Asp Cys Tyr Ile Gly Ser Asn  
 100 105 110

Ser Ser Ser Ile Lys Ser Asn Leu Met Leu Val Lys Val Ser Asp Lys  
 115 120 125

Arg Lys Arg Lys Ile Phe Asn Ile His Phe Thr Met Pro Pro Ala Ile  
 130 135 140

Arg Thr Val Glu Leu Met Thr Cys Gly Glu Thr Asp Pro Glu Ile Phe  
 145 150 155 160

Pro Tyr Leu Glu Thr Val Leu Gly Glu Cys Gly Met Leu Pro Val Thr  
 165 170 175

Ala Arg Arg Glu Ser Thr Gly Phe Ile Phe Asn Arg Ile Trp Ala Ala  
 180 185 190

Val Lys Arg Glu Ile Thr Gln Ile Leu Tyr Glu Gly Val Ser Asp Pro  
 195 200 205

Gly Gln Ile Asp Leu Leu Trp Glu His Met Phe Lys Asn Gly Pro Leu  
 210 215 220

Pro Cys Gln Leu Met Asp Gln Val Gly Leu Asp Thr Val Ala Phe Ile  
 225 230 235 240

Glu Glu Asn Tyr Ile Gln Glu Arg Gly Leu Pro Ser Ala Ala Ile Asp  
 245 250 255

Trp Leu Arg Arg Glu Tyr Leu Asp Gln Gly Arg Leu Gly Lys Lys Ser  
 260 265 270

Glu Lys Gly Gly Leu Tyr Pro Pro Leu Ser Lys Ser Ser Ser Ala Glu  
 275 280 285

Ala His Pro Ala His Pro His Ser Ala Ala Lys Asp Ile Tyr Leu Leu  
 290 295 300

Asp Val Gly Leu Gly Gly Asn Ala Arg Asp Val Ser Gln Val His Ser  
 305 310 315 320

Asn Gly Lys Ile Ile Arg Leu Asn Leu Ala Thr Gln Lys Leu Thr Pro  
 325 330 335

Val Val Val Gly Gln Asn Leu Pro Asp Gly Ile Asp Val Ala Leu Glu  
 340 345 350

Thr Gln Arg Ile Phe Trp Thr Asn Met Gly Arg Ser Thr Ala Ala Cys  
 355 360 365

Asp Gly Ser Val Trp Ser Ala Asp Met Asp Gly Gly Asp Val Met Cys  
 370 375 380

Val Val Thr Val Gly Gln Val His Thr Pro Lys Gln Ile Ser Val Ile  
 385 390 395 400

Glu Ser Arg Lys Gln Val Tyr Phe Cys Asp Arg Glu Gly Leu Gly Val  
 405 410 415

His Arg Cys Asp Phe Asp Gly Ser Asn His Val Val Leu Val Gln Arg  
 420 425 430

Arg Ala Glu Pro Gly Met Ser Leu Leu Glu Gln Met Thr Leu Trp Cys  
 435 440 445

Val Gly Val Ala Ile Asp Ala Glu Arg Gly Leu Leu Tyr Trp Thr Gln  
 450 455 460

Lys Gly Pro Cys Lys Ala Gly Leu Gly Gln Ile Tyr Cys Ala Gly Leu  
 465 470 475 480

Gly Ile Pro Ala Gly Glu Thr Ala Glu Asn Arg Thr Asp Ile Arg Cys  
 485 490 495

Leu Trp Ser His Leu Pro Glu Pro Ile Asp Thr Glu Ile Asp Ser Asp  
 500 505 510

Thr Arg Thr Leu Tyr Trp Thr Asp Arg Gly Glu His Pro Phe Gly Cys  
 515 520 525

Thr Leu Asn Arg Ala Tyr Val Gly Gly Glu Glu Ile Asp Phe Glu Lys  
 530 535 540

Val Ile Leu Ala Arg His Phe His Glu Pro Ile Gly Leu Lys Leu Asp  
 545 550 555 560

