SEQUENCE LISTING

<110> Novartis AG

<120> Production of glycoproteins having increased N-glycosylation site occupancy

<130> NOVA 0005 WO

<160> 91

<170> PatentIn version 3.5

<210> 1
<211> 857
<212> PRT
<213> Leishmania major

<400> 1

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Thr Ala Ser Arg Glu Ala Ser Ala Gln Ala Glu Asp Ala Ala Ser Gln
            20                  25                  30

Thr Lys Thr Ala Ser Pro Pro Ala Lys Val Ile Leu Leu Pro Lys Thr
        35                  40                  45

Leu Thr Asp Glu Lys Asp Phe Ile Gly Ile Phe Pro Phe Pro Phe Trp
    50                  55                  60

Pro Val His Phe Val Leu Thr Val Val Ala Leu Phe Val Leu Ala Ala
65                  70                  75                  80

Ser Cys Phe Gln Ala Phe Thr Val Arg Met Ile Ser Val Gln Ile Tyr
                85                  90                  95

Gly Tyr Leu Ile His Glu Phe Asp Pro Trp Phe Asn Tyr Arg Ala Ala
            100                 105                 110

Glu Tyr Met Ser Thr His Gly Trp Ser Ala Phe Phe Ser Trp Phe Asp
        115                 120                 125

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

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

Ala Gly Met Pro Met Ser Leu Asn Asn Val Cys Val Leu Met Pro Ala
                165                 170                 175

Trp Phe Gly Ala Ile Ala Thr Ala Thr Leu Ala Phe Cys Thr Tyr Glu
            180                 185                 190
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Ala Ser Gly Ser Thr Val Ala Ala Ala Ala Ala Leu Ser Phe Ser
        195                 200                 205

Ile Ile Pro Ala His Leu Met Arg Ser Met Ala Gly Glu Phe Asp Asn
    210                 215                 220

Glu Cys Ile Ala Val Ala Ala Met Leu Leu Thr Phe Tyr Cys Trp Val
225                 230                 235                 240

Arg Ser Leu Arg Thr Arg Ser Ser Trp Pro Ile Gly Val Leu Thr Gly
                245                 250                 255

Val Ala Tyr Gly Tyr Met Ala Ala Ala Trp Gly Gly Tyr Ile Phe Val
            260                 265                 270

Leu Asn Met Val Ala Met His Ala Gly Ile Ser Ser Met Val Asp Trp
        275                 280                 285

Ala Arg Asn Thr Tyr Asn Pro Ser Leu Leu Arg Ala Tyr Thr Leu Phe
    290                 295                 300

Tyr Val Val Gly Thr Ala Ile Ala Val Cys Val Pro Pro Val Gly Met
305                 310                 315                 320

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

Phe Leu Cys Gly Leu Gln Val Cys Glu Val Leu Arg Ala Arg Ala Gly
            340                 345                 350

Val Glu Val Arg Ser Arg Ala Asn Phe Lys Ile Arg Val Arg Val Phe
        355                 360                 365

Ser Val Met Ala Gly Val Ala Ala Leu Ala Ile Ser Val Leu Ala Pro
    370                 375                 380

Thr Gly Tyr Phe Gly Pro Leu Ser Val Arg Val Arg Ala Leu Phe Val
385                 390                 395                 400

Glu His Thr Arg Thr Gly Asn Pro Leu Val Asp Ser Val Ala Glu His
                405                 410                 415

Gln Pro Ala Ser Pro Glu Ala Met Trp Ala Phe Leu His Val Cys Gly
            420                 425                 430

Val Thr Trp Gly Leu Gly Ser Ile Val Leu Ala Val Ser Thr Phe Val
        435                 440                 445

His Tyr Ser Pro Ser Lys Val Phe Trp Leu Leu Asn Ser Gly Ala Val
    450                 455                 460
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Tyr Tyr Phe Ser Thr Arg Met Ala Arg Leu Leu Leu Leu Ser Gly Pro
465                 470                 475                 480

Ala Ala Cys Leu Ser Thr Gly Ile Phe Val Gly Thr Ile Leu Glu Ala
                485                 490                 495

Ala Val Gln Leu Ser Phe Trp Asp Ser Asp Ala Thr Lys Ala Lys Lys
            500                 505                 510

Gln Gln Lys Gln Ala Gln Arg His Gln Arg Gly Ala Gly Lys Gly Ser
        515                 520                 525

Gly Arg Asp Asp Ala Lys Asn Ala Thr Thr Ala Arg Ala Phe Cys Asp
    530                 535                 540

Val Phe Ala Gly Ser Ser Leu Ala Trp Gly His Arg Met Val Leu Ser
545                 550                 555                 560

Ile Ala Met Trp Ala Leu Val Thr Thr Thr Ala Val Ser Phe Phe Ser
                565                 570                 575

Ser Glu Phe Ala Ser His Ser Thr Lys Phe Ala Glu Gln Ser Ser Asn
            580                 585                 590

Pro Met Ile Val Phe Ala Ala Val Val Gln Asn Arg Ala Thr Gly Lys
        595                 600                 605

Pro Met Asn Leu Leu Val Asp Asp Tyr Leu Lys Ala Tyr Glu Trp Leu
    610                 615                 620

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

Gly Tyr Gln Ile Thr Gly Ile Gly Asn Arg Thr Ser Leu Ala Asp Gly
                645                 650                 655

Asn Thr Trp Asn His Glu His Ile Ala Thr Ile Gly Lys Met Leu Thr
            660                 665                 670

Ser Pro Val Val Glu Ala His Ser Leu Val Arg His Met Ala Asp Tyr
        675                 680                 685

Val Leu Ile Trp Ala Gly Gln Ser Gly Asp Leu Met Lys Ser Pro His
    690                 695                 700

Met Ala Arg Ile Gly Asn Ser Val Tyr His Asp Ile Cys Pro Asp Asp
705                 710                 715                 720

Pro Leu Cys Gln Gln Phe Gly Phe His Arg Asn Asp Tyr Ser Arg Pro
                725                 730                 735
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eolf-seql

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Thr Pro Met Met Arg Ala Ser Leu Leu Tyr Asn Leu His Glu Ala Gly
            740                 745                 750

Lys Arg Lys Gly Val Lys Val Asn Pro Ser Leu Phe Gln Glu Val Tyr
        755                 760                 765

Ser Ser Lys Tyr Gly Leu Val Arg Ile Phe Lys Val Met Asn Val Ser
    770                 775                 780

Ala Glu Ser Lys Lys Trp Val Ala Asp Pro Ala Asn Arg Val Cys His
785                 790                 795                 800

Pro Pro Gly Ser Trp Ile Cys Pro Gly Gln Tyr Pro Pro Ala Lys Glu
                805                 810                 815

Ile Gln Glu Met Leu Ala His Arg Val Pro Phe Asp Gln Val Thr Asn
            820                 825                 830

Ala Asp Arg Lys Asn Asn Val Gly Ser Tyr Gln Glu Glu Tyr Met Arg
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Arg Met Arg Glu Ser Glu Asn Arg Arg
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<212> DNA
<213> Leishmania major

<400> 2

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caaggtcatc ctcctgccca agaccctcac cgacgagaag gacttcatcg gcatcttccc      180

gttcccgttc tggcccgtcc acttcgtcct caccgtcgtc gccctcttcg tcctcgccgc      240

cagctgcttc caggccttca ccgtccgcat gatcagcgtc cagatctacg gctacctcat      300

ccacgagttc gacccctggt tcaactaccg agccgccgag tacatgagca cccacggctg      360

gtccgccttt ttcagctggt tcgactacat gagctggtat ccgctcggcc gacccgtcgg      420

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cggcatcagc agcatggtcg actgggcccg caacacctac aaccccagcc tgctccgcgc      900
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<213> Trichoderma reesei

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<210> 4
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<212> DNA
<213> Aspergillus niger

<400> 4
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<211> 1000
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<213> Trichoderma reesei

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aattcagatc gcagataaca aaatgctacc agcatctgtc tagttgtgga gatatgaagg 180

ggtatttcag gctttctttg tgggaataaa gagagaaaga gagacttaca ggagctctag 240

gcttcgtagc ccctgcgttc ttagttcgca atgccgtgaa agcagctaca tctaccaaga 300

cactcgtgca tcgtctattt tatttgttac atgctgggaa tttccgggac attgtttaag 360

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aagtccgaca tgaagcccct tgacttgatt ggcaggctaa atgcgacatc ttagccggat 600

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gccaagcttc gaggatactg tacgagccgc tttcaacctc acttgatgat gtctgagttt 840

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aattctgcat atataaagcc atggaagaag acgtaaaact gagacagcaa gctcaactgc 960

atagtatcga cttcaaggaa aacacgcaca aataatcatc 1000

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<212> DNA
<213> Trichoderma reesei

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gacgctgtat gctcatgata catgcgtgac atcgaaatat atcagccaaa gtatccgtcc 180

ggcgacatgc ccatcaacta tattgaagtc agaaacacac tgtccctctt ccctcctatg 240

cttttacaag ctgctcctct atccgccccc acagtccctt gttcatatac cccgaaagcc 300

aaaagtttcc atccttgtcc ttgcccatga tcgggaagcc gtttggtagc acgatacccc 360

actgattatt ctgtatatag atcggtgaac ccgatttccc accctcccta ctgggctgaa 420

gcacagctgc agaaaagtcc aagtcgaaca gctttgcctt gccccaattt gacaacgtaa 480

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gtgaagtggc aactttgatc caccaggcgc agagaacatc gccttcagtc aagaaagtgt 840

tttctgcgcc ctcggactca agctcactga ttgcctcttt gcgaaggttc tcaatgaaag 900

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<212> PRT
<213> Trichomonas vaginalis

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Met Gly Asn Thr Val Lys Val Ile Gln Leu Ile Thr Leu Leu Leu Ser
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Cys Leu Leu Ala Phe Leu Ile Arg Gln Phe Ala Asn Val Val Asn Glu
20 25 30

Pro Ile Ile His Glu Phe Asp Pro His Phe Asn Trp Arg Cys Thr Gln
35 40 45

Tyr Ile Asp Thr His Gly Leu Tyr Glu Phe Leu Gly Trp Phe Asp Asn
50 55 60

Ile Ser Trp Tyr Pro Gln Gly Arg Pro Val Gly Glu Thr Ala Tyr Pro
65 70 75 80

Gly Leu Met Tyr Thr Ser Ala Ile Val Lys Trp Ala Leu Gln Lys Ile
85 90 95

His Ile Ile Val Asp Leu Arg Asn Ile Cys Val Phe Met Gly Pro Ser
100 105 110

Val Ser Ile Leu Ser Val Leu Val Ala Phe Leu Phe Gly Glu Leu Val
115 120 125

Gly Ser Ala Gln Leu Gly Thr Leu Phe Gly Ala Ile Thr Ser Phe Ile
130 135 140

Pro Gly Met Ile Ser Arg Ser Val Gly Gly Ala Tyr Asp Tyr Glu Cys
145 150 155 160

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Ile Gly Leu Phe Ile Ile Val Leu Ser Leu Tyr Thr Phe Ala Leu Ala
                165                 170                 175

Leu Lys Ser Gly Ser Ile Leu Leu Ser Val Ile Ala Ala Phe Ala Tyr
            180                 185                 190

Ser Tyr Leu Ala Leu Thr Trp Gly Gly Tyr Val Phe Val Ser Asn Cys
        195                 200                 205

Ile Pro Leu Phe Ala Ala Gly Leu Val Ala Ile Gly Arg Tyr Ser Trp
    210                 215                 220

Arg Leu His Ile Thr Tyr Ser Ile Trp Phe Ile Val Ala Ser Ile Leu
225                 230                 235                 240

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

His Phe Ala Met Leu Gly Thr Phe Leu Val Met Gln Ile Trp Gly Phe
            260                 265                 270

Phe Thr Phe Ile Lys Ser Arg Phe Ser Pro Thr Thr Tyr Asn Ser Val
        275                 280                 285

Ala Ile Thr Ser Ile Leu Ile Leu Pro Ser Phe Leu Leu Leu Met Ile
    290                 295                 300

Thr Val Gly Met Ser Thr Gly Leu Leu Gly Gly Phe Ser Gly Arg Leu
305                 310                 315                 320

Leu Gln Met Phe Asp Pro Thr Tyr Ala Ala Lys Asn Val Pro Ile Ile
                325                 330                 335

Asn Ser Val Ala Glu His Gln Pro Thr Ala Trp Val Lys Tyr Tyr Ser
            340                 345                 350

Asp Cys Glu Leu Phe Ile Phe Phe Phe Pro Leu Gly Ala Tyr Ile Val
        355                 360                 365

Ile Ser Ser Leu Ile Arg Thr Gln Lys Thr Lys Asp Gln Thr Glu Leu
    370                 375                 380

Lys Arg Ala Glu Thr Leu Leu Leu Leu Phe Ile Tyr Gly Phe Ser Thr
385                 390                 395                 400

Leu Tyr Phe Ala Ser Ile Met Val Arg Leu Val Leu Val Phe Thr Pro
                405                 410                 415

Ala Leu Val Phe Val Ala Gly Ile Ala Ile His Gln Leu Leu Arg Glu
            420                 425                 430
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Ser Phe Lys Gln Lys Ser Phe Leu His Pro Val Ser Leu Thr Met Ile
        435                 440                 445

Ile Leu Thr Phe Ile Ile Cys Leu His Gly Val Leu His Ala Thr His
    450                 455                 460

Phe Ala Cys Tyr Ser Tyr Ser Gly Asp His Leu His Phe Asn Ile Met
465                 470                 475                 480

Thr Pro Arg Gly Val Glu Thr Ser Asp Asp Tyr Arg Glu Gly Tyr Arg
                485                 490                 495

Trp Leu Thr Glu Asn Thr Tyr Arg Asp Asp Ile Val Met Ser Trp Trp
            500                 505                 510

Asp Tyr Gly Tyr Gln Ile Thr Ser Met Gly Asn Arg Gly Cys Ile Ala
        515                 520                 525

Asp Gly Asn Thr Asn Asn Phe Thr His Ile Gly Ile Ile Gly Met Ala
    530                 535                 540

Met Ser Ser Pro Glu Pro Ile Ser Trp Arg Ile Ala Arg Leu Met Asn
545                 550                 555                 560

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

Asp Asp Ile Asn Lys Phe Leu Trp Met Pro Arg Ile Ala His Gln Thr
            580                 585                 590

Phe Asp Asn Ile Thr Gly Glu Met Tyr Gln Ile Pro Tyr Arg His Ile
        595                 600                 605

Val Gly Glu Ser Met Thr Lys Asn Met Thr Leu Ser Met Met Phe Lys
    610                 615                 620

Phe Cys Tyr Asn Asn Tyr Lys Tyr Tyr Gln Pro His Pro Gln Phe Pro
625                 630                 635                 640

Thr Gly Tyr Asp Leu Thr Arg Arg Thr Ser Ile Pro Asn Ile Lys Asp
                645                 650                 655

Ile Ser Met Ser Gln Phe Thr Glu Ala Phe Thr Thr Lys Asn Trp Ile
            660                 665                 670

Val Arg Ile Tyr Lys Val Gly Asp Asp Pro Gln Trp Asn Arg Val Tyr
        675                 680                 685
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<212> PRT
<213> Leishmania infantum

<400> 8

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Ala Ser Pro Pro Ala Asn Met Ile Leu Leu Pro Lys Thr Pro Ile Asp
            20                  25                  30

Thr Lys Asp Phe Ile Gly Ile Phe Ser Phe Pro Phe Trp Pro Val Arg
        35                  40                  45

Phe Val Val Thr Val Val Ala Leu Phe Val Val Gly Ala Ser Cys Phe
    50                  55                  60

Gln Ala Phe Thr Val Arg Met Thr Ser Val Gln Ile Tyr Gly Tyr Leu
65                  70                  75                  80

Ile His Glu Phe Asp Pro Trp Phe Asn Tyr Arg Ala Ala Glu Tyr Met
                85                  90                  95

Ser Thr His Gly Trp Ser Ala Phe Phe Ser Trp Phe Asp Tyr Met Ser
            100                 105                 110

Trp Tyr Pro Leu Gly Arg Pro Val Gly Ser Thr Thr Tyr Pro Gly Leu
        115                 120                 125

Gln Leu Thr Ala Val Ala Ile His Arg Ala Leu Ala Ala Ala Gly Met
    130                 135                 140