Lys Ala Asn Asn Ile Val Tyr Val Ala Asp Leu Gly Gly Ser Leu Tyr  
 565 570 575

Ser Val Ser Leu Glu Asp Gly Leu Lys Thr Glu Leu Val Arg Asn Asp  
 580 585 590

Val Cys Tyr Thr Gly Leu Ala Leu Val  
 595 600

<210> 117

<211> 1433

<212> DNA

<213> Penicillium chrysogenum

<400> 117

atgtctaacg gtgagtgatg tgcattgtgac agcccatggc catgtattca acagaacact 60

gggtttcttg tggcttttga cgggttagaa tcgaaataga aacagcaaac taattcctat 120

ctatagccca gcaacgcctt agccagggtt cctcccactt cggccccggg ggcaagaagg 180

gagccgccgc tattaccgaa aagcaccocg atgacattgt cgtgacatgt gccctccgca 240  
 cagccctcac caaggggtggg aaggggtgggt tcaaggatac cgctggcgct gacctgcttg 300  
 ctgggtgtctt caaggctggt ctgaacaaga gcggcggtga cccagctct gtccaggaca 360  
 ttgccgtcgg ctccgtcctt gcccccggtg gtgggtgctac tgagttccgt gccgctgctc 420  
 tcgtgggtgg cttccccgag agcaccgcgc tgaagagctt gaaccgtcag tgctctagcg 480  
 gtctccaggc tatcgccgat attgccaatg ccattcagtc tggcatgac gatgtcggca 540  
 tcgggtgccg tgttgagagc atgtcctctc agtacgggta tgttacaagc cccccaaacc 600  
 cccgttcaat aatatggcta ataacttgat acagaccocg tgccgtgacc gagttctccg 660  
 acctcctcga gagccacccc gagtcgcgaa actgcaaggt ccccatgggt gtgctgtccg 720  
 agaacatggc caaagaccgt ggcgtgaccc gtgcttccca agactccttc gccgctcaat 780  
 cataccagaa ggctgttgcc gcccagaagg ccggtctctt caacgaagag atcgcccttc 840  
 ttgacgtgaa gtggaccgac cctaagaccg gcgaggagaa gaccatcacc gtgaaggccg 900  
 atgacggcgt ccgccagggt atcaccgcgc agtcgcttgg caagatcaag cccgcctttg 960  
 ccaaggacgg ctccatccac gccggtaacg cttcccagat ctccgacggg gccgccgccg 1020  
 tcctcctcat gaagcgggtc actgcggagc gtctgggcca gaagatcctt ggcaagtatg 1080  
 tcactgccag cgtcgtcggc gtgaagcccc tgctcatggg cgtcggccct tggaaggcta 1140  
 tccccgttgc gctggagaag gccggcatca ccaaggatga tgcgacatt tatgagatca 1200  
 acgaggcttt cgcttcccag tgtgtctggt gtgttaatga actcggcatc cctgccgaga 1260  
 aggttaaccc caaggggtgg gctattgctt tcggtcaccc tcttggctgc actggtgccc 1320  
 gtcaggtcag cactttgttt actgagctca agcgcacaaa caagaagatt ggtgtcacca 1380  
 gcatgtgcgt cggtaaccgt atgggtatgg ccgctgtctg ggtgtcggag taa 1433

<210> 118

<211> 1542

<212> DNA

<213> *Penicillium chrysogenum*

<400> 118

atgtcttcac cacaacaacg tctgaactcc gtcgccaacc agctggctcc tggctcggcc 60  
 cgccaaaaga ttctagccaa gaaccagat gacgtggat gttactgctt tgctgcttta 120  
 cacaactcct tgcgccttgg attaataatta atcaattggc aggtcatcac ttacttggcc 180  
 cggacgccgc tcaccaaagc ccgcaaagggt ggattgaagg ataccaccgt ggatgatctc 240