Pro Met Ser Leu Asn Asn Val Cys Val Leu Met Pro Ala Trp Phe Gly
145                 150                 155                 160

Ala Ile Ala Thr Ala Thr Leu Ala Phe Cys Thr Tyr Glu Ala Ser Gly
                165                 170                 175

Ser Thr Val Ala Ala Ala Ala Ala Ala Leu Ser Phe Ser Ile Ile Pro
            180                 185                 190

Ala His Leu Met Arg Ser Met Ala Gly Glu Phe Asp Asn Glu Cys Ile
        195                 200                 205

Ala Val Ala Ala Met Leu Leu Thr Phe Tyr Cys Trp Val Arg Ser Leu
    210                 215                 220

Arg Thr Arg Ser Ser Trp Pro Ile Gly Val Leu Thr Gly Val Ala Tyr
225                 230                 235                 240

Gly Tyr Met Val Ala Ala Trp Gly Gly Tyr Ile Phe Val Leu Asn Met
                245                 250                 255

Val Ala Met His Ala Gly Ile Ser Ser Met Val Asp Trp Ala Arg Asn
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            260                 265                 270

Thr Tyr Asn Pro Ser Leu Leu Arg Ala Tyr Thr Leu Phe Tyr Val Val
        275                 280                 285

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

Lys Ser Leu Glu Gln Leu Gly Ala Leu Leu Val Leu Val Phe Leu Cys
305                 310                 315                 320

Gly Leu Gln Ala Cys Glu Val Phe Arg Ala Arg Ala Gly Val Glu Val
                325                 330                 335

Arg Ser Arg Ala Asn Phe Lys Ile Arg Val Arg Val Phe Ser Val Met
            340                 345                 350

Ala Gly Val Ala Ala Leu Ala Ile Ala Val Leu Ala Pro Thr Gly Tyr
        355                 360                 365

Phe Gly Pro Leu Ser Val Arg Val Arg Ala Leu Phe Val Glu His Thr
    370                 375                 380

Arg Thr Gly Asn Pro Leu Val Asp Ser Val Ala Glu His Gln Pro Ala
385                 390                 395                 400

Gly Pro Glu Ala Met Trp Ser Phe Leu His Val Cys Gly Val Thr Trp
                405                 410                 415

Gly Leu Gly Ser Ile Val Leu Ala Leu Ser Thr Phe Val His Tyr Ala
            420                 425                 430

Pro Ser Lys Leu Phe Trp Leu Leu Asn Ser Gly Ala Val Tyr Tyr Phe
        435                 440                 445

Ser Thr Arg Met Ala Arg Leu Leu Leu Leu Ser Gly Pro Ala Ala Cys
    450                 455                 460

Leu Ser Thr Gly Ile Phe Val Gly Thr Ile Leu Glu Ala Ala Val Gln
465                 470                 475                 480

Leu Ser Phe Trp Asp Ser Asp Ala Thr Lys Ala Arg Lys Gln Gln Lys
                485                 490                 495

Pro Ala Gln Arg His Arg Arg Gly Ala Gly Lys Asp Ser Asp Arg Asp
            500                 505                 510

Asp Ala Glu Ser Ala Thr Thr Ala Arg Thr Leu Cys Asp Val Phe Ala
        515                 520                 525

Gly Ser Pro Leu Ala Trp Gly His Arg Met Val Leu Phe Ile Ala Val
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Trp Ala Leu Val Thr Thr Thr Ala Val Ser Phe Phe Ser Ser Asp Phe
545 550 555 560

Ala Ser His Ser Thr Thr Phe Ala Glu Gln Ser Ser Asn Pro Met Ile
565 570 575

Val Phe Ala Ala Val Val Gln Asn Arg Ala Thr Gly Lys Pro Met Asn
580 585 590

Ile Leu Val Asp Asp Tyr Leu Arg Ser Tyr Ile Trp Leu Arg Asp Asn
595 600 605

Thr Pro Glu Asp Ala Arg Ile Leu Ala Trp Trp Asp Tyr Gly Tyr Gln
610 615 620

Ile Thr Gly Ile Gly Asn Arg Thr Ser Leu Ala Asp Gly Asn Thr Trp
625 630 635 640

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

Ala Glu Ala His Ser Leu Val Arg His Met Ala Asp Tyr Val Leu Ile
660 665 670

Trp Ala Gly Gln Ser Gly Asp Leu Met Lys Ser Pro His Met Ala Arg
675 680 685

Ile Gly Asn Ser Val Tyr His Asp Ile Cys Pro His Asp Pro Leu Cys
690 695 700

Gln Gln Phe Gly Phe Tyr Arg Asn Asp Tyr Ser Arg Pro Thr Pro Met
705 710 715 720

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

Gly Val Lys Val Asp Pro Ser Leu Phe Gln Glu Val Tyr Ser Ser Lys
740 745 750

Tyr Gly Leu Val Arg Val Phe Lys Val Met Asn Val Ser Glu Glu Ser
755 760 765

Lys Lys Trp Val Ala Asp Pro Ala Asn Arg Val Cys His Pro Pro Gly
770 775 780

Ser Trp Ile Cys Pro Gly Gln Tyr Pro Pro Ala Lys Glu Ile Gln Glu
785 790 795 800

Met Leu Ala His Arg Val Pro Phe Asp Gln Val Glu Lys Val Asp Arg

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805 810 815

Lys Asn His Val Gly Ser Tyr His Glu Glu Tyr Met Arg Arg Met Arg
820 825 830

Glu Ser Glu Ser
835

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<212> DNA
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agcttcccgt tctggcccgt ccgcttcgtc gtcaccgtcg tcgccctctt cgtcgtcggc 180

gccagctgct tccaggcctt caccgtccgc atgaccagcg tccagatcta cggctacctc 240

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ggcgagttcg acaacgagtg cattgccgtc gccgccatgc tcctcacctt ctactgctgg 660

gtccgctccc tccgcacccg cagcagctgg cccatcggcg tcctcaccgg ggtcgcctac 720

ggctacatgg tggccgcctg gggcggctac atcttcgtcc tcaacatggt cgccatgcac 780

gccggcatca gcagcatggt cgactgggcc cgcaacacct acaaccccag cctgctccgc 840

gcctacaccc tcttctacgt cgtcggcacc gccattgccg tctgcgtccc ccccgtcggc 900

atgagcccct tcaagagcct cgagcagctc ggagcgctgc tcgtcctggt ctttctgtgc 960

ggcctccagg cctgcgaggt ctttcgcgcc cgagccggcg tcgaggtccg cagccgcgcc 1020

aacttcaaga tccgcgtccg cgtgttcagc gtcatggccg gcgtcgccgc cttggctatc 1080

gccgtcctcg cccccaccgg ctacttcggc cccctcagcg tccgcgtgcg cgccctgttc 1140

gtcgagcaca cccgcaccgg caatcccctg gtcgacagcg tcgccgagca ccagcctgcc 1200

ggccctgagg ccatgtggtc gttcctccac gtctgcggcg tcacctgggg cctcggatcc 1260

atcgtcctgg ccctcagcac cttcgtccac tacgccccca gcaagctgtt ctggctcctc 1320

aactctggcg ccgtctacta cttctcgacc cgaatggccc gcctcctgct cctcagcggc 1380

cctgccgcct gcctcagcac cggcatcttc gtgggcacca tcctcgaggc cgccgtccag 1440

ctcagcttct gggacagcga cgccaccaag gcccgcaagc agcagaagcc tgcccagcgc 1500

caccgacggg gagccggcaa ggatagcgac cgcgacgacg ccgagtctgc caccaccgcc 1560

cgcaccctct gcgacgtctt tgccggcagc cccctcgcct ggggccaccg catggtcctc 1620

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agctacatct ggctccgcga caacaccccc gaggacgccc gcatcctcgc ctggtgggac 1860

tacggctacc agatcaccgg catcggcaac cgcaccagcc tcgccgacgg caacacctgg 1920

aaccacgagc acattgccac catcggcaag atgctcacca gccccgtcgc cgaggcccac 1980

agcctcgtcc gccacatggc cgactacgtc ctcatctggg ctggccagag cggcgacctc 2040

atgaagtccc cccacatggc ccgcatcggc aacagcgtct accacgacat ctgcccccac 2100

gacccctct gccagcagtt cggcttctac cgcaacgact acagccgccc caccccgatg 2160

atgcgcgcca gcctcctcta caacctccac gaggtcggca agaccaaggg cgtcaaggtc 2220

gaccccagcc tcttccaaga ggtctacagc agcaagtacg gcctcgtgcg cgtgttcaag 2280

gtcatgaacg tcagcgaaga gtccaagaag tgggtcgcgg accccgccaa cagggtctgc 2340

caccccctg gcagctggat ctgccctggc cagtaccctc ccgccaaaga gatccaagag 2400

atgctcgccc accgcgtccc gttcgaccag gtcgagaagg tcgaccgcaa gaaccacgtc 2460

ggctcctacc acgaagagta catgcgccgc atgcgcgaga gcgagagctg a 2511

<210> 10
<211> 721
<212> PRT
<213> Entamoeba histolytica

<400> 10

Met Gly Phe Phe Lys Thr Leu Val Gln Leu Ile Leu Lys Asn Ile Gly
1 5 10 15

Ile Thr Leu Ile Cys Ile Ile Ala Phe Ser Ser Arg Leu Tyr Ser Ile
20 25 30

Ile Met Tyr Glu Ala Ile Ile His Glu Phe Asp Pro Tyr Phe Asn Phe
35 40 45

Arg Ala Thr Lys Tyr Leu Val Glu His Gly Pro Thr Ala Phe Met Asn
50 55 60

Trp Phe Asp Pro Asp Ser Trp Tyr Pro Leu Gly Arg Asn Ile Gly Thr
65 70 75 80

Thr Val Phe Pro Gly Leu Met Phe Thr Ser Ala Phe Ile Phe Lys Phe
85 90 95

Leu Ala Tyr Phe Asn Leu Ile Ile Asp Val Arg Leu Ile Cys Val Cys
100 105 110

```
Met Gly Pro Ile Tyr Ser Val Ile Thr Cys Ile Val Ala Tyr Leu Phe
        115                 120                 125

Gly Ser Arg Val His Ser Asp Arg Ala Gly Leu Phe Ala Ala Ala Leu
    130                 135                 140

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

Asp Tyr Glu Cys Ile Ser Ile Thr Ile Leu Ile Leu Thr Phe Tyr Leu
                165                 170                 175

Trp Ile Glu Ala Val His Asn Asn Ser Pro Ile Leu Ser Ala Val Thr
            180                 185                 190

Ala Leu Ser Tyr Phe Tyr Met Ala Ser Thr Trp Gly Ala Tyr Val Phe
        195                 200                 205

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

Phe Tyr Asn Lys Lys Leu Tyr Ser Cys Tyr Ser Ile Tyr Tyr Ile Phe
225                 230                 235                 240

Ala Thr Ile Leu Ser Met Gln Val Pro Phe Ile Asn Tyr Val Pro Ile
                245                 250                 255

Arg Ser Ser Glu His Ile Gly Ala Met Gly Val Phe Gly Ile Cys Gln
            260                 265                 270

Leu Ile Glu Leu Tyr Ser Leu Ile His Lys Leu Leu Gly Gln Lys Lys
        275                 280                 285

Thr Val Glu Leu Ile Lys Lys Val Leu Met Gly Ser Val Ile Ile Gly
    290                 295                 300

Ile Ile Met Val Leu Ile Leu Ile Lys Lys Gly Tyr Ile Ser Ala Trp
305                 310                 315                 320

Ser Gly Arg Phe Tyr Ala Leu Phe Asp Pro Thr Phe Ala Lys Lys Asn
                325                 330                 335

Ile Pro Leu Ile Val Ser Val Ser Glu His Gln Pro Ala Asn Trp Ala
            340                 345                 350

Ser Tyr Phe Phe Asp Leu His Cys Leu Ile Val Ile Ala Pro Ala Gly
        355                 360                 365

Leu Tyr Tyr Cys Phe Lys Lys Phe Asp Phe Asn Met Leu Phe Leu Ile
    370                 375                 380
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Ile Tyr Ser Val Ser Val Phe Tyr Phe Ser Cys Val Met Ser Arg Leu
385                 390                 395                 400

Val Leu Ile Leu Ala Pro Ala Ile Cys Leu Leu Ser Gly Ile Ala Leu
                405                 410                 415

Ala Glu Phe Phe Thr Gln Ile Gln Lys Gln Leu Glu Ser Thr Leu Lys
            420                 425                 430

Met Val Phe Lys Ser Asn Lys Lys Gln Gln Gln Gln Gln Ser Asn Glu
        435                 440                 445

Pro Thr Thr Lys Ile Glu Lys Glu Lys Arg Lys Ile His Pro Pro Lys
    450                 455                 460

Lys Glu Gln Asn Asn Glu Lys Ser Phe Ile Ser Glu Phe Ile Ile Phe
465                 470                 475                 480

Ile Ile Met Thr Ile Val Gly Ile Leu Leu Ile Ile Phe Leu Phe Lys
                485                 490                 495

Phe Phe Glu Tyr Ser Ile Gln Met Ser Lys Asn Tyr Ser Ser Pro Ser
            500                 505                 510

Val Val Leu Tyr Gly Asn His Gly Gly Lys Gln Ile Ala Phe Asp Asp
        515                 520                 525

Tyr Arg Glu Ala Tyr Arg Trp Leu Ala His Asn Thr Pro Glu Gly Ser
    530                 535                 540

Arg Val Met Ser Trp Trp Asp Tyr Gly Tyr Gln Ile Ser His Leu Ala
545                 550                 555                 560

Asn Arg Thr Val Ile Val Asp Asn Asn Thr Trp Asn Asn Ser His Ile
                565                 570                 575

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

Thr Ile Arg Asp Leu Asp Val Asp Tyr Leu Leu Val Val Phe Gly Gly
        595                 600                 605

Tyr Leu Gly Tyr Ser Ser Asp Asp Ile Asn Lys Phe Leu Trp Met Ile
    610                 615                 620

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

Asn His Asn Ala Tyr Thr Val Ala Asp Pro Ser Asp Thr Phe Lys Tyr
                645                 650                 655
```

Ser Met Met Tyr Lys Met Cys Tyr His Asn Phe Tyr Lys Ala Ser Asn
660 665 670

Gly Tyr Arg Ala Gly Met Asp Ala Val Arg Arg Glu Val Ile Glu Glu
675 680 685

Gln Thr Tyr Phe Lys Asn Ile Gln Glu Ala Phe Thr Ser Gln His Trp
690 695 700

Val Val Arg Ile Tyr Lys Val Asn Lys Pro Asn Pro Ile Asp Ser Leu
705 710 715 720

Leu

<210> 11
<211> 40
<212> DNA
<213> Trichoderma reesei

<400> 11
agctccgtgg cgaaagcctg acgcaccggt agattcttgg 40

<210> 12
<211> 1000
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 12
gttgggctga ggccgtatcg gagggacggg gtgaggattg aggcggagga gatgaagggg 60

gatgatgggg agacggtggt tgttgtgcat aattatgggc atgcgggatg ggggtatcag 120

gggtcgtatg ggtgtgcgga gagggttgtc gagttggtgg aggggattgt gaggggatga 180

gcggatgttt ttgatgtttt gactgctcgc ctttgactcg attctgatac ggacactttt 240

cgacctttgt ttctccaaga tggccctgta cagtcagatt gatagaggag catgtataat 300

tcattgccgg ttgccgtccc gtttccaagc agaaagccac tgttgagaag caacgtgctt 360

tgacgaaagt cgtggctcac tactcaaatc tctccacact catacattgt gtttcagtca 420

aaacactttg gcaaccaaga cgtgggaggg agtatctgca tcttttctca tcggcaagct 480

atctgactcg attgagaaga tgcgtggttc atatcacctg gccgttggag gtttcttcct 540

aggcagtcgc tctgttctcc ttctataaag aactccatcg ttcttgaata cctctttggc 600

cttcaagctc gatagtattg aacccattct tcactcatgc tgctcatcat tccacctccc 660

tcaagttggg tgtcgttgag tacctagtgt acataagcgg gtctatgcat ttaaaggggt 720

atcttcacca ccagcaatat ccacacttct aggctccacg ttgcacataa cgaaaccaaa 780

acagctaaac cgacgggcca atttcacgcg catcttcatc gacgaagcga gcgacagcga 840

agccgatacg caaatcctct tcagacaagc tcaactcggc caagcctcat gttttgccaa 900

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agatttcagt ctctcaccac tcacctgagt tgcctctctc 1000