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ctcatctcac ttctcacggt attttttttc tccccattg ggaacaagtc tcagtaacta 300
atgtatcaaa acagaccgtt cgcgagaagt ccaaccttga cccaacctc gttgaagatg 360
tctgtgttgg caatgtcctc tgccccggct ccgcatatgt cggccgttcc gccgtgctgg 420
cagcaggcta ccccgtaaca gcagctgoot ccatcgccaa ccgattctgc tcgtccggtc 480
tactggccgt gcaaaacatc gccaacccaa tcatcgcagg atccatcgat gtccgtgtgg 540
ccgtgggagc cgagagcatg agcaagaacg ccgacggcgg cgccccgaa atgtccgagc 600
gcatcaccaa gcaccgatc gcacgcaga actcccaacc catgggcca acatcggaga 660
atgtggcgaa ccagttcaac atctcgcgcg agcaacatga cagattcgct gccaacagtt 720
tccagaaaagc tgagcgcgcc cagaaggccg gctggctgga ggacgagatc gtccccgtca 780
ggactcaaat taaggacccc aagaccggcg aggtcaagga tattgtcgtg gtccgtgacg 840
acggcatccg ctacgggtact acccccgagt cctcggcaa ggtccgcgct gccttcccc 900
agtgggcccc tagcgtacc accggcggtg acgccagtca aattactgat ggtgctgctg 960
cgctggttct gatgaagcgc tcgcgcgcc agcagcttgg ccaaccatc gttgccaagt 1020
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ctaacatact tcattacagg gtgtgtactg cgtcaacaag ctgggcttgg atgaatccaa 1260
ggtgaacccg cgtggtggtg ctatgtaaga gtttcttcga ccaaatttga ttgataccat 1320
actaatatct caaagtgctt ttggtcacc tctgggcgcc actgggcgac gccaggttgt 1380
cactgctctg tctgagctac gtcgacagga taagcgagtc gccgtgactt cgatgtgcgt 1440
gggcactgta agttacctc gatcatcatg accctgatgt cagatattaa tctcttcgaa 1500
tagggcatgg gtatggccgg tatctttggt tctgagcatt ag 1542

```

<210> 119

<211> 1376

<212> DNA

<213> *Penicillium chrysogenum*

<400> 119

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```

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ctcgtgcta tgtaagtact cagatgaggt catctgtgtc ttatgagtct aacaagcaaa 120
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```
cgcagtacac agaagaaccc tgacgatgtg gtcacaccc tagcaatccg cacaccgctg 180
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accaaggcgc gtaagggcgg gttcaaggac acagaattgg actacatgat ctacgccctg 240  
 ctgaaggaga ccctggccaa gtcacagatt gaccctgctc taatcgagga tgtctgtctc 300  
 ggaaacgtac gtttaatctc ttttctccac cccacaaatc tatagatccc atattctaac 360  
 accggcggca ggtcaacgaa gtcaaagcgg cctacatggt ccgcgccgca gctcttgccg 420  
 ccggcatccc ccacacagcc ggtgcctcat cagtgaaccg cttctgctca tccgggctga 480  
 aggctgtgca ggatatcgcg aaccagatcc agctgggcgc catcgacgtt ggtgtcgctc 540  
 ttggcgcgga gctgatgtcc gcctctggcg accggctgga caggccgttc aacgaggaag 600  
 tcctgcgcaa ccaggaggcc gccgactgca tgcagcccat gggacaaact tctgagaacg 660  
 tcggaaagga cttcgatatc ccccgcgaa agcaggaccg atatgccgcc gagtccctcc 720  
 gccgtgctga ggctgctcag aacaatggct ggctcgatga cgagattgcc cccatcgctg 780  
 tcaagggtta ggaccccaag actggcgagg ttaaggaagt cactctgtcc cgtgacgatg 840  
 gtatccgtcc cggtactact ttcgagtgcg tttccaagat tcgtcctgct ttccctcagt 900  
 tcggtgataa gtccactggg ggaaactcca gccaggttac cgatggtgcc gcttctgttc 960  
 ttctcatgcg ccgctccaag gctatcgagt tgaaccagcc tacccttgct aagttctgtg 1020  
 gcgctaccgt tgccgggtgtg cccctctcg tgatgggtat cggcccaact gctgctattc 1080  
 ctaagctgct gagcaagttc cagcttgaca agaatgatat cgatatctac gagatcaacg 1140  
 aggctttcgc ctctatggcg gtctactgtg ttaagaacct tggctcttgat cacgccaagg 1200  
 tcaaccctcg tggcggtgct attgcccttg gtcacccgct cggcgcaaca ggtgcgcgcc 1260  
 agatcgcgac cattctgagt gaggctcgcc ggacaaagag taagattctg gtcacttcta 1320  
 tgtgtatttg aactggacag ggtatggctg gtctcttcgt caacgagcaa ctgtaa 1376

<210> 120

<211> 1242

<212> DNA

<213> *Penicillium chrysogenum*

<400> 120

atggcttctc caattccccg cggactccgc caagtgtctc agaagtcctc caatgacatt 60  
 gtcacctctgt cctctctgcg cacgcccgtc accgcgcga agaagggcgg tttcaaggat 120  
 gcctaccag aagagctact cgccagcgtg ttgcaggcaa cactgaaggc aaaccggaac 180  
 ttagaccgg cccagatcga cgatgtgctg atcggctccg tcctacaaga actaggcggc 240  
 gccaaagcgg gtcgcatggg ccagatccac gccggcttcc ctactctgt gcccttcaac 300

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acgatcaacc gtcagtgtct atccggcctg gcagcgatca caaccattgc caacggcatt      360
cgggccggcg ccatcaacgt cggcgctcggg ggcgggcatgg aatccatgac ccgcaactac      420
ggctcccgcg ccatccccac agtcctcttg cccgagctga aggagtccta ttcccaggac      480
gcccgcgact gcatcatgcc catgggcatt acctcggaga atgtcgcata gcgatacggc      540
gtctcccgcg cagaccagga tgccttcgcc gtcgagtccc acgcaaaggc gtctgccgcc      600
cagaaggcag gccgcttcga ctccgagatc gtctcgggtca ctaccaagac ccttgacccc      660
gagaaccccc atgccccgcg cagggacgtg acagtctctc aggacgacgg tatccgccac      720
ggcctgtcca tcgagaagggt gggcgcgctg aagcccgctt tctcgcctac tggcgccagc      780
accgccggta acagttcgca agttagcgac ggtgctgccg ctactttggt gatgcgtcgc      840
tccaccgcg aggagcttgg tctgtctggt tcaattaagg cgcgctgggt cgcgtctgcc      900
gtcgccgggt gtgccccga cgagatgggc gttggccctg ctggtgccat cctaagctc      960
ctacagactg ttggtgtcga ggttcccgag gtcggtgttt gggagatcaa tgaggctttc     1020
gcctcgcagg ctctctacag cgttcgcaag cttggcatcg accaggctaa ggtaaccct      1080
aatggtggtg ctattgctat cggtcacact ctcggtgcta ctggtgctcg ccaattggt      1140
acactgctgc ctgagttgga gcgcagtggg caggagatcg gtgttattag catgtgcatt      1200
ggtacgggta tgggtatggc gggcatgttt gtccgcgagt aa                          1242