<210> 13
<211> 1001
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 13
gggcagtatg ccggatggct ggcttataca ggcaaaaacc accttcttca ttcttcattc 60

ttcgtcttct tcttcttctt cctcctcatc gtcggtaggc ggcagctttc ccacattgga 120

gtcgctctcc tcgtcgctga gttcctcgac cgtcttttcg aattcctttg gcctggagtc 180

atcataatag tttaatacac gtttagagta tagagagaaa aaataagggg gaaaaagacg 240

caaatcatac cagtacggct gcttccgcca gagcttctcg tcgcgcacga ccttgataat 300

ctcgccaaag gccctgctgt cctgcgtgcc gacgggatat ccctcggcca ggacgtagcc 360

gccgcgcttg atccagacgg tgttgcgcag gcgctgggcg agctcgagga cgacgtgctt 420

cttgctgggc atctcgcagg tgtagaggtt gttgccctcg ggcttcagga cgcgcacaat 480

ggcctgcgtc ggctcgaggg catcgggagg cgtgagggcc tcttgtgtgg cggcaaggac 540

atttcgcttc ggcttaccca tggctgcgag tctttggggt cgattcggtg atactatctg 600

atcccaagaa aaaagagaca aaatttcatt gttgttgatt ggaaaataaa ctggggccgt 660

gatggagggg cagctttatc gataggacgg ggatttctcg aataggaaaa taaaacccct 720

ccgcccgtcc cgctctccgg cacggtgttg ccccattcgg cgaaaccgct tcagggacca 780

aactagaagt aaggtaccta tccataagct atcacgatga tatagaaggc atggatgtat 840

tgcaaaagcg aattgttaga cgccccaatg ggaggcttgg tggggttatc ggtttacgaa 900

atacttgaat caatgcatta ttaatctatc cattaggcat tttggcgttc accagaccgt 960

ttgactcacc gatatcgttc gtggtggtac tcggccagat g 1001

<210> 14
<211> 19
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 14
gcacactttc aagattggc 19

<210> 15
<211> 19
<212> DNA
<213> Artificial

<220>

<223> Primer

<400> 15
gcacactttc aagattggc 19

<210> 16
<211> 19
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 16
gtacggtgtt gccaagaag 19

<210> 17
<211> 448
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 17
gttgagtaca tcgagcgcga cagcattgtg cacaccatgc ttcccctcga gtccaaggac 60

agcatcatcg ttgaggactc gtgcaacggc gagacggaga agcaggctcc ctggggtctt 120

gcccgtatct ctcaccgaga gacgctcaac tttggctcct tcaacaagta cctctacacc 180

gctgatggtg gtgagggtgt tgatgcctat gtcattgaca ccggcaccaa catcgagcac 240

gtcgactttg agggtcgtgc caagtggggc aagaccatcc ctgccggcga tgaggacgag 300

gacggcaacg gccacggcac tcactgctct ggtaccgttg ctggtaagaa gtacggtgtt 360

gccaagaagg cccacgtcta cgccgtcaag gtgctccgat ccaacggatc cggcaccatg 420

tctgacgtcg tcaagggcgt cgagtacg 448

<210> 18
<211> 399
<212> PRT
<213> Trichoderma reesei

<400> 18

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

Met Ala Ala Gly Ser Val Ile Pro Ser Thr Asn Ala Asn Pro Gly Ser
20 25 30

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

Pro Leu Ala Leu Ala Arg Thr Tyr Ala Lys Tyr Gly Val Glu Val Pro
50 55 60

Lys Thr Leu Val Asp Ala Ile Gln Leu Val Lys Ser Ile Gln Leu Ala

65 70 75 80

Lys Arg Asp Ser Ala Thr Val Thr Ala Thr Pro Asp His Asp Asp Ile
85 90 95

Glu Tyr Leu Val Pro Val Lys Ile Gly Thr Pro Pro Gln Thr Leu Asn
100 105 110

Leu Asp Phe Asp Thr Gly Ser Ser Asp Leu Trp Val Phe Ser Ser Asp
115 120 125

Val Asp Pro Thr Ser Ser Gln Gly His Asp Ile Tyr Thr Pro Ser Lys
130 135 140

Ser Thr Ser Ser Lys Lys Leu Glu Gly Ala Ser Trp Asn Ile Thr Tyr
145 150 155 160

Gly Asp Arg Ser Ser Ser Ser Gly Asp Val Tyr His Asp Ile Val Ser
165 170 175

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

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

Ala Phe Ser Ser Ile Asn Thr Val Lys Pro Thr Pro Gln Lys Thr Trp
210 215 220

Tyr Asp Asn Ile Val Gly Ser Leu Asp Ser Pro Val Phe Val Ala Asp
225 230 235 240

Leu Arg His Asp Thr Pro Gly Ser Tyr His Phe Gly Ser Ile Pro Ser
245 250 255

Glu Ala Ser Lys Ala Phe Tyr Ala Pro Ile Asp Asn Ser Lys Gly Phe
260 265 270

Trp Gln Phe Ser Thr Ser Ser Asn Ile Ser Gly Gln Phe Asn Ala Val
275 280 285

Ala Asp Thr Gly Thr Thr Leu Leu Leu Ala Ser Asp Asp Leu Val Lys
290 295 300

Ala Tyr Tyr Ala Lys Val Gln Gly Ala Arg Val Asn Val Phe Leu Gly
305 310 315 320

Gly Tyr Val Phe Asn Cys Thr Thr Gln Leu Pro Asp Phe Thr Phe Thr
325 330 335

Val Gly Glu Gly Asn Ile Thr Val Pro Gly Thr Leu Ile Asn Tyr Ser

340 345 350

Glu Ala Gly Asn Gly Gln Cys Phe Gly Gly Ile Gln Pro Ser Gly Gly
355 360 365

Leu Pro Phe Ala Ile Phe Gly Asp Ile Ala Leu Lys Ala Ala Tyr Val
370 375 380

Ile Phe Asp Ser Gly Asn Lys Gln Val Gly Trp Ala Gln Lys Lys
385 390 395

<210> 19
<211> 452
<212> PRT
<213> Trichoderma reesei

<400> 19

Met Glu Ala Ile Leu Gln Ala Gln Ala Lys Phe Arg Leu Asp Arg Gly
1 5 10 15

Leu Gln Lys Ile Thr Ala Val Arg Asn Lys Asn Tyr Lys Arg His Gly
20 25 30

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

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

Ala His Pro Asp Phe Lys Ala Ala Val Gly Gly Arg Val Thr Arg Gln
65 70 75 80

Lys Val Leu Ala Lys Lys Val Lys Glu Asp Gly Thr Val Asp Ala Gly
85 90 95

Gly Ser Lys Thr Gly Glu Val Asp Ala Glu Asp Gln Gln Asn Asp Ser
100 105 110

Glu Tyr Leu Cys Glu Val Thr Ile Gly Thr Pro Gly Gln Lys Leu Met
115 120 125

Leu Asp Phe Asp Thr Gly Ser Ser Asp Leu Trp Val Phe Ser Thr Glu
130 135 140

Leu Ser Lys His Leu Gln Glu Asn His Ala Ile Phe Asp Pro Lys Lys
145 150 155 160

Ser Ser Thr Phe Lys Pro Leu Lys Asp Gln Thr Trp Gln Ile Ser Tyr
165 170 175

Gly Asp Gly Ser Ser Ala Ser Gly Thr Cys Gly Ser Asp Thr Val Thr
180 185 190

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Leu Gly Gly Leu Ser Ile Lys Asn Gln Thr Ile Glu Leu Ala Ser Lys
        195                 200                 205

Leu Ala Pro Gln Phe Ala Gln Gly Thr Gly Asp Gly Leu Leu Gly Leu
    210                 215                 220

Ala Trp Pro Gln Ile Asn Thr Val Gln Thr Asp Gly Arg Pro Thr Pro
225                 230                 235                 240

Ala Asn Thr Pro Val Ala Asn Met Ile Gln Gln Asp Asp Ile Pro Ser
                245                 250                 255

Asp Ala Gln Leu Phe Thr Ala Ala Phe Tyr Ser Glu Arg Asp Glu Asn
            260                 265                 270

Ala Glu Ser Phe Tyr Thr Phe Gly Tyr Ile Asp Gln Asp Leu Val Ser
        275                 280                 285

Ala Ser Gly Gln Glu Ile Ala Trp Thr Asp Val Asp Asn Ser Gln Gly
    290                 295                 300

Phe Trp Met Phe Pro Ser Thr Lys Thr Thr Ile Asn Gly Lys Asp Ile
305                 310                 315                 320

Ser Gln Glu Gly Asn Thr Ala Ile Ala Asp Thr Gly Thr Thr Leu Ala
                325                 330                 335

Leu Val Ser Asp Glu Val Cys Glu Ala Leu Tyr Lys Ala Ile Pro Gly
            340                 345                 350

Ala Lys Tyr Asp Asp Asn Gln Gln Gly Tyr Val Phe Pro Ile Asn Thr
        355                 360                 365

Asp Ala Ser Ser Leu Pro Glu Leu Lys Val Ser Val Gly Asn Thr Gln
    370                 375                 380

Phe Val Ile Gln Pro Glu Asp Leu Ala Phe Ala Pro Ala Asp Asp Ser
385                 390                 395                 400

Asn Trp Tyr Gly Gly Val Gln Ser Arg Gly Ser Asn Pro Phe Asp Ile
                405                 410                 415

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

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

Gln Pro Pro Gln
    450
```

<210> 20
<211> 395
<212> PRT
<213> Trichoderma reesei

<400> 20

```
Met Lys Ser Ala Leu Leu Ala Ala Ala Ala Leu Val Gly Ser Ala Gln
1               5                   10                  15

Ala Gly Ile His Lys Met Lys Leu Gln Lys Val Ser Leu Glu Gln Gln
            20                  25                  30

Leu Glu Gly Ser Ser Ile Glu Ala His Val Gln Gln Leu Gly Gln Lys
        35                  40                  45

Tyr Met Gly Val Arg Pro Thr Ser Arg Ala Glu Val Met Phe Asn Asp
    50                  55                  60

Lys Pro Pro Lys Val Gln Gly Gly His Pro Val Pro Val Thr Asn Phe
65                  70                  75                  80

Met Asn Ala Gln Tyr Phe Ser Glu Ile Thr Ile Gly Thr Pro Pro Gln
                85                  90                  95

Ser Phe Lys Val Val Leu Asp Thr Gly Ser Ser Asn Leu Trp Val Pro
            100                 105                 110

Ser Gln Ser Cys Asn Ser Ile Ala Cys Phe Leu His Ser Thr Tyr Asp
        115                 120                 125

Ser Ser Ser Ser Ser Thr Tyr Lys Pro Asn Gly Ser Asp Phe Glu Ile
    130                 135                 140

His Tyr Gly Ser Gly Ser Leu Thr Gly Phe Ile Ser Asn Asp Val Val
145                 150                 155                 160

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

Ser Glu Pro Gly Leu Ala Phe Ala Phe Gly Arg Phe Asp Gly Ile Leu
            180                 185                 190

Gly Leu Gly Tyr Asp Thr Ile Ser Val Asn Gly Ile Val Pro Pro Phe
        195                 200                 205

Tyr Gln Met Val Asn Gln Lys Leu Ile Asp Glu Pro Val Phe Ala Phe
    210                 215                 220

Tyr Leu Gly Ser Ser Asp Glu Gly Ser Glu Ala Val Phe Gly Gly Val
225                 230                 235                 240
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```
Asp Asp Ala His Tyr Glu Gly Lys Ile Glu Tyr Ile Pro Leu Arg Arg
                245                 250                 255

Lys Ala Tyr Trp Glu Val Asp Leu Asp Ser Ile Ala Phe Gly Asp Glu
            260                 265                 270

Val Ala Glu Leu Glu Asn Thr Gly Ala Ile Leu Asp Thr Gly Thr Ser
        275                 280                 285

Leu Asn Val Leu Pro Ser Gly Leu Ala Glu Leu Leu Asn Ala Glu Ile
    290                 295                 300

Gly Ala Lys Lys Gly Phe Gly Gly Gln Tyr Thr Val Asp Cys Ser Lys
305                 310                 315                 320

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

Ser Leu Pro Ala Ser Asp Tyr Ile Ile Glu Met Ser Gly Asn Cys Ile
            340                 345                 350

Ser Ser Phe Gln Gly Met Asp Phe Pro Glu Pro Val Gly Pro Leu Val
        355                 360                 365

Ile Leu Gly Asp Ala Phe Leu Arg Arg Tyr Tyr Ser Val Tyr Asp Leu
    370                 375                 380

Gly Arg Asp Ala Val Gly Leu Ala Lys Ala Lys
385                 390                 395


<210>  21
<211>  426
<212>  PRT
<213>  Trichoderma reesei

<400>  21

Met Lys Phe His Ala Ala Ala Leu Thr Leu Ala Cys Leu Ala Ser Ser
1               5                   10                  15

Ala Ser Ala Gly Val Ala Gln Pro Arg Ala Asp Glu Val Glu Ser Ala
            20                  25                  30

Glu Gln Gly Lys Thr Phe Ser Leu Glu Gln Ile Pro Asn Glu Arg Tyr
        35                  40                  45

Lys Gly Asn Ile Pro Ala Ala Tyr Ile Ser Ala Leu Ala Lys Tyr Ser
    50                  55                  60

Pro Thr Ile Pro Asp Lys Ile Lys His Ala Ile Glu Ile Asn Pro Asp
65                  70                  75                  80
```

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

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

Pro Val Lys Ile Gly Thr Pro Pro Gln Thr Leu Pro Leu Asn Leu Asp
        115                 120                 125

Thr Gly Ser Ser Asp Leu Trp Val Ile Ser Thr Asp Thr Tyr Pro Pro
    130                 135                 140

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

Gln Arg Leu Ile Gly Glu Ser Trp Val Ile Arg Tyr Gly Asp Gly Ser
                165                 170                 175

Ser Ala Asn Gly Ile Val Tyr Lys Asp Arg Val Gln Ile Gly Asn Thr
            180                 185                 190

Phe Phe Asn Gln Gln Ala Val Glu Ser Ala Val Asn Ile Ser Asn Glu
        195                 200                 205

Ile Ser Asp Asp Ser Phe Ser Ser Gly Leu Leu Gly Ala Ala Ser Ser
    210                 215                 220

Ala Ala Asn Thr Val Arg Pro Asp Arg Gln Thr Thr Tyr Leu Glu Asn
225                 230                 235                 240

Ile Lys Ser Gln Leu Ala Arg Pro Val Phe Thr Ala Asn Leu Lys Lys
                245                 250                 255

Gly Lys Pro Gly Asn Tyr Asn Phe Gly Tyr Ile Asn Gly Ser Glu Tyr
            260                 265                 270

Ile Gly Pro Ile Gln Tyr Ala Ala Ile Asn Pro Ser Ser Pro Leu Trp
        275                 280                 285

Glu Val Ser Val Ser Gly Tyr Arg Val Gly Ser Asn Asp Thr Lys Tyr
    290                 295                 300

Val Pro Arg Val Trp Asn Ala Ile Ala Asp Thr Gly Thr Thr Leu Leu
305                 310                 315                 320

Leu Val Pro Asn Asp Ile Val Ser Ala Tyr Tyr Ala Gln Val Lys Gly
                325                 330                 335

Ser Thr Phe Ser Asn Asp Val Gly Met Met Leu Val Pro Cys Ala Ala
            340                 345                 350
```

```
Thr Leu Pro Asp Phe Ala Phe Gly Leu Gly Asn Tyr Arg Gly Val Ile
        355                 360                 365

Pro Gly Ser Tyr Ile Asn Tyr Gly Arg Met Asn Lys Thr Tyr Cys Tyr
    370                 375                 380

Gly Gly Ile Gln Ser Ser Glu Asp Ala Pro Phe Ala Val Leu Gly Asp
385                 390                 395                 400

Ile Ala Leu Lys Ala Gln Phe Val Val Phe Asp Met Gly Asn Lys Val
                405                 410                 415

Val Gly Phe Ala Asn Lys Asn Thr Asn Val
            420                 425
```

<210> 22
<211> 407
<212> PRT
<213> Trichoderma reesei

<400> 22

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

Leu Ala Ala Ala Leu Pro Thr Glu Gly Gln Lys Thr Ala Ser Val Glu
            20                  25                  30