```

```

<210> 121
<211> 419
<212> PRT
<213> Penicillium chrysogenum

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<400> 121
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Met Ser Asn Ala Gln Gln Arg Leu Ser Gln Val Ser Ser His Phe Gly
1           5           10          15

```

```

Pro Gly Gly Lys Lys Gly Ala Ala Ala Ile Thr Glu Lys His Pro Asp
          20          25          30

```

```

Asp Ile Val Val Thr Cys Ala Leu Arg Thr Ala Leu Thr Lys Gly Gly
          35          40          45

```

```

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

```

```

Phe Lys Ala Val Leu Asn Lys Ser Gly Val Asp Pro Ser Ser Val Gln

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

Ala Ser Val Val Gly Val Lys Pro Leu Leu Met Gly Val Gly Pro Trp  
 305 310 315 320

Lys Ala Ile Pro Val Ala Leu Glu Lys Ala Gly Ile Thr Lys Asp Asp  
 325 330 335

Val Asp Ile Tyr Glu Ile Asn Glu Ala Phe Ala Ser Gln Cys Val Trp  
 340 345 350

Cys Val Asn Glu Leu Gly Ile Pro Ala Glu Lys Val Asn Pro Lys Gly  
 355 360 365

Gly Ala Ile Ala Phe Gly His Pro Leu Gly Cys Thr Gly Ala Arg Gln  
 370 375 380

Val Ser Thr Leu Phe Thr Glu Leu Lys Arg Thr Asn Lys Lys Ile Gly  
 385 390 395 400

Val Thr Ser Met Cys Val Gly Thr Gly Met Gly Met Ala Ala Val Trp  
 405 410 415

Val Ser Glu

<210> 122  
 <211> 418  
 <212> PRT  
 <213> *Penicillium chrysogenum*

<400> 122

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

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

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

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

Thr Val Arg Glu Lys Ser Asn Leu Asp Pro Asn Leu Val Glu Asp Val  
65 70 75 80

Cys Val Gly Asn Val Leu Cys Pro Gly Ser Ala Tyr Val Ala Arg Ser  
85 90 95

Ala Val Leu Ala Ala Gly Tyr Pro Val Thr Ala Ala Ala Ser Ile Ala  
100 105 110

Asn Arg Phe Cys Ser Ser Gly Leu Leu Ala Val Gln Asn Ile Ala Asn  
115 120 125

Gln Ile Ile Ala Gly Ser Ile Asp Val Gly Val Ala Val Gly Ala Glu  
130 135 140

Ser Met Ser Lys Asn Ala Asp Gly Gly Ala Pro Glu Met Ser Glu Arg  
145 150 155 160

Ile Thr Lys His Pro Ile Ala Ser Gln Asn Ser Gln Pro Met Gly Gln  
165 170 175

Thr Ser Glu Asn Val Ala Asn Gln Phe Asn Ile Ser Arg Glu Gln His  
180 185 190

Asp Arg Phe Ala Ala Asn Ser Phe Gln Lys Ala Glu Arg Ala Gln Lys  
195 200 205

Ala Gly Trp Leu Glu Asp Glu Ile Val Pro Val Arg Thr Gln Ile Lys  
210 215 220

Asp Pro Lys Thr Gly Glu Val Lys Asp Ile Val Val Val Arg Asp Asp  
225 230 235 240

Gly Ile Arg Tyr Gly Thr Thr Pro Glu Ser Leu Gly Lys Val Arg Ala  
245 250 255

Ala Phe Pro Gln Trp Ala Pro Ser Ala Thr Thr Gly Gly Asn Ala Ser  
260 265 270

Gln Ile Thr Asp Gly Ala Ala Ala Leu Val Leu Met Lys Arg Ser Arg  
275 280 285

Ala Gln Gln Leu Gly Gln Pro Ile Val Ala Lys Phe Cys Gly Ala Thr

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

Glu His

<210> 123  
 <211> 418  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 123

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

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

Cys Leu Gly Asn Val Asn Glu Val Lys Ala Ala Tyr Met Val Arg Ala  
85 90 95

Ala Ala Leu Ala Ala Gly Ile Pro His Thr Ala Gly Ala Ser Ser Val  
100 105 110

Asn Arg Phe Cys Ser Ser Gly Leu Lys Ala Val Gln Asp Ile Ala Asn  
115 120 125

Gln Ile Gln Leu Gly Ala Ile Asp Val Gly Val Ala Leu Gly Ala Glu  
130 135 140