Val Gln Tyr Asn Lys Asn Tyr Val Pro His Gly Pro Thr Ala Leu Phe
        35                  40                  45

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

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

Gly Ser Ala Pro Asn His Pro Ser Asp Ser Ala Asp Ser Glu Tyr Ile
                85                  90                  95

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

Asp Thr Gly Ser Ser Asp Leu Trp Val Phe Ser Ser Glu Thr Pro Lys
        115                 120                 125

Ser Ser Ala Thr Gly His Ala Ile Tyr Thr Pro Ser Lys Ser Ser Thr
    130                 135                 140

Ser Lys Lys Val Ser Gly Ala Ser Trp Ser Ile Ser Tyr Gly Asp Gly
145                 150                 155                 160

Ser Ser Ser Ser Gly Asp Val Tyr Thr Asp Lys Val Thr Ile Gly Gly
```

eolf-seql

```
                165                 170                 175

Phe Ser Val Asn Thr Gln Gly Val Glu Ser Ala Thr Arg Val Ser Thr
            180                 185                 190

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

Asp Ser Gly Asn Gln Val Arg Pro His Pro Gln Lys Thr Trp Phe Ser
    210                 215                 220

Asn Ala Ala Ser Ser Leu Ala Glu Pro Leu Phe Thr Ala Asp Leu Arg
225                 230                 235                 240

His Gly Gln Asn Gly Ser Tyr Asn Phe Gly Tyr Ile Asp Thr Ser Val
                245                 250                 255

Ala Lys Gly Pro Val Ala Tyr Thr Pro Val Asp Asn Ser Gln Gly Phe
            260                 265                 270

Trp Glu Phe Thr Ala Ser Gly Tyr Ser Val Gly Gly Gly Lys Leu Asn
        275                 280                 285

Arg Asn Ser Ile Asp Gly Ile Ala Asp Thr Gly Thr Thr Leu Leu Leu
    290                 295                 300

Leu Asp Asp Asn Val Val Asp Ala Tyr Tyr Ala Asn Val Gln Ser Ala
305                 310                 315                 320

Gln Tyr Asp Asn Gln Gln Glu Gly Val Val Phe Asp Cys Asp Glu Asp
                325                 330                 335

Leu Pro Ser Phe Ser Phe Gly Val Gly Ser Ser Thr Ile Thr Ile Pro
            340                 345                 350

Gly Asp Leu Leu Asn Leu Thr Pro Leu Glu Glu Gly Ser Ser Thr Cys
        355                 360                 365

Phe Gly Gly Leu Gln Ser Ser Ser Gly Ile Gly Ile Asn Ile Phe Gly
    370                 375                 380

Asp Val Ala Leu Lys Ala Ala Leu Val Val Phe Asp Leu Gly Asn Glu
385                 390                 395                 400

Arg Leu Gly Trp Ala Gln Lys
                405
```

<210> 23
<211> 446
<212> PRT
<213> Trichoderma reesei

<400> 23

```
Met Thr Leu Pro Val Pro Leu Arg Glu His Asp Leu Pro Phe Leu Lys
1               5                  10                  15

Glu Lys Arg Lys Leu Pro Ala Asp Asp Ile Pro Ser Gly Thr Tyr Thr
            20                  25                  30

Leu Pro Ile Ile His Ala Arg Arg Pro Lys Leu Ala Ser Arg Ala Ile
        35                  40                  45

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

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

Ser Phe Glu Leu Trp Val Asn Pro Asn Cys Ser Asn Val Gln Ser Ala
                85                  90                  95

Asp Gln Arg Phe Cys Arg Ala Ile Gly Phe Tyr Asp Pro Ser Ser Ser
            100                 105                 110

Ser Thr Ala Asp Val Thr Ser Gln Ser Ala Arg Leu Arg Tyr Gly Ile
        115                 120                 125

Gly Ser Ala Asp Val Thr Tyr Val His Asp Thr Ile Ser Leu Pro Gly
    130                 135                 140

Ser Gly Ser Gly Ser Lys Ala Met Lys Ala Val Gln Phe Gly Val Ala
145                 150                 155                 160

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

Asn Gly Ile Asn Thr Glu Tyr Pro Asn Phe Val Asp Glu Leu Ala Ala
            180                 185                 190

Gln Gly Val Thr Ala Thr Lys Ala Phe Ser Leu Ala Leu Gly Ser Lys
        195                 200                 205

Ala Glu Glu Glu Gly Val Ile Ile Phe Gly Gly Val Asp Thr Ala Lys
    210                 215                 220

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

Pro Asp Gly Val Ala Arg Tyr Trp Val Lys Met Lys Ser Ile Ser Leu
                245                 250                 255

Thr Pro Pro Pro Pro Ser Ser Ser Gly Ser Thr Asp Asp Asn Asn Asn
            260                 265                 270
```

```
Lys Pro Val Ala Phe Pro Gln Thr Ser Met Thr Val Phe Leu Asp Ser
        275                 280                 285

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

Ser Ala Leu Gly Ser Thr Gln Thr Asp Glu Ser Gly Phe Phe Val Val
305                 310                 315                 320

Asp Cys Ala Leu Ala Ser Gln Asp Gly Thr Ile Asp Phe Glu Phe Asp
                325                 330                 335

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

Thr Leu Pro Pro His Cys Tyr Leu Gly Met Met Gly Ser Thr Gln Phe
        355                 360                 365

Ala Leu Leu Gly Asp Thr Phe Leu Arg Ser Ala Tyr Ala Val Phe Asp
    370                 375                 380

Leu Thr Ser Asn Val Val His Leu Ala Pro Tyr Ala Asn Cys Gly Thr
385                 390                 395                 400

Asn Val Lys Ser Ile Thr Ser Thr Ser Ser Leu Ser Asn Leu Val Gly
                405                 410                 415

Thr Cys Asn Asp Pro Ser Lys Pro Ser Ser Ser Pro Ser Pro Ser Gln
            420                 425                 430

Thr Pro Ser Ala Ser Pro Ser Ser Thr Ala Thr Gln Lys Ala
        435                 440                 445


<210>  24
<211>  259
<212>  PRT
<213>  Trichoderma reesei

<400>  24

Met Ala Pro Ala Ser Gln Val Val Ser Ala Leu Met Leu Pro Ala Leu
1               5                   10                  15

Ala Leu Gly Ala Ala Ile Gln Pro Arg Gly Ala Asp Ile Val Gly Gly
            20                  25                  30

Thr Ala Ala Ser Leu Gly Glu Phe Pro Tyr Ile Val Ser Leu Gln Asn
        35                  40                  45

Pro Asn Gln Gly Gly His Phe Cys Gly Gly Val Leu Val Asn Ala Asn
    50                  55                  60
```

```
Thr Val Val Thr Ala Ala His Cys Ser Val Val Tyr Pro Ala Ser Gln
65                  70                  75                  80

Ile Arg Val Arg Ala Gly Thr Leu Thr Trp Asn Ser Gly Gly Thr Leu
                85                  90                  95

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

Thr Asp Phe Asp Val Ala Val Trp His Leu Ser Ser Pro Ile Arg Glu
        115                 120                 125

Ser Ser Thr Ile Gly Tyr Ala Thr Leu Pro Ala Gln Gly Ser Asp Pro
    130                 135                 140

Val Ala Gly Ser Thr Val Thr Thr Ala Gly Trp Gly Thr Thr Ser Glu
145                 150                 155                 160

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

Val Ala Arg Ser Thr Cys Gln Ala Asp Tyr Arg Ser Gln Gly Leu Ser
            180                 185                 190

Val Thr Asn Asn Met Phe Cys Ala Gly Leu Thr Gln Gly Gly Lys Asp
        195                 200                 205

Ser Cys Ser Gly Asp Ser Gly Gly Pro Ile Val Asp Ala Asn Gly Val
    210                 215                 220

Leu Gln Gly Val Val Ser Trp Gly Ile Gly Cys Ala Glu Ala Gly Phe
225                 230                 235                 240

Pro Gly Val Tyr Thr Arg Ile Gly Asn Phe Val Asn Tyr Ile Asn Gln
                245                 250                 255

Asn Leu Ala
```

<210> 25
<211> 882
<212> PRT
<213> Trichoderma reesei

<400> 25

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

Val Ile Ala Arg Val Ser Gly His Gly Ser Lys Ile Val Pro Gly Ala
            20                  25                  30
```

```
Tyr Ile Phe Glu Phe Glu Asp Ser Gln Asp Thr Ala Asp Phe Tyr Lys
        35                  40                  45

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

Phe Lys Gly Val Ser Val Gln Leu Lys Asp Leu Asp Asn His Glu Ala
65                  70                  75                  80

Lys Ala Gln Gln Met Ala Gln Leu Pro Ala Val Lys Asn Val Trp Pro
                85                  90                  95

Val Thr Leu Ile Asp Ala Pro Asn Pro Lys Val Glu Trp Val Ala Gly
            100                 105                 110

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

Pro Asn Asp Ser Ser Asp Phe Pro Thr His Gln Met Thr Gln Ile Asp
    130                 135                 140

Lys Leu Arg Ala Lys Gly Tyr Thr Gly Lys Gly Val Arg Val Ala Val
145                 150                 155                 160

Ile Asp Thr Gly Ile Asp Tyr Thr His Pro Ala Leu Gly Gly Cys Phe
                165                 170                 175

Gly Arg Gly Cys Leu Val Ser Phe Gly Thr Asp Leu Val Gly Asp Asp
            180                 185                 190

Tyr Thr Gly Phe Asn Thr Pro Val Pro Asp Asp Asp Pro Val Asp Cys
        195                 200                 205

Ala Gly His Gly Ser His Val Ala Gly Ile Ile Ala Ala Gln Glu Asn
    210                 215                 220

Pro Tyr Gly Phe Thr Gly Gly Ala Pro Asp Val Thr Leu Gly Ala Tyr
225                 230                 235                 240

Arg Val Phe Gly Cys Asp Gly Gln Ala Gly Asn Asp Val Leu Ile Ser
                245                 250                 255

Ala Tyr Asn Gln Ala Phe Glu Asp Gly Ala Gln Ile Ile Thr Ala Ser
            260                 265                 270

Ile Gly Gly Pro Ser Gly Trp Ala Glu Glu Pro Trp Ala Val Ala Val
        275                 280                 285

Thr Arg Ile Val Glu Ala Gly Val Pro Cys Thr Val Ser Ala Gly Asn
    290                 295                 300
```

```
Glu Gly Asp Ser Gly Leu Phe Phe Ala Ser Thr Ala Ala Asn Gly Lys
305                 310                 315                 320

Lys Val Ile Ala Val Ala Ser Val Asp Asn Glu Asn Ile Pro Ser Val
                325                 330                 335

Leu Ser Val Ala Ser Tyr Lys Ile Asp Ser Gly Ala Ala Gln Asp Phe
            340                 345                 350

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

Tyr Ala Val Ser Phe Asp Thr Thr Ile Pro Asp Asp Gly Cys Ser Pro
    370                 375                 380

Leu Pro Asp Ser Thr Pro Asp Leu Ser Asp Tyr Ile Val Leu Val Arg
385                 390                 395                 400

Arg Gly Thr Cys Thr Phe Val Gln Lys Ala Gln Asn Val Ala Ala Lys
                405                 410                 415

Gly Ala Lys Tyr Leu Leu Tyr Tyr Asn Asn Ile Pro Gly Ala Leu Ala
            420                 425                 430

Val Asp Val Ser Ala Val Pro Glu Ile Glu Ala Val Gly Met Val Asp
        435                 440                 445

Asp Lys Thr Gly Ala Thr Trp Ile Ala Ala Leu Lys Asp Gly Lys Thr
    450                 455                 460

Val Thr Leu Thr Leu Thr Asp Pro Ile Glu Ser Glu Lys Gln Ile Gln
465                 470                 475                 480

Phe Ser Asp Asn Pro Thr Thr Gly Gly Ala Leu Ser Gly Tyr Thr Thr
                485                 490                 495

Trp Gly Pro Thr Trp Glu Leu Asp Val Lys Pro Gln Ile Ser Ser Pro
            500                 505                 510

Gly Gly Asn Ile Leu Ser Thr Tyr Pro Val Ala Leu Gly Gly Tyr Ala
        515                 520                 525

Thr Leu Ser Gly Thr Ser Met Ala Cys Pro Leu Thr Ala Ala Ala Val
    530                 535                 540

Ala Leu Ile Gly Gln Ala Arg Gly Thr Phe Asp Pro Ala Leu Ile Asp
545                 550                 555                 560

Asn Leu Leu Ala Thr Thr Ala Asn Pro Gln Leu Phe Asn Asp Gly Glu
                565                 570                 575
```

```
Lys Phe Tyr Asp Phe Leu Ala Pro Val Pro Gln Gln Gly Gly Gly Leu
            580                 585                 590

Ile Gln Ala Tyr Asp Ala Ala Phe Ala Thr Thr Leu Leu Ser Pro Ser
        595                 600                 605

Ser Leu Ser Phe Asn Asp Thr Asp His Phe Ile Lys Lys Lys Gln Ile
    610                 615                 620

Thr Leu Lys Asn Thr Ser Lys Gln Arg Val Thr Tyr Lys Leu Asn His
625                 630                 635                 640

Val Pro Thr Asn Thr Phe Tyr Thr Leu Ala Pro Gly Asn Gly Tyr Pro
                645                 650                 655

Ala Pro Phe Pro Asn Asp Ala Val Ala Ala His Ala Asn Leu Lys Phe
            660                 665                 670

Asn Leu Gln Gln Val Thr Leu Pro Ala Gly Arg Ser Ile Thr Val Asp
        675                 680                 685

Val Phe Pro Thr Pro Pro Arg Asp Val Asp Ala Lys Arg Leu Ala Leu
    690                 695                 700

Trp Ser Gly Tyr Ile Thr Val Asn Gly Thr Asp Gly Thr Ser Leu Ser
705                 710                 715                 720

Val Pro Tyr Gln Gly Leu Thr Gly Ser Leu His Lys Gln Lys Val Leu
                725                 730                 735

Tyr Pro Glu Asp Ser Trp Ile Ala Asp Ser Thr Asp Glu Ser Leu Ala
            740                 745                 750

Pro Val Glu Asn Gly Thr Val Phe Thr Ile Pro Ala Pro Gly Asn Ala
        755                 760                 765

Gly Pro Asp Asp Lys Leu Pro Ser Leu Val Val Ser Pro Ala Leu Gly
    770                 775                 780

Ser Arg Tyr Val Arg Val Asp Leu Val Leu Leu Ser Ala Pro Pro His
785                 790                 795                 800

Gly Thr Lys Leu Lys Thr Val Lys Phe Leu Asp Thr Thr Ser Ile Gly
                805                 810                 815

Gln Pro Ala Gly Ser Pro Leu Leu Trp Ile Ser Arg Gly Ala Asn Pro
            820                 825                 830

Ile Ala Trp Thr Gly Glu Leu Ser Asp Asn Lys Phe Ala Pro Pro Gly
        835                 840                 845
```

Thr Tyr Lys Ala Val Phe His Ala Leu Arg Ile Phe Gly Asn Glu Lys
850 855 860

Lys Lys Glu Asp Trp Asp Val Ser Glu Ser Pro Ala Phe Thr Ile Lys
865 870 875 880

Tyr Ala

<210> 26
<211> 541
<212> PRT
<213> Trichoderma reesei

<400> 26

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

Thr Phe Gln Ile Gly Thr Ile His Glu Lys Ser Ala Pro Val Leu Ser
20 25 30

Asn Val Glu Ala Asn Ala Ile Pro Asp Ala Tyr Ile Ile Lys Phe Lys
35 40 45

Asp His Val Gly Glu Asp Asp Ala Ser Lys His His Asp Trp Ile Gln
50 55 60

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

Ser Asn Val Phe Gly Ala Asp Asp Val Phe Asp Gly Leu Lys His Thr
85 90 95

Phe Lys Ile Gly Asp Gly Phe Lys Gly Tyr Ala Gly His Phe His Glu
100 105 110

Ser Val Ile Glu Gln Val Arg Asn His Pro Asp Val Glu Tyr Ile Glu
115 120 125

Arg Asp Ser Ile Val His Thr Met Leu Pro Leu Glu Ser Lys Asp Ser
130 135 140

Ile Ile Val Glu Asp Ser Cys Asn Gly Glu Thr Glu Lys Gln Ala Pro
145 150 155 160

Trp Gly Leu Ala Arg Ile Ser His Arg Glu Thr Leu Asn Phe Gly Ser
165 170 175

Phe Asn Lys Tyr Leu Tyr Thr Ala Asp Gly Gly Glu Gly Val Asp Ala
180 185 190

Tyr Val Ile Asp Thr Gly Thr Asn Ile Glu His Val Asp Phe Glu Gly

```
        195                 200                 205

Arg Ala Lys Trp Gly Lys Thr Ile Pro Ala Gly Asp Glu Asp Glu Asp
    210                 215                 220

Gly Asn Gly His Gly Thr His Cys Ser Gly Thr Val Ala Gly Lys Lys
225                 230                 235                 240

Tyr Gly Val Ala Lys Lys Ala His Val Tyr Ala Val Lys Val Leu Arg
                245                 250                 255

Ser Asn Gly Ser Gly Thr Met Ser Asp Val Val Lys Gly Val Glu Tyr
            260                 265                 270

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

Arg Lys Gly Phe Lys Gly Ser Val Ala Asn Met Ser Leu Gly Gly Gly
    290                 295                 300

Lys Thr Gln Ala Leu Asp Ala Ala Val Asn Ala Ala Val Arg Ala Gly
305                 310                 315                 320

Val His Phe Ala Val Ala Ala Gly Asn Asp Asn Ala Asp Ala Cys Asn
                325                 330                 335

Tyr Ser Pro Ala Ala Ala Thr Glu Pro Leu Thr Val Gly Ala Ser Ala
            340                 345                 350

Leu Asp Asp Ser Arg Ala Tyr Phe Ser Asn Tyr Gly Lys Cys Thr Asp
        355                 360                 365

Ile Phe Ala Pro Gly Leu Ser Ile Gln Ser Thr Trp Ile Gly Ser Lys
    370                 375                 380

Tyr Ala Val Asn Thr Ile Ser Gly Thr Ser Met Ala Ser Pro His Ile
385                 390                 395                 400

Cys Gly Leu Leu Ala Tyr Tyr Leu Ser Leu Gln Pro Ala Gly Asp Ser
                405                 410                 415

Glu Phe Ala Val Ala Pro Ile Thr Pro Lys Lys Leu Lys Glu Ser Val
            420                 425                 430

Ile Ser Val Ala Thr Lys Asn Ala Leu Ser Asp Leu Pro Asp Ser Asp
        435                 440                 445

Thr Pro Asn Leu Leu Ala Trp Asn Gly Gly Gly Cys Ser Asn Phe Ser
    450                 455                 460

Gln Ile Val Glu Ala Gly Ser Tyr Thr Val Lys Pro Lys Gln Asn Lys
```

465 470 475 480

Gln Ala Lys Leu Pro Ser Thr Ile Glu Glu Leu Glu Glu Ala Ile Glu
485 490 495

Gly Asp Phe Glu Val Val Ser Gly Glu Ile Val Lys Gly Ala Lys Ser
500 505 510

Phe Gly Ser Lys Ala Glu Lys Phe Ala Lys Lys Ile His Asp Leu Val
515 520 525

Glu Glu Glu Ile Glu Glu Phe Ile Ser Glu Leu Ser Glu
530 535 540

<210> 27
<211> 391
<212> PRT
<213> Trichoderma reesei

<400> 27

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

Pro Ala Ile Glu Lys Arg Ala Glu Pro Ala Pro Leu Leu Val Pro Thr
20 25 30

Thr Lys His Gly Leu Val Ala Asp Lys Tyr Ile Val Lys Phe Lys Asp
35 40 45

Gly Ser Ser Leu Gln Ala Val Asp Glu Ala Ile Ser Gly Leu Val Ser
50 55 60

Asn Ala Asp His Val Tyr Gln His Val Phe Arg Gly Phe Ala Ala Thr
65 70 75 80

Leu Asp Lys Glu Thr Leu Glu Ala Leu Arg Asn His Pro Glu Val Asp
85 90 95

Tyr Ile Glu Gln Asp Ala Val Val Lys Ile Asn Ala Tyr Val Ser Gln
100 105 110

Thr Gly Ala Pro Trp Gly Leu Gly Arg Ile Ser His Lys Ala Arg Gly
115 120 125

Ser Thr Thr Tyr Val Tyr Asp Asp Ser Ala Gly Ala Gly Thr Cys Ser
130 135 140

Tyr Val Ile Asp Thr Gly Val Asp Ala Thr His Pro Asp Phe Glu Gly
145 150 155 160

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

```
Asn Gly His Gly Thr His Val Ser Gly Thr Ile Gly Ser Arg Thr Tyr
            180                 185                 190

Gly Val Ala Lys Lys Thr Gln Ile Tyr Gly Val Lys Val Leu Asp Asn
        195                 200                 205

Ser Gly Ser Gly Ser Phe Ser Thr Val Ile Ala Gly Met Asp Tyr Val
    210                 215                 220

Ala Ser Asp Ser Gln Thr Arg Asn Cys Pro Asn Gly Ser Val Ala Asn
225                 230                 235                 240

Met Ser Leu Gly Gly Gly Tyr Thr Ala Ser Val Asn Gln Ala Ala Ala
                245                 250                 255

Arg Leu Ile Gln Ala Gly Val Phe Leu Ala Val Ala Ala Gly Asn Asp
            260                 265                 270

Gly Val Asp Ala Arg Asn Thr Ser Pro Ala Ser Glu Pro Thr Val Cys
        275                 280                 285

Thr Val Gly Ala Ser Thr Ser Ser Asp Ala Arg Ala Ser Phe Ser Asn
    290                 295                 300

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

Thr Trp Pro Asn Arg Gln Thr Asn Thr Ile Ser Gly Thr Ser Met Ala
                325                 330                 335

Thr Pro His Ile Val Gly Leu Gly Ala Tyr Leu Ala Gly Leu Glu Gly
            340                 345                 350

Phe Ser Asp Pro Gln Ala Leu Cys Ala Arg Ile Gln Ser Leu Ala Asn
        355                 360                 365

Arg Asn Leu Leu Ser Gly Ile Pro Ser Gly Thr Ile Asn Ala Ile Ala
    370                 375                 380

Phe Asn Gly Asn Pro Ser Gly
385                 390
```

<210> 28
<211> 387
<212> PRT
<213> Trichoderma reesei

<400> 28

```
Met Gly Leu Val Thr Asn Pro Phe Ala Lys Asn Ile Ile Pro Asn Arg
1               5                   10                  15
```

```
Tyr Ile Val Val Tyr Asn Asn Ser Phe Gly Glu Glu Ala Ile Ser Ala
            20                  25                  30

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

Arg Gly Leu Phe Gly Asn Glu Leu Ser Thr Ala Ile His Ser Phe Ser
    50                  55                  60

Met His Thr Trp Arg Ala Met Ala Leu Asp Ala Asp Asp Ile Met Ile
65                  70                  75                  80

Lys Asp Ile Phe Asp Ala Glu Glu Val Ala Tyr Ile Glu Ala Asp Thr
                85                  90                  95

Lys Val Gln His Ala Ala Leu Val Ala Gln Thr Asn Ala Ala Pro Gly
            100                 105                 110

Leu Ile Arg Leu Ser Asn Lys Ala Val Gly Gly Gln Asn Tyr Ile Phe
        115                 120                 125

Asp Asn Ser Ala Gly Ser Asn Ile Thr Ala Tyr Val Val Asp Thr Gly
    130                 135                 140

Ile Arg Ile Thr His Ser Glu Phe Glu Gly Arg Ala Thr Phe Gly Ala
145                 150                 155                 160

Asn Phe Val Asn Asp Asp Thr Asp Glu Asn Gly His Gly Ser His Val
                165                 170                 175

Ala Gly Thr Ile Gly Gly Ala Thr Phe Gly Val Ala Lys Asn Val Glu
            180                 185                 190

Leu Val Ala Val Lys Val Leu Asp Ala Asp Gly Ser Gly Ser Asn Ser
        195                 200                 205

Gly Val Leu Asn Gly Met Gln Phe Val Val Asn Asp Val Gln Ala Lys
    210                 215                 220

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

Ser Thr Ala Val Asn Asn Ala Ile Thr Ala Leu Thr Asn Ala Gly Ile
                245                 250                 255

Val Pro Val Val Ala Ala Gly Asn Glu Asn Gln Asp Thr Ala Asn Thr
            260                 265                 270

Ser Pro Gly Ser Ala Pro Gln Ala Ile Thr Val Gly Ala Ile Asp Ala
        275                 280                 285
```

```
Thr Thr Asp Ile Arg Ala Gly Phe Ser Asn Phe Gly Thr Gly Val Asp
    290                 295                 300

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

Ile Asp Thr Ala Val Leu Ser Gly Thr Ser Met Ala Ser Pro His Val
                325                 330                 335

Ala Gly Leu Ala Ala Tyr Leu Met Ala Leu Glu Gly Val Ser Asn Val
            340                 345                 350

Asp Asp Val Ser Asn Leu Ile Lys Asn Leu Ala Ala Lys Thr Gly Ala
        355                 360                 365

Ala Val Lys Gln Asn Ile Ala Gly Thr Thr Ser Leu Ile Ala Asn Asn
    370                 375                 380

Gly Asn Phe
385
```

<210> 29
<211> 409
<212> PRT
<213> Trichoderma reesei

<400> 29

```
Met Ala Ser Leu Arg Arg Leu Ala Leu Tyr Leu Gly Ala Leu Leu Pro
1               5                   10                  15

Ala Val Leu Ala Ala Pro Ala Val Asn Tyr Lys Leu Pro Glu Ala Val
            20                  25                  30

Pro Asn Lys Phe Ile Val Thr Leu Lys Asp Gly Ala Ser Val Asp Thr
        35                  40                  45

Asp Ser His Leu Thr Trp Val Lys Asp Leu His Arg Arg Ser Leu Gly
    50                  55                  60

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

Asn Ala Tyr Ala Gly Glu Phe Asp Glu Glu Thr Val Lys Gln Ile Lys
                85                  90                  95

Ala Asn Pro Asp Val Ala Ser Val Glu Pro Asp Tyr Ile Met Trp Leu
            100                 105                 110

Ser Asp Ile Val Glu Asp Lys Arg Ala Leu Thr Thr Gln Thr Gly Ala
        115                 120                 125
```

```
Pro Trp Gly Leu Gly Thr Val Ser His Arg Thr Pro Gly Ser Thr Ser
    130                 135                 140

Tyr Ile Tyr Asp Thr Ser Ala Gly Ser Gly Thr Phe Ala Tyr Val Val
145                 150                 155                 160

Asp Ser Gly Ile Asn Ile Ala His Gln Gln Phe Gly Gly Arg Ala Ser
                165                 170                 175

Leu Gly Tyr Asn Ala Ala Gly Gly Asp His Val Asp Thr Leu Gly His
            180                 185                 190

Gly Thr His Val Ser Gly Thr Ile Gly Gly Ser Thr Tyr Gly Val Ala
        195                 200                 205

Lys Gln Ala Ser Leu Ile Ser Val Lys Val Phe Gln Gly Asn Ser Ala
    210                 215                 220

Ser Thr Ser Val Ile Leu Asp Gly Tyr Asn Trp Ala Val Asn Asp Ile
225                 230                 235                 240

Val Ser Arg Asn Arg Ala Ser Lys Ser Ala Ile Asn Met Ser Leu Gly
                245                 250                 255

Gly Pro Ala Ser Ser Thr Trp Ala Thr Ala Ile Asn Ala Ala Phe Asn
            260                 265                 270

Lys Gly Val Leu Thr Ile Val Ala Ala Gly Asn Gly Asp Ala Leu Gly
        275                 280                 285

Asn Pro Gln Pro Val Ser Ser Thr Ser Pro Ala Asn Val Pro Asn Ala
    290                 295                 300

Ile Thr Val Ala Ala Leu Asp Ile Asn Trp Arg Thr Ala Ser Phe Thr
305                 310                 315                 320

Asn Tyr Gly Ala Gly Val Asp Val Phe Ala Pro Gly Val Asn Ile Leu
                325                 330                 335

Ser Ser Trp Ile Gly Ser Asn Thr Ala Thr Asn Thr Ile Ser Gly Thr
            340                 345                 350

Ser Met Ala Thr Pro His Val Val Gly Leu Ala Leu Tyr Leu Gln Ala
        355                 360                 365

Leu Glu Gly Leu Ser Thr Pro Thr Ala Val Thr Asn Arg Ile Lys Ala
    370                 375                 380

Leu Ala Thr Thr Gly Arg Val Thr Gly Ser Leu Asn Gly Ser Pro Asn
385                 390                 395                 400
```