Leu Met Ser Ala Ser Gly Asp Arg Leu Asp Arg Pro Phe Asn Glu Glu  
145 150 155 160

Val Leu Arg Asn Gln Glu Ala Ala Asp Cys Met Gln Pro Met Gly Gln  
165 170 175

Thr Ser Glu Asn Val Gly Lys Asp Phe Asp Ile Pro Arg Glu Gln Gln  
180 185 190

Asp Arg Tyr Ala Ala Glu Ser Phe Arg Arg Ala Glu Ala Ala Gln Asn  
195 200 205

Asn Gly Trp Leu Asp Asp Glu Ile Ala Pro Ile Ala Val Lys Val Lys  
210 215 220

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

Gly Ile Arg Pro Gly Thr Thr Phe Glu Ser Leu Ser Lys Ile Arg Pro  
245 250 255

Ala Phe Pro Gln Phe Gly Asp Lys Ser Thr Gly Gly Asn Ser Ser Gln  
260 265 270

Val Thr Asp Gly Ala Ala Ser Val Leu Leu Met Arg Arg Ser Lys Ala  
275 280 285

Ile Glu Leu Asn Gln Pro Ile Leu Ala Lys Phe Cys Gly Ala Thr Val  
 290 295 300

Ala Gly Val Pro Pro Arg Val Met Gly Ile Gly Pro Thr Ala Ala Ile  
 305 310 315 320

Pro Lys Leu Leu Ser Lys Phe Gln Leu Asp Lys Asn Asp Ile Asp Ile  
 325 330 335

Tyr Glu Ile Asn Glu Ala Phe Ala Ser Met Ala Val Tyr Cys Val Lys  
 340 345 350

Asn Leu Gly Leu Asp His Ala Lys Val Asn Pro Arg Gly Gly Ala Ile  
 355 360 365

Ala Leu Gly His Pro Leu Gly Ala Thr Gly Ala Arg Gln Ile Ala Thr  
 370 375 380

Ile Leu Ser Glu Ala Arg Arg Thr Lys Ser Lys Ile Leu Val Thr Ser  
 385 390 395 400

Met Cys Ile Gly Thr Gly Gln Gly Met Ala Gly Leu Phe Val Asn Glu  
 405 410 415

Gln Leu

<210> 124  
 <211> 413  
 <212> PRT  
 <213> Penicillium chrysogenum

<400> 124

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

Ser Asn Asp Ile Val Ile Leu Ser Ser Leu Arg Thr Pro Val Thr Arg  
 20 25 30

Ala Lys Lys Gly Gly Phe Lys Asp Ala Tyr Pro Glu Glu Leu Leu Ala  
 35 40 45

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



Gln Ile Asp Asp Val Leu Ile Gly Ser Val Leu Gln Glu Leu Gly Gly  
65 70 75 80

Ala Lys Ala Gly Arg Met Gly Gln Ile His Ala Gly Phe Pro His Ser  
85 90 95

Val Pro Phe Asn Thr Ile Asn Arg Gln Cys Ser Ser Gly Leu Ala Ala  
100 105 110

Ile Thr Thr Ile Ala Asn Gly Ile Arg Ala Gly Ala Ile Asn Val Gly  
115 120 125

Val Gly Gly Gly Met Glu Ser Met Thr Arg Asn Tyr Gly Ser Arg Ala  
130 135 140

Ile Pro Thr Val Leu Trp Pro Glu Leu Lys Glu Ser Tyr Ser Gln Asp  
145 150 155 160

Ala Arg Asp Cys Ile Met Pro Met Gly Ile Thr Ser Glu Asn Val Ala  
165 170 175

Ser Arg Tyr Gly Val Ser Arg Ala Asp Gln Asp Ala Phe Ala Val Glu  
180 185 190

Ser His Ala Lys Ala Ser Ala Ala Gln Lys Ala Gly Arg Phe Asp Ser  
195 200 205

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

Ala Pro Ala Arg Asp Val Thr Val Ser Gln Asp Asp Gly Ile Arg His  
225 230 235 240

Gly Leu Ser Ile Glu Lys Val Gly Ala Leu Lys Pro Ala Phe Ser Pro  
245 250 255

Thr Gly Ala Ser Thr Ala Gly Asn Ser Ser Gln Val Ser Asp Gly Ala  
260 265 270

Ala Ala Thr Leu Leu Met Arg Arg Ser Thr Ala Glu Glu Leu Gly Leu  
275 280 285

Ser Gly Ser Ile Lys Ala Arg Trp Val Ala Ser Ala Val Ala Gly Cys  
 290 295 300

Ala Pro Asp Glu Met Gly Val Gly Pro Ala Val Ala Ile Pro Lys Leu  
 305 310 315 320

Leu Gln Thr Val Gly Val Glu Val Pro Glu Val Gly Val Trp Glu Ile  
 325 330 335

Asn Glu Ala Phe Ala Ser Gln Ala Leu Tyr Ser Val Arg Lys Leu Gly  
 340 345 350

Ile Asp Gln Ala Lys Val Asn Pro Asn Gly Gly Ala Ile Ala Ile Gly  
 355 360 365

His Pro Leu Gly Ala Thr Gly Ala Arg Gln Leu Ala Thr Leu Leu Pro  
 370 375 380

Glu Leu Glu Arg Ser Gly Gln Glu Ile Gly Val Ile Ser Met Cys Ile  