Thr Leu Ile Phe Asn Gly Asn Ser Ala
405

<210> 30
<211> 555
<212> PRT
<213> Trichoderma reesei

<400> 30

Met Arg Ala Cys Leu Leu Phe Leu Gly Ile Thr Ala Leu Ala Thr Ala
1 5 10 15

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

Thr Gln Leu Ala Lys Val Ser Ile Ala Leu Gln Pro Glu Cys Arg Glu
35 40 45

Leu Leu Glu Gln Ala Leu His His Leu Ser Asp Pro Ser Ser Pro Arg
50 55 60

Tyr Gly Arg Tyr Leu Gly Arg Glu Glu Ala Lys Ala Leu Leu Arg Pro
65 70 75 80

Arg Arg Glu Ala Thr Ala Ala Val Lys Arg Trp Leu Ala Arg Ala Gly
85 90 95

Val Pro Ala His Asp Val Leu Thr Asp Gly Gln Phe Ile His Val Arg
100 105 110

Thr Leu Ala Glu Lys Ala Gln Ala Leu Leu Gly Phe Glu Tyr Asn Ser
115 120 125

Thr Leu Gly Ser Gln Thr Ile Ala Ile Ser Thr Leu Pro Gly Lys Ile
130 135 140

Arg Lys His Val Met Thr Val Gln Tyr Val Pro Leu Trp Thr Glu Ala
145 150 155 160

Asp Trp Glu Glu Cys Lys Thr Ile Ile Thr Pro Ser Cys Leu Lys Arg
165 170 175

Leu Tyr His Val Asp Ser Tyr Arg Ala Lys Tyr Glu Ser Ser Ser Leu
180 185 190

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

Asp Lys Phe Leu His Asp Phe Ala Pro Tyr Ser Thr Asn Ala Asn Phe
210 215 220

Ser Ile Glu Ser Val Asn Gly Gly Gln Ser Pro Gln Gly Met Asn Glu

225 230 235 240

Pro Ala Ser Glu Ala Asn Gly Asp Val Gln Tyr Ala Val Ala Met Gly
245 250 255

Tyr His Val Pro Val Arg Tyr Tyr Ala Val Gly Gly Glu Asn His Asp
260 265 270

Ile Ile Pro Asp Leu Asp Leu Val Asp Thr Thr Glu Glu Tyr Leu Glu
275 280 285

Pro Phe Leu Glu Phe Ala Ser His Leu Leu Asp Leu Asp Asp Asp Glu
290 295 300

Leu Pro Arg Val Val Ser Ile Ser Tyr Gly Ala Asn Glu Gln Leu Phe
305 310 315 320

Pro Arg Ser Tyr Ala His Gln Val Cys Asp Met Phe Gly Gln Leu Gly
325 330 335

Ala Arg Gly Val Ser Ile Val Val Ala Ala Gly Asp Leu Gly Pro Gly
340 345 350

Val Ser Cys Gln Ser Asn Asp Gly Ser Ala Arg Pro Lys Phe Ile Pro
355 360 365

Ser Phe Pro Ala Thr Cys Pro Tyr Val Thr Ser Val Gly Ser Thr Arg
370 375 380

Gly Ile Met Pro Glu Val Ala Ala Ser Phe Ser Ser Gly Gly Phe Ser
385 390 395 400

Asp Tyr Phe Ala Arg Pro Ala Trp Gln Asp Arg Ala Val Gly Ala Tyr
405 410 415

Leu Gly Ala His Gly Glu Glu Trp Glu Gly Phe Tyr Asn Pro Ala Gly
420 425 430

Arg Gly Phe Pro Asp Val Ala Ala Gln Gly Val Asn Phe Arg Phe Arg
435 440 445

Ala His Gly Asn Glu Ser Leu Ser Ser Gly Thr Ser Leu Ser Ser Pro
450 455 460

Val Phe Ala Ala Leu Ile Ala Leu Leu Asn Asp His Arg Ser Lys Ser
465 470 475 480

Gly Met Pro Pro Met Gly Phe Leu Asn Pro Trp Ile Tyr Thr Val Gly
485 490 495

Ser His Ala Phe Thr Asp Ile Ile Glu Ala Arg Ser Glu Gly Cys Pro

500 505 510

Gly Gln Ser Val Glu Tyr Leu Ala Ser Pro Tyr Ile Pro Asn Ala Gly
515 520 525

Trp Ser Ala Val Pro Gly Trp Asp Pro Val Thr Gly Trp Gly Thr Pro
530 535 540

Leu Phe Asp Arg Met Leu Asn Leu Ser Leu Val
545 550 555

<210> 31
<211> 388
<212> PRT
<213> Trichoderma reesei

<400> 31

Met Ala Trp Leu Lys Lys Leu Ala Leu Val Leu Leu Ala Ile Val Pro
1 5 10 15

Tyr Ala Thr Ala Ser Pro Ala Leu Ser Pro Arg Ser Arg Glu Ile Leu
20 25 30

Ser Leu Glu Asp Leu Glu Ser Glu Asp Lys Tyr Val Ile Gly Leu Lys
35 40 45

Gln Gly Leu Ser Pro Thr Asp Leu Lys Lys His Leu Leu Arg Val Ser
50 55 60

Ala Val Gln Tyr Arg Asn Lys Asn Ser Thr Phe Glu Gly Gly Thr Gly
65 70 75 80

Val Lys Arg Thr Tyr Ala Ile Gly Asp Tyr Arg Ala Tyr Thr Ala Val
85 90 95

Leu Asp Arg Asp Thr Val Arg Glu Ile Trp Asn Asp Thr Leu Glu Lys
100 105 110

Pro Pro Trp Gly Leu Ala Thr Leu Ser Asn Lys Lys Pro His Gly Phe
115 120 125

Leu Tyr Arg Tyr Asp Lys Ser Ala Gly Glu Gly Thr Phe Ala Tyr Val
130 135 140

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

Tyr Met Gly Phe Ser Pro Pro Lys Thr Glu Pro Thr Asp Ile Asn Gly
165 170 175

His Gly Thr His Val Ala Gly Ile Ile Gly Gly Lys Thr Phe Gly Val
180 185 190

```
Ala Lys Lys Thr Gln Leu Ile Gly Val Lys Val Phe Leu Asp Asp Glu
        195                 200                 205

Ala Thr Thr Ser Thr Leu Met Glu Gly Leu Glu Trp Ala Val Asn Asp
    210                 215                 220

Ile Thr Thr Lys Gly Arg Gln Gly Arg Ser Val Ile Asn Met Ser Leu
225                 230                 235                 240

Gly Gly Pro Tyr Ser Gln Ala Leu Asn Asp Ala Ile Asp His Ile Ala
                245                 250                 255

Asp Met Gly Ile Leu Pro Val Ala Ala Ala Gly Asn Lys Gly Ile Pro
            260                 265                 270

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

Ala Ile Asn Ser Asp Trp Gln Glu Thr Asn Phe Ser Asn Phe Gly Pro
    290                 295                 300

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

Ser Thr Asn Thr Ala Thr Arg Val Leu Ser Gly Thr Ser Met Ala Ala
                325                 330                 335

Pro His Val Ala Gly Leu Ala Leu Tyr Leu Met Ala Leu Glu Glu Phe
            340                 345                 350

Asp Ser Thr Gln Lys Leu Thr Asp Arg Ile Leu Gln Leu Gly Met Lys
        355                 360                 365

Asn Lys Val Val Asn Leu Met Thr Asp Ser Pro Asn Leu Ile Ile His
    370                 375                 380

Asn Asn Val Lys
385


<210>  32
<211>  256
<212>  PRT
<213>  Trichoderma reesei

<400>  32

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

Val Leu Ala Gly Val Ala Gln Asp Arg Gly Leu Ala Ala Arg Leu Ala
            20                  25                  30
```

```
Arg Arg Ala Gly Arg Arg Ser Ala Pro Phe Arg Asn Asp Thr Ser His
        35                  40                  45

Ala Thr Val Gln Ser Asn Trp Gly Gly Ala Ile Leu Glu Gly Ser Gly
    50                  55                  60

Phe Thr Ala Ala Ser Ala Thr Val Asn Val Pro Arg Gly Gly Gly Gly
65                  70                  75                  80

Ser Asn Ala Ala Gly Ser Ala Trp Val Gly Ile Asp Gly Ala Ser Cys
                85                  90                  95

Gln Thr Ala Ile Leu Gln Thr Gly Phe Asp Trp Tyr Gly Asp Gly Thr
            100                 105                 110

Tyr Asp Ala Trp Tyr Glu Trp Tyr Pro Glu Phe Ala Ala Asp Phe Ser
        115                 120                 125

Gly Ile Asp Ile Arg Gln Gly Asp Gln Ile Ala Met Ser Val Val Ala
    130                 135                 140

Thr Ser Leu Thr Gly Gly Ser Ala Thr Leu Glu Asn Leu Ser Thr Gly
145                 150                 155                 160

Gln Lys Val Thr Gln Asn Phe Asn Arg Val Thr Ala Gly Ser Leu Cys
                165                 170                 175

Glu Thr Ser Ala Glu Phe Ile Ile Glu Asp Phe Glu Glu Cys Asn Ser
            180                 185                 190

Asn Gly Ser Asn Cys Gln Pro Val Pro Phe Ala Ser Phe Ser Pro Ala
        195                 200                 205

Ile Thr Phe Ser Ser Ala Thr Ala Thr Arg Ser Gly Arg Ser Val Ser
    210                 215                 220

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

Thr Arg Cys Ser Val Ser Gly Ser Ser Thr Leu Thr Cys Ser Tyr Val
                245                 250                 255
```

<210> 33
<211> 236
<212> PRT
<213> Trichoderma reesei

<400> 33

```
Met Asp Ala Ile Arg Ala Arg Ser Ala Ala Arg Arg Ser Asn Arg Phe
1               5                   10                  15
```

Gln Ala Gly Ser Ser Lys Asn Val Asn Gly Thr Ala Asp Val Glu Ser
20 25 30

Thr Asn Trp Ala Gly Ala Ala Ile Thr Thr Ser Gly Val Thr Glu Val
35 40 45

Ser Gly Thr Phe Thr Val Pro Arg Pro Ser Val Pro Ala Gly Gly Ser
50 55 60

Ser Arg Glu Glu Tyr Cys Gly Ala Ala Trp Val Gly Ile Asp Gly Tyr
65 70 75 80

Ser Asp Ala Asp Leu Ile Gln Thr Gly Val Leu Trp Cys Val Glu Asp
85 90 95

Gly Glu Tyr Leu Tyr Glu Ala Trp Tyr Glu Tyr Leu Pro Ala Ala Leu
100 105 110

Val Glu Tyr Ser Gly Ile Ser Val Thr Ala Gly Ser Val Val Thr Val
115 120 125

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

Gly Gly Lys Thr Val Ser His Thr Phe Ser Arg Gln Asn Ser Pro Leu
145 150 155 160

Pro Gly Thr Ser Ala Glu Trp Ile Val Glu Asp Phe Thr Ser Gly Ser
165 170 175

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

Thr Ala Val Val Asn Gly Ala Thr Val Thr Ala Gly Gly Asp Ser Pro
195 200 205

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

Thr Val Ser Gly Ser Thr Val Thr Val Glu Tyr Glu
225 230 235

<210> 34
<211> 612
<212> PRT
<213> Trichoderma reesei

<400> 34

Met Ala Lys Leu Ser Thr Leu Arg Leu Ala Ser Leu Leu Ser Leu Val
1 5 10 15

Ser Val Gln Val Ser Ala Ser Val His Leu Leu Glu Ser Leu Glu Lys

```
            20                  25                  30

Leu Pro His Gly Trp Lys Ala Ala Glu Thr Pro Ser Pro Ser Ser Gln
        35                  40                  45

Ile Val Leu Gln Val Ala Leu Thr Gln Gln Asn Ile Asp Gln Leu Glu
    50                  55                  60

Ser Arg Leu Ala Ala Val Ser Thr Pro Thr Ser Ser Thr Tyr Gly Lys
65                  70                  75                  80

Tyr Leu Asp Val Asp Glu Ile Asn Ser Ile Phe Ala Pro Ser Asp Ala
                85                  90                  95

Ser Ser Ser Ala Val Glu Ser Trp Leu Gln Ser His Gly Val Thr Ser
            100                 105                 110

Tyr Thr Lys Gln Gly Ser Ser Ile Trp Phe Gln Thr Asn Ile Ser Thr
        115                 120                 125

Ala Asn Ala Met Leu Ser Thr Asn Phe His Thr Tyr Ser Asp Leu Thr
    130                 135                 140

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

Ile Gly His Val Asp Leu Ile Ser Pro Thr Thr Tyr Phe Gly Thr Thr
                165                 170                 175

Lys Ala Met Arg Lys Leu Lys Ser Ser Gly Val Ser Pro Ala Ala Asp
            180                 185                 190

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

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

Glu Tyr Ser Val Asp Gly Tyr Thr Pro Ser Val Lys Ser Gly Ser Arg
225                 230                 235                 240

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

Ala Leu Phe Glu Lys His Phe Asn Ile Pro Ser Gln Asn Phe Ser Val
            260                 265                 270

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

Asn Asp Gly Glu Ala Asn Leu Asp Ala Gln Thr Ile Leu Thr Ile Ala
```

```
    290                 295                 300

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

Phe Pro Asp Pro Val Glu Pro Ala Gly Thr Pro Asn Glu Asn Glu Pro
                325                 330                 335

Tyr Leu Gln Tyr Tyr Glu Phe Leu Leu Ser Lys Ser Asn Ala Glu Ile
            340                 345                 350

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

Arg Ser Tyr Ala Val Arg Val Cys Asn Leu Ile Gly Leu Leu Gly Leu
    370                 375                 380

Arg Gly Ile Ser Val Leu His Ser Ser Gly Asp Glu Gly Val Gly Ala
385                 390                 395                 400

Ser Cys Val Ala Thr Asn Ser Thr Thr Pro Gln Phe Asn Pro Ile Phe
                405                 410                 415

Pro Ala Thr Cys Pro Tyr Val Thr Ser Val Gly Gly Thr Val Ser Phe
            420                 425                 430

Asn Pro Glu Val Ala Trp Ala Gly Ser Ser Gly Gly Phe Ser Tyr Tyr
        435                 440                 445

Phe Ser Arg Pro Trp Tyr Gln Gln Glu Ala Val Gly Thr Tyr Leu Glu
    450                 455                 460

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

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

Asp Tyr Pro Val Phe Gln Gly Gly Glu Leu Thr Pro Ser Gly Gly Thr
            500                 505                 510

Ser Ala Ala Ser Pro Val Val Ala Ala Ile Val Ala Leu Leu Asn Asp
        515                 520                 525

Ala Arg Leu Arg Glu Gly Lys Pro Thr Leu Gly Phe Leu Asn Pro Leu
    530                 535                 540

Ile Tyr Leu His Ala Ser Lys Gly Phe Thr Asp Ile Thr Ser Gly Gln
545                 550                 555                 560

Ser Glu Gly Cys Asn Gly Asn Asn Thr Gln Thr Gly Ser Pro Leu Pro
```

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565 570 575

Gly Ala Gly Phe Ile Ala Gly Ala His Trp Asn Ala Thr Lys Gly Trp
580 585 590

Asp Pro Thr Thr Gly Phe Gly Val Pro Asn Leu Lys Lys Leu Leu Ala
595 600 605

Leu Val Arg Phe
610

<210> 35
<211> 477
<212> PRT
<213> Trichoderma reesei

<400> 35

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

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

Asn Pro Asp Phe Ala Pro Ser Leu Leu Arg Arg Asp Gly Ser Val Ser
35 40 45

Leu Asp Ala Ile Asn Asn Leu Thr Gly Gly Gly Tyr Tyr Ala Gln Phe
50 55 60

Ser Val Gly Thr Pro Pro Gln Lys Leu Ser Phe Leu Leu Asp Thr Gly
65 70 75 80

Ser Ser Asp Thr Trp Val Asn Ser Val Thr Ala Asp Leu Cys Thr Asp
85 90 95

Glu Phe Thr Gln Gln Thr Val Gly Glu Tyr Cys Phe Arg Gln Phe Asn
100 105 110

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

Thr Tyr Leu Asp Gly Arg Arg Ile Arg Gly Asn Tyr Phe Thr Asp Thr
130 135 140

Val Thr Ile Asn Gln Ala Asn Ile Thr Gly Gln Lys Ile Gly Leu Ala
145 150 155 160

Leu Gln Ser Val Arg Gly Thr Gly Ile Leu Gly Leu Gly Phe Arg Glu
165 170 175

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

```
Ser Gln Lys Val Ile Pro Val Pro Ala Phe Ser Leu Tyr Leu Asn Asp
        195                 200                 205

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

Lys Phe His Gly Gly Leu Ala Thr Leu Pro Leu Gln Ser Leu Pro Pro
225                 230                 235                 240

Ser Ile Ala Glu Thr Gln Asp Ile Val Met Tyr Ser Val Asn Leu Asp
                245                 250                 255

Gly Phe Ser Ala Ser Asp Val Asp Thr Pro Asp Val Ser Ala Lys Ala
            260                 265                 270

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

Gln Glu Leu Phe Asp Glu Tyr Asp Val Leu Asn Ile Gln Gly Leu Pro
    290                 295                 300

Val Pro Phe Ile Asp Cys Ala Lys Ala Asn Ile Lys Asp Ala Thr Phe
305                 310                 315                 320

Asn Phe Lys Phe Asp Gly Lys Thr Ile Lys Val Pro Ile Asp Glu Met
                325                 330                 335

Val Leu Asn Asn Leu Ala Ala Ala Ser Asp Glu Ile Met Ser Asp Pro
            340                 345                 350

Ser Leu Ser Lys Phe Phe Lys Gly Trp Ser Gly Val Cys Thr Phe Gly
        355                 360                 365

Met Gly Ser Thr Lys Thr Phe Gly Ile Gln Ser Asp Glu Phe Val Leu
    370                 375                 380

Leu Gly Asp Thr Phe Leu Arg Ser Ala Tyr Val Val Tyr Asp Leu Gln
385                 390                 395                 400

Asn Lys Gln Ile Gly Ile Ala Gln Ala Thr Leu Asn Ser Thr Ser Ser
                405                 410                 415

Thr Ile Val Glu Phe Lys Ala Gly Ser Lys Thr Ile Pro Gly Pro Ala
            420                 425                 430

Ser Thr Gly Asp Asp Ser Asp Asp Ser Ser Asp Asp Ser Asp Glu Asp
        435                 440                 445

Ser Ala Gly Ala Ala Leu His Pro Thr Phe Ser Ile Ala Leu Ala Gly
    450                 455                 460
```

Thr Leu Phe Thr Ala Val Ser Met Met Met Ser Val Leu
465 470 475

<210> 36
<211> 1263
<212> DNA
<213> Trichoderma reesei

<400> 36
atggcgtcac tcatcaaaac tgccgtggac attgccaacg gccgccatgc gctgtccaga 60

tatgtcatct ttgggctctg gcttgcggat gcggtgctgt gcgggctgat tatctggaaa 120

gtgccttata cggaaatcga ctgggtcgcc tacatggagc aagtcaccca gttcgtccac 180

ggagagcgag actaccccaa gatggagggc ggcacagggc ccctggtgta tcccgcggcc 240

catgtgtaca tctacacagg gctctactac ctgacgaaca agggcaccga catcctgctg 300

gcgcagcagc tctttgccgt gctctacatg gctactctgg cggtcgtcat gacatgctac 360

tccaaggcca aggtcccgcc gtacatcttc ccgcttctca tcctctccaa aagacttcac 420

agcgtcttcg tcctgagatg cttcaacgac tgcttcgccg ccttcttcct ctggctctgc 480

atcttcttct tccagaggcg agagtggacc atcggagctc tcgcatacag catcggcctg 540

ggcgtcaaaa tgtcgctgct actggttctc cccgccgtgg tcatcgtcct ctacctcggc 600

cgcggcttca agggcgccct gcggctgctc tggctcatgg tgcaggtcca gctcctcctc 660

gccataccct tcatcacgac aaattggcgc ggctacctcg gccgtgcatt cgagctctcg 720

aggcagttca agtttgaatg gacagtcaat tggcgcatgc tgggcgagga tctgttcctc 780

agccggggct tctctatcac gctactggca tttcacgcca tcttcctcct cgcctttatc 840

ctcggccggt ggctgaagat tagggaacgg accgtactcg ggatgatccc ctatgtcatc 900

cgattcagat cgccctttac cgagcaggaa gagcgcgcca tctccaaccg cgtcgtcacg 960

cccggctatg tcatgtccac catcttgtcg gccaacgtgg tgggactgct gtttgcccgg 1020

tctctgcact accagttcta tgcatatctg gcgtgggcga ccccctatct cctgtggacg 1080

gcctgcccca atcttttggt ggtggccccc ctctgggcgg cgcaagaatg ggcctggaac 1140

gtcttcccca gcacgcctct tagctcgagc gtcgtggtga gcgtgctggc cgtgacggtg 1200

gccatggcgt ttgcaggttc aaatccgcag ccacgtgaaa catcgaagcc gaagcagcac 1260

taa 1263

<210> 37
<211> 420
<212> PRT
<213> Trichoderma reesei

<400> 37

Met Ala Ser Leu Ile Lys Thr Ala Val Asp Ile Ala Asn Gly Arg His
1 5 10 15

```
Ala Leu Ser Arg Tyr Val Ile Phe Gly Leu Trp Leu Ala Asp Ala Val
            20                  25                  30

Leu Cys Gly Leu Ile Ile Trp Lys Val Pro Tyr Thr Glu Ile Asp Trp
        35                  40                  45

Val Ala Tyr Met Glu Gln Val Thr Gln Phe Val His Gly Glu Arg Asp
    50                  55                  60

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

His Val Tyr Ile Tyr Thr Gly Leu Tyr Tyr Leu Thr Asn Lys Gly Thr
                85                  90                  95

Asp Ile Leu Leu Ala Gln Gln Leu Phe Ala Val Leu Tyr Met Ala Thr
            100                 105                 110

Leu Ala Val Val Met Thr Cys Tyr Ser Lys Ala Lys Val Pro Pro Tyr
        115                 120                 125

Ile Phe Pro Leu Leu Ile Leu Ser Lys Arg Leu His Ser Val Phe Val
    130                 135                 140

Leu Arg Cys Phe Asn Asp Cys Phe Ala Ala Phe Phe Leu Trp Leu Cys
145                 150                 155                 160

Ile Phe Phe Phe Gln Arg Arg Glu Trp Thr Ile Gly Ala Leu Ala Tyr
                165                 170                 175

Ser Ile Gly Leu Gly Val Lys Met Ser Leu Leu Leu Val Leu Pro Ala
            180                 185                 190

Val Val Ile Val Leu Tyr Leu Gly Arg Gly Phe Lys Gly Ala Leu Arg
        195                 200                 205

Leu Leu Trp Leu Met Val Gln Val Gln Leu Leu Leu Ala Ile Pro Phe
    210                 215                 220

Ile Thr Thr Asn Trp Arg Gly Tyr Leu Gly Arg Ala Phe Glu Leu Ser
225                 230                 235                 240

Arg Gln Phe Lys Phe Glu Trp Thr Val Asn Trp Arg Met Leu Gly Glu
                245                 250                 255

Asp Leu Phe Leu Ser Arg Gly Phe Ser Ile Thr Leu Leu Ala Phe His
            260                 265                 270

Ala Ile Phe Leu Leu Ala Phe Ile Leu Gly Arg Trp Leu Lys Ile Arg
        275                 280                 285
```

Glu Arg Thr Val Leu Gly Met Ile Pro Tyr Val Ile Arg Phe Arg Ser
290 295 300

Pro Phe Thr Glu Gln Glu Glu Arg Ala Ile Ser Asn Arg Val Val Thr
305 310 315 320

Pro Gly Tyr Val Met Ser Thr Ile Leu Ser Ala Asn Val Val Gly Leu
325 330 335

Leu Phe Ala Arg Ser Leu His Tyr Gln Phe Tyr Ala Tyr Leu Ala Trp
340 345 350

Ala Thr Pro Tyr Leu Leu Trp Thr Ala Cys Pro Asn Leu Leu Val Val
355 360 365

Ala Pro Leu Trp Ala Ala Gln Glu Trp Ala Trp Asn Val Phe Pro Ser
370 375 380

Thr Pro Leu Ser Ser Ser Val Val Val Ser Val Leu Ala Val Thr Val
385 390 395 400

Ala Met Ala Phe Ala Gly Ser Asn Pro Gln Pro Arg Glu Thr Ser Lys
405 410 415

Pro Lys Gln His
420

<210> 38
<211> 445
<212> PRT
<213> Homo sapiens

<400> 38

Met Leu Lys Lys Gln Ser Ala Gly Leu Val Leu Trp Gly Ala Ile Leu
1 5 10 15

Phe Val Ala Trp Asn Ala Leu Leu Leu Leu Phe Phe Trp Thr Arg Pro
20 25 30

Ala Pro Gly Arg Pro Pro Ser Val Ser Ala Leu Asp Gly Asp Pro Ala
35 40 45

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

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

Ser Gln Arg Gly Arg Val Pro Thr Ala Ala Pro Pro Ala Gln Pro Arg
85 90 95

Val Pro Val Thr Pro Ala Pro Ala Val Ile Pro Ile Leu Val Ile Ala

```
            100                 105                 110

Cys Asp Arg Ser Thr Val Arg Arg Cys Leu Asp Lys Leu Leu His Tyr
        115                 120                 125

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

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

His Ile Arg Gln Pro Asp Leu Ser Ser Ile Ala Val Pro Pro Asp His
                165                 170                 175

Arg Lys Phe Gln Gly Tyr Tyr Lys Ile Ala Arg His Tyr Arg Trp Ala
            180                 185                 190

Leu Gly Gln Val Phe Arg Gln Phe Arg Phe Pro Ala Ala Val Val Val
        195                 200                 205

Glu Asp Asp Leu Glu Val Ala Pro Asp Phe Phe Glu Tyr Phe Arg Ala
    210                 215                 220

Thr Tyr Pro Leu Leu Lys Ala Asp Pro Ser Leu Trp Cys Val Ser Ala
225                 230                 235                 240

Trp Asn Asp Asn Gly Lys Glu Gln Met Val Asp Ala Ser Arg Pro Glu
                245                 250                 255

Leu Leu Tyr Arg Thr Asp Phe Phe Pro Gly Leu Gly Trp Leu Leu Leu
            260                 265                 270

Ala Glu Leu Trp Ala Glu Leu Glu Pro Lys Trp Pro Lys Ala Phe Trp
        275                 280                 285

Asp Asp Trp Met Arg Arg Pro Glu Gln Arg Gln Gly Arg Ala Cys Ile
    290                 295                 300

Arg Pro Glu Ile Ser Arg Thr Met Thr Phe Gly Arg Lys Gly Val Ser
305                 310                 315                 320

His Gly Gln Phe Phe Asp Gln His Leu Lys Phe Ile Lys Leu Asn Gln
                325                 330                 335

Gln Phe Val His Phe Thr Gln Leu Asp Leu Ser Tyr Leu Gln Arg Glu
            340                 345                 350

Ala Tyr Asp Arg Asp Phe Leu Ala Arg Val Tyr Gly Ala Pro Gln Leu
        355                 360                 365

Gln Val Glu Lys Val Arg Thr Asn Asp Arg Lys Glu Leu Gly Glu Val
```

370 375 380

Arg Val Gln Tyr Thr Gly Arg Asp Ser Phe Lys Ala Phe Ala Lys Ala
385 390 395 400

Leu Gly Val Met Asp Asp Leu Lys Ser Gly Val Pro Arg Ala Gly Tyr
405 410 415

Arg Gly Ile Val Thr Phe Gln Phe Arg Gly Arg Arg Val His Leu Ala
420 425 430

Pro Pro Leu Thr Trp Glu Gly Tyr Asp Pro Ser Trp Asn
435 440 445

<210> 39
<211> 447
<212> PRT
<213> Homo sapiens

<400> 39

Met Arg Phe Arg Ile Tyr Lys Arg Lys Val Leu Ile Leu Thr Leu Val
1 5 10 15

Val Ala Ala Cys Gly Phe Val Leu Trp Ser Ser Asn Gly Arg Gln Arg
20 25 30

Lys Asn Glu Ala Leu Ala Pro Pro Leu Leu Asp Ala Glu Pro Ala Arg
35 40 45

Gly Ala Gly Gly Arg Gly Gly Asp His Pro Ser Val Ala Val Gly Ile
50 55 60

Arg Arg Val Ser Asn Val Ser Ala Ala Ser Leu Val Pro Ala Val Pro
65 70 75 80

Gln Pro Glu Ala Asp Asn Leu Thr Leu Arg Tyr Arg Ser Leu Val Tyr
85 90 95

Gln Leu Asn Phe Asp Gln Thr Leu Arg Asn Val Asp Lys Ala Gly Thr
100 105 110

Trp Ala Pro Arg Glu Leu Val Leu Val Val Gln Val His Asn Arg Pro
115 120 125

Glu Tyr Leu Arg Leu Leu Leu Asp Ser Leu Arg Lys Ala Gln Gly Ile
130 135 140

Asp Asn Val Leu Val Ile Phe Ser His Asp Phe Trp Ser Thr Glu Ile
145 150 155 160

Asn Gln Leu Ile Ala Gly Val Asn Phe Cys Pro Val Leu Gln Val Phe
165 170 175

```
Phe Pro Phe Ser Ile Gln Leu Tyr Pro Asn Glu Phe Pro Gly Ser Asp
            180                 185                 190

Pro Arg Asp Cys Pro Arg Asp Leu Pro Lys Asn Ala Ala Leu Lys Leu
        195                 200                 205

Gly Cys Ile Asn Ala Glu Tyr Pro Asp Ser Phe Gly His Tyr Arg Glu
    210                 215                 220

Ala Lys Phe Ser Gln Thr Lys His His Trp Trp Trp Lys Leu His Phe
225                 230                 235                 240

Val Trp Glu Arg Val Lys Ile Leu Arg Asp Tyr Ala Gly Leu Ile Leu
                245                 250                 255

Phe Leu Glu Glu Asp His Tyr Leu Ala Pro Asp Phe Tyr His Val Phe
            260                 265                 270

Lys Lys Met Trp Lys Leu Lys Gln Gln Glu Cys Pro Glu Cys Asp Val
        275                 280                 285

Leu Ser Leu Gly Thr Tyr Ser Ala Ser Arg Ser Phe Tyr Gly Met Ala
    290                 295                 300

Asp Lys Val Asp Val Lys Thr Trp Lys Ser Thr Glu His Asn Met Gly
305                 310                 315                 320

Leu Ala Leu Thr Arg Asn Ala Tyr Gln Lys Leu Ile Glu Cys Thr Asp
                325                 330                 335

Thr Phe Cys Thr Tyr Asp Asp Tyr Asn Trp Asp Trp Thr Leu Gln Tyr
            340                 345                 350

Leu Thr Val Ser Cys Leu Pro Lys Phe Trp Lys Val Leu Val Pro Gln
        355                 360                 365

Ile Pro Arg Ile Phe His Ala Gly Asp Cys Gly Met His His Lys Lys
    370                 375                 380

Thr Cys Arg Pro Ser Thr Gln Ser Ala Gln Ile Glu Ser Leu Leu Asn
385                 390                 395                 400

Asn Asn Lys Gln Tyr Met Phe Pro Glu Thr Leu Thr Ile Ser Glu Lys
                405                 410                 415

Phe Thr Val Val Ala Ile Ser Pro Pro Arg Lys Asn Gly Gly Trp Gly
            420                 425                 430

Asp Ile Arg Asp His Glu Leu Cys Lys Ser Tyr Arg Arg Leu Gln
        435                 440                 445
```

<210> 40
<211> 85
<212> PRT
<213> Trichoderma reesei

<400> 40

Met Ala Ser Thr Asn Ala Arg Tyr Val Arg Tyr Leu Leu Ile Ala Phe
1 5 10 15

Phe Thr Ile Leu Val Phe Tyr Phe Val Ser Asn Ser Lys Tyr Glu Gly
20 25 30

Val Asp Leu Asn Lys Gly Thr Phe Thr Ala Pro Asp Ser Thr Lys Thr
35 40 45

Thr Pro Lys Pro Pro Ala Thr Gly Asp Ala Lys Asp Phe Pro Leu Ala
50 55 60

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

Gly Pro Arg Met Asn
85

<210> 41
<211> 255
<212> DNA
<213> Trichoderma reesei

<400> 41
atggcgtcaa caaatgcgcg ctatgtgcgc tatctactaa tcgccttctt cacaatcctc 60

gtcttctact ttgtctccaa ttcaaagtat gagggcgtcg atctcaacaa gggcaccttc 120

acagctccgg attcgaccaa gacgacacca aagccgccag ccactggcga tgccaaagac 180

tttcctctgg ccctgacgcc gaacgatcca ggcttcaacg acctcgtcgg catcgctccc 240

ggccctcgaa tgaac 255

<210> 42
<211> 58
<212> PRT
<213> Homo sapiens

<400> 42

Met Arg Phe Arg Ile Tyr Lys Arg Lys Val Leu Ile Leu Thr Leu Val
1 5 10 15

Val Ala Ala Cys Gly Phe Val Leu Trp Ser Ser Asn Gly Arg Gln Arg
20 25 30

Lys Asn Glu Ala Leu Ala Pro Pro Leu Leu Asp Ala Glu Pro Ala Arg
35 40 45

Gly Ala Gly Gly Arg Gly Gly Asp His Pro
50 55

<210> 43
<211> 51
<212> PRT
<213> Trichoderma reesei

<400> 43

Met Ala Ser Thr Asn Ala Arg Tyr Val Arg Tyr Leu Leu Ile Ala Phe
1 5 10 15

Phe Thr Ile Leu Val Phe Tyr Phe Val Ser Asn Ser Lys Tyr Glu Gly
20 25 30

Val Asp Leu Asn Lys Gly Thr Phe Thr Ala Pro Asp Ser Thr Lys Thr
35 40 45

Thr Pro Lys
50

<210> 44
<211> 52
<212> PRT
<213> Trichoderma reesei

<400> 44

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

Leu Trp Cys Phe Phe Leu Tyr Gln Leu Leu Arg Pro Ser Ser Ser Tyr
20 25 30

Asn Ser Pro Gly Asp Arg Tyr Ile Asn Phe Glu Arg Asp Pro Asn Leu
35 40 45

Asp Pro Thr Gly
50

<210> 45
<211> 33
<212> PRT
<213> Trichoderma reesei

<400> 45

Met Leu Asn Pro Arg Arg Ala Leu Ile Ala Ala Ala Phe Ile Leu Thr
1 5 10 15

Val Phe Phe Leu Ile Ser Arg Ser His Asn Ser Glu Ser Ala Ser Thr
20 25 30

Ser

<210> 46
<211> 84
<212> PRT
<213> Trichoderma reesei

<400> 46

Met Met Pro Arg His His Ser Ser Gly Phe Ser Asn Gly Tyr Pro Arg
1 5 10 15

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

Leu Pro Pro His Arg Lys Arg Lys Arg Thr Ala Ile Arg Val Gly Ile
35 40 45

Ala Val Val Val Ile Leu Val Leu Val Leu Trp Phe Gly Gln Pro Arg
50 55 60

Ser Val Ala Ser Leu Ile Ser Leu Gly Ile Leu Ser Gly Tyr Asp Asp
65 70 75 80

Leu Lys Leu Glu

<210> 47
<211> 55
<212> PRT
<213> Trichoderma reesei

<400> 47

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

Ile Pro Pro Thr Arg Ala Leu Trp Asn Ala Val Thr Arg Thr Arg Phe
20 25 30

Ile Leu Leu Val Gly Ile Thr Gly Leu Ile Leu Leu Leu Trp Arg Gly
35 40 45

Val Ser Thr Ser Ala Ser Glu
50 55

<210> 48
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 48
ccgcgttgaa cggcttccca 20

<210> 49
<211> 24
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 49
taacttgtac gctctcagtt cgag 24

<210> 50
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 50
gcgacggcga cccattagca 20

<210> 51
<211> 19
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 51
catcctcaag gcctcagac 19

<210> 52
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 52
tgcgctctca ccagcatcgc 20

<210> 53
<211> 20
<212> DNA
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<220>
<223> Primer