 385 390 395 400

Gly Thr Gly Met Gly Met Ala Gly Met Phe Val Arg Glu  
 405 410

<210> 125

<211> 43

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<400> 125

ccttcgccga ctgaacgtcg gcgcatatcc ctacaaggcc gtg

43

<210> 126

<211> 68

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<400> 126

caccttcctt cccagtagc tatcggccat agacggaggt tggaacaaaa aaagaaagac

60

aattatac

68

<210> 127  
 <211> 43  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Synthetic oligonucleotide  
  
 <400> 127  
 caccttccac atatgatgaa ccgctctctt cttcgcgcag ctg 43

<210> 128  
 <211> 46  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Synthetic oligonucleotide  
  
 <400> 128  
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<210> 129  
 <211> 1551  
 <212> DNA  
 <213> *Penicillium chrysogenum*  
  
 <400> 129  
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 acaaagtca tttgagcgca ggaagcgtgc caacatcgct gttgaatcag ctattgcgac 180  
 tctccagggt tgtttggacg aacgagatat ccagctggcg ctcgtcggtg tcccactata 240  
 tctccacagc atgatcacat ttgctgcagt ttttctgcta aagatcgag ccaaagtttg 300  
 ctggaatggg gctattcctg ggagccaggg caaacgaacc tcaattgcct cggcaggact 360  
 acacgttgac gtgagctacg tgcgtgttct tgttgggcgg gtagtcgagc tcatggtgtc 420  
 ctgtagccag cgggcgagcg agcgccacct gagccaccac atcgcccgcg gtctccgcaa 480  
 gatgctgact gggctcgagg aatgggagaa gcgcactact ggcacccaac attccatggg 540  
 gtcaactgcg ccggaatctc attctctctt caagccggtg gtcattcccc gagcaciaat 600  
 gctgggtgaa cgtgacacta ttttgaatca cccgcctcca ttgcttgggg tggcaccgct 660  
 gtccgctgaa cgcagcaatg ggtttgaacc tcctctgacc ctagaaaagc aggagcccgg 720  
 tttatcggag ggctcgggtg atcccatgat ggcggatctt tggggatttg acgaggatta 780

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tttccctacg ggagtgtttg acttccttca gagccagatg ccagcgtgat ctaccccgaa      840
cttggaaatga tttcccttga ttgttctctt tgtacatagt aataacgacc tacgattgac      900
gaccacagtt gttgtagggg aatatatgga tactagaagc atacatttag agtggactac      960
taatgaagtc ctgtctccat actaatatac cccttttccc tctgtaaatg gcgagcccag     1020
tgtatatgaa tggatgggca tttggcctag cgccactttt gatccccgtc catcctcagc     1080
ttgaaatgcc gtttgatctc aggctgccgg atctcctacg ggcgatgata tattttttat     1140
tttgattatt ttgatataag cgtcgaagcc ctccatgtag tactccgtat acttcgtagt     1200
gtatctcggg gcttggcatg gagcccaccc ggatagaccg aaaaagtccg agtcgggtga     1260
acatgcggaa cccagacagc cgattgctcg ggggttctgt cgaatgaaat tgatctagat     1320
aaatacaaat gccgatttac tgttgatctt gtaattccac cagtcctggg atattacatt     1380
cggtgattta ccccaaacct gcaactgccg aggtctccgc gattagtgtg tattttgattc     1440
agctccccgc aacaattgac aacttttggt ctctccccac tctgtataat tgtctttctt     1500
tttttgttcc aacctccgtc tatggccgat agctactggg gaaggaagggt g              1551

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<210> 130

<211> 1527

<212> DNA

<213> *Penicillium chrysogenum*

<400> 130

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cccctcgccg cagcggagct gttcacagac gaggaactgg ccattcagga tacagcacgc     180
caatactgcc aggataagct tgcgccccgc gttttgggta tgtctaattt gctttgcttc     240
tgttggtgaaa tggatgaactg acgtcagtga ccccttgca gaggcctacc gcaatgagga     300
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<213> *Penicillium chrysogenum*

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<213> *Penicillium chrysogenum*

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