<400> 53
gtcctgggcg agttccgcac 20

<210> 54
<211> 63
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 54
agatttcagt ctctcaccac tcacctgagt tgcctctctc ggtctgaagg acgtggaatg 60

atg 63

<210> 55
<211> 66
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 55
gcagggtgat gagctggatc accttgacgg tgttgcccat gttgagagaa gttgttggat 60

tgatca 66

<210> 56
<211> 63
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 56
agatttcagt ctctcaccac tcacctgagt tgcctctctc ggtctgaagg acgtggaatg 60

atg 63

<210> 57
<211> 66
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 57
cagagccgct atcgccgagg aggttgccct tcttgcccat gttgagagaa gttgttggat 60

tgatca 66

<210> 58
<211> 63
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 58
agatttcagt ctctcaccac tcacctgagt tgcctctctc ggtctgaagg acgtggaatg 60

atg 63

<210> 59
<211> 66
<212> DNA
<213> Artificial

<220>

<223> Primer

<400> 59
tcttgaggat gagctggacg agggtcttga aaaagcccat gttgagagaa gttgttggat 60

tgatca 66

<210> 60
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 60
agctccgtgg cgaaagcctg a 21

<210> 61
<211> 66
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 61
cagccgcagc ctcagcctct ctcagcctca tcagccgcgg ccgccaactt tgcgtccctt 60

gtgacg 66

<210> 62
<211> 76
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 62
gcaacgagag cagagcagca gtagtcgatg ctaggcggcc gcgggcagta tgccggatgg 60

ctggcttata caggca 76

<210> 63
<211> 76
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 63
tgcctgtata agccagccat ccggcatact gcccgcggcc gcctagcatc gactactgct 60

gctctgctct cgttgc 76

<210> 64
<211> 20
<212> DNA
<213> Artificial

<220>

<223> Primer

<400> 64
tgcgtcgccg tctcgctcct 20

<210> 65
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 65
ttaggcgacc tctttttcca 20

<210> 66
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 66
cgaggaagtc tcgtgaggat 20

<210> 67
<211> 19
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 67
cagctaaacc gacgggcca 19

<210> 68
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 68
gaccgtatat ttgaaaaggg 20

<210> 69
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 69
gatgttgcgc ctgggttgac 20

<210> 70
<211> 23

<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 70
taacttgtac gctctcagtt cga 23

<210> 71
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 71
ccatgagctt gaacaggtaa 20

<210> 72
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 72
gattgtcatg gtgtacgtga 20

<210> 73
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 73
caagatggag ggcggcacag 20

<210> 74
<211> 22
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 74
gccagtagcg tgatagagaa gc 22

<210> 75
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 75
gcgtcactca tcaaaactgc 20

<210> 76
<211> 19
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 76
cttcggcttc gatgtttca 19

<210> 77
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 77
tgcgtcgccg tctcgctcct 20

<210> 78
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 78
tgacgtacca gttgggatga 20

<210> 79
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 79
gatgttgcgc ctgggttgac 20

<210> 80
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 80
tgacgtacca gttgggatga 20

<210> 81
<211> 20
<212> DNA
<213> Artificial

<220>

<223> Primer

<400> 81
tgcgtcgccg tctcgctcct 20

<210> 82
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 82
gattgtcatg gtgtacgtga 20

<210> 83
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 83
caagatggag ggcggcacag 20

<210> 84
<211> 22
<212> DNA
<213> Artificial

<220>
<223> Primer

<400> 84
gccagtagcg tgatagagaa gc 22

<210> 85
<211> 488
<212> PRT
<213> Trichoderma reesei

<400> 85

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

Ala Gln Ala Gln Val Val Gln Phe Asp Ile Glu Lys Arg His Ala Pro
20 25 30

Arg Leu Ser Arg Arg Asp Gly Thr Ile Asp Gly Thr Leu Ser Asn Gln
35 40 45

Arg Val Gln Gly Gly Tyr Phe Ile Asn Val Gln Val Gly Ser Pro Gly
50 55 60

Gln Asn Ile Thr Leu Gln Leu Asp Thr Gly Ser Ser Asp Val Trp Val
65 70 75 80

```
Pro Ser Ser Thr Ala Ala Ile Cys Thr Gln Val Ser Glu Arg Asn Pro
                85                  90                  95

Gly Cys Gln Phe Gly Ser Phe Asn Pro Asp Asp Ser Asp Thr Phe Asp
            100                 105                 110

Glu Val Gly Gln Gly Leu Phe Asp Ile Thr Tyr Val Asp Gly Ser Ser
        115                 120                 125

Ser Lys Gly Asp Tyr Phe Gln Asp Asn Phe Gln Ile Asn Gly Val Thr
    130                 135                 140

Val Lys Asn Leu Thr Met Gly Leu Gly Leu Ser Ser Ser Ile Pro Asn
145                 150                 155                 160

Gly Leu Ile Gly Val Gly Tyr Met Asn Asp Glu Ala Ser Val Ser Thr
                165                 170                 175

Thr Arg Ser Thr Tyr Pro Asn Leu Pro Ile Val Leu Gln Gln Gln Lys
            180                 185                 190

Leu Ile Asn Ser Val Ala Phe Ser Leu Trp Leu Asn Asp Leu Asp Ala
        195                 200                 205

Ser Thr Gly Ser Ile Leu Phe Gly Gly Ile Asp Thr Glu Lys Tyr His
    210                 215                 220

Gly Asp Leu Thr Ser Ile Asp Ile Ile Ser Pro Asn Gly Gly Lys Thr
225                 230                 235                 240

Phe Thr Glu Phe Ala Val Asn Leu Tyr Ser Val Gln Ala Thr Ser Pro
                245                 250                 255

Ser Gly Thr Asp Thr Leu Ser Thr Ser Glu Asp Thr Leu Ile Ala Val
            260                 265                 270

Leu Asp Ser Gly Thr Thr Leu Thr Tyr Leu Pro Gln Asp Met Ala Glu
        275                 280                 285

Glu Ala Trp Asn Glu Val Gly Ala Glu Tyr Ser Asn Glu Leu Gly Leu
    290                 295                 300

Ala Val Val Pro Cys Ser Val Gly Asn Thr Asn Gly Phe Phe Ser Phe
305                 310                 315                 320

Thr Phe Ala Gly Thr Asp Gly Pro Thr Ile Asn Val Thr Leu Ser Glu
                325                 330                 335

Leu Val Leu Asp Leu Phe Ser Gly Gly Pro Ala Pro Arg Phe Ser Ser
            340                 345                 350
```

```
Gly Pro Asn Lys Gly Gln Ser Ile Cys Glu Phe Gly Ile Gln Asn Gly
        355                 360                 365

Thr Gly Ser Pro Phe Leu Leu Gly Asp Thr Phe Leu Arg Ser Ala Phe
    370                 375                 380

Val Val Tyr Asp Leu Val Asn Asn Gln Ile Ala Ile Ala Pro Thr Asn
385                 390                 395                 400

Phe Asn Ser Thr Arg Thr Asn Val Val Ala Phe Ala Ser Ser Gly Ala
                405                 410                 415

Pro Ile Pro Ser Ala Thr Ala Ala Pro Asn Gln Ser Arg Thr Gly His
            420                 425                 430

Ser Ser Ser Thr His Ser Gly Leu Ser Ala Ala Ser Gly Phe His Asp
        435                 440                 445

Gly Asp Asp Glu Asn Ala Gly Ser Leu Thr Ser Val Phe Ser Gly Pro
    450                 455                 460

Gly Met Ala Val Val Gly Met Thr Ile Cys Tyr Thr Leu Leu Gly Ser
465                 470                 475                 480

Ala Ile Phe Gly Ile Gly Trp Leu
                485
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<210> 86
<211> 761
<212> PRT
<213> Trichoderma reesei

<400> 86

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Met Arg Ser Thr Leu Tyr Gly Leu Ala Ala Leu Pro Leu Ala Ala Gln
1               5                   10                  15

Ala Leu Glu Phe Ile Asp Asp Thr Val Ala Gln Gln Asn Gly Ile Met
            20                  25                  30

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

Arg Arg Gln Asp Ser Ala Asp Leu Met Ser Gln Gln Thr Gly Tyr Phe
    50                  55                  60

Tyr Ser Ile Gln Leu Glu Ile Gly Thr Pro Pro Gln Ala Val Ser Val
65                  70                  75                  80

Asn Phe Asp Thr Gly Ser Ser Glu Leu Trp Val Asn Pro Val Cys Ser
                85                  90                  95
```

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Lys Ala Thr Asp Pro Ala Phe Cys Lys Thr Phe Gly Gln Tyr Asn His
            100                 105                 110

Ser Thr Thr Phe Val Asp Ala Lys Ala Pro Gly Gly Ile Lys Tyr Gly
        115                 120                 125

Thr Gly Phe Val Asp Phe Asn Tyr Gly Tyr Asp Tyr Val Gln Leu Gly
    130                 135                 140

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

Phe Ala Ser Val Gly Ile Leu Gly Ala Gly Pro Asp Leu Ser Gly Trp
                165                 170                 175

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

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

Arg Gly Ser Val Thr Tyr Gly Gly Ile Asp Ile Lys Lys Phe Ser Gly
    210                 215                 220

Pro Leu Ala Lys Lys Pro Ile Ile Pro Ala Ala Gln Ser Pro Asp Gly
225                 230                 235                 240

Tyr Thr Arg Tyr Trp Val His Met Asp Gly Met Ser Ile Thr Lys Glu
                245                 250                 255

Asp Gly Ser Lys Phe Glu Ile Phe Asp Lys Pro Asn Gly Gln Pro Val
            260                 265                 270

Leu Leu Asp Ser Gly Tyr Thr Val Ser Thr Leu Pro Gly Pro Leu Met
        275                 280                 285

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

Gly Asp Tyr Ile Val Asp Cys Asp Ile Ile Asp Thr Pro Gly Arg Val
305                 310                 315                 320

Asn Phe Lys Phe Gly Asn Val Val Val Asp Val Glu Tyr Lys Asp Phe
                325                 330                 335

Ile Trp Gln Gln Pro Asp Leu Gly Ile Cys Lys Leu Gly Val Ser Gln
            340                 345                 350

Asp Asp Asn Phe Pro Val Leu Gly Asp Thr Phe Leu Arg Ala Ala Tyr
        355                 360                 365
```

```
Val Val Phe Asp Trp Asp Asn Gln Glu Val His Ile Ala Ala Asn Glu
    370                 375                 380

Asp Cys Gly Asp Glu Leu Ile Pro Ile Gly Ser Gly Pro Asp Ala Ile
385                 390                 395                 400

Pro Ala Ser Ala Ile Gly Lys Cys Ser Pro Ser Val Lys Thr Asp Thr
                405                 410                 415

Thr Thr Ser Val Ala Glu Thr Thr Ala Thr Ser Ala Ala Ala Ser Thr
            420                 425                 430

Ser Glu Leu Ala Ala Thr Thr Ser Glu Ala Ala Thr Thr Ser Ser Glu
        435                 440                 445

Ala Ala Thr Thr Ser Ala Ala Ala Glu Thr Thr Ser Val Pro Leu Asn
    450                 455                 460

Thr Ala Pro Ala Thr Thr Gly Leu Leu Pro Thr Thr Ser His Arg Phe
465                 470                 475                 480

Ser Asn Gly Thr Ala Pro Tyr Pro Ile Pro Ser Leu Ser Ser Val Ala
                485                 490                 495

Ala Ala Ala Gly Ser Ser Thr Val Pro Ser Glu Ser Ser Thr Gly Ala
            500                 505                 510

Ala Ala Ala Gly Thr Thr Ser Ala Ala Thr Gly Ser Gly Ser Gly Ser
        515                 520                 525

Gly Ser Gly Asp Ala Thr Thr Ala Ser Ala Thr Tyr Thr Ser Thr Phe
    530                 535                 540

Thr Thr Thr Asn Val Tyr Thr Val Thr Ser Cys Pro Pro Ser Val Thr
545                 550                 555                 560

Asn Cys Pro Val Gly His Val Thr Thr Glu Val Val Val Ala Tyr Thr
                565                 570                 575

Thr Trp Cys Pro Val Glu Asn Gly Pro His Pro Thr Ala Pro Pro Lys
            580                 585                 590

Pro Ala Ala Pro Glu Ile Thr Ala Thr Phe Thr Leu Pro Asn Thr Tyr
        595                 600                 605

Thr Cys Ser Gln Gly Lys Asn Thr Cys Ser Asn Pro Lys Thr Ala Pro
    610                 615                 620

Asn Val Ile Val Val Thr Pro Ile Val Thr Gln Thr Ala Pro Val Val
625                 630                 635                 640
```

Ile Pro Gly Ile Ala Ala Pro Thr Pro Thr Pro Ser Val Ala Ala Ser
645 650 655

Ser Pro Ala Ser Pro Ser Val Val Pro Ser Pro Thr Ala Pro Val Ala
660 665 670

Thr Ser Pro Ala Gln Ser Ala Tyr Tyr Pro Pro Pro Pro Pro Pro Glu
675 680 685

His Ala Val Ser Thr Pro Val Ala Asn Pro Pro Ala Val Thr Pro Ala
690 695 700

Pro Ala Pro Phe Pro Ser Gly Gly Leu Thr Thr Val Ile Ala Pro Gly
705 710 715 720

Ser Thr Gly Val Pro Ser Gln Pro Ala Gln Ser Gly Leu Pro Pro Val
725 730 735

Pro Ala Gly Ala Ala Gly Phe Arg Ala Pro Ala Ala Val Ala Leu Leu
740 745 750

Ala Gly Ala Val Ala Ala Ala Leu Leu
755 760

<210> 87
<211> 526
<212> PRT
<213> Trichoderma reesei

<400> 87

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

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

Glu Glu His Asn Ala Gly Glu Ala Lys Arg Ser Ala Asp Asn Gly Leu
35 40 45

Thr Phe Asp Ile Lys Arg Arg Ala Ser Arg Arg Ala Pro Ala Ser Gln
50 55 60

Glu Glu Lys Ala Ala Trp Gln Ala Ala Leu Leu Ser His Lys Tyr Ser
65 70 75 80

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

Asp Asn Gln Phe Ser Ile Leu Lys Ala Val Asp Pro Asp Ala Pro Asn
100 105 110

Thr Ala Gly Leu Ala Gln Asp Gly Thr Asp Tyr Ser Tyr Phe Val Gln

```
        115                 120                 125

Ala Ser Leu Gly Ser Lys Lys Thr Lys Leu Tyr Met Leu Leu Asp Thr
    130                 135                 140

Gly Ala Gly Ser Ser Trp Val Met Gly Thr Asp Cys Val Ser Glu Ala
145                 150                 155                 160

Cys Ser Leu His Asp Ser Phe Gly Pro Glu Asp Ser Asp Thr Leu Lys
                165                 170                 175

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

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

Tyr Gln Phe Gly Leu Ala His Asn Thr Ser Ser Asp Phe Val His Phe
    210                 215                 220

Ala Phe Asp Gly Ile Leu Gly Met Ser Met Asn Ser Gly Ala Asn Glu
225                 230                 235                 240

Asn Phe Leu Ser Ala Leu Glu Gly Ala Gly Leu Leu Asp Lys Ser Ile
                245                 250                 255

Phe Ser Val Ala Leu Ala Arg Ala Ser Asp Gly His Asn Asp Gly Glu
            260                 265                 270

Val Thr Phe Gly Ala Thr Asn Pro Ser Arg Tyr Thr Gly Asp Ile Thr
        275                 280                 285

Tyr Thr Pro Ile Pro Ser Gly Thr Asp Trp Ser Ile Pro Leu Asp Asp
    290                 295                 300

Met Ser Tyr Asn Gly Lys Lys Gly Asn Val Gly Gly Ile Asn Ala Tyr
305                 310                 315                 320

Ile Asp Thr Gly Thr Ser Tyr Met Phe Gly Pro Ser Lys Asn Val Lys
                325                 330                 335

Ala Leu His Ala Val Ile Asp Gly Ala Lys Ser Ser Asp Gly Ile Thr
            340                 345                 350

Trp Thr Val Pro Cys Asp Thr Thr Thr Pro Leu Val Val Thr Phe Ser
        355                 360                 365

Gly Val Asp Phe Ala Ile Ser Pro Lys Asp Trp Ile Ser Pro Lys Asp
    370                 375                 380

Ser Ser Gly Lys Cys Thr Ser Asn Val Tyr Gly Tyr Glu Val Val Ser
```

eolf-seql

385 390 395 400

Gly Ser Trp Leu Phe Gly Asp Thr Phe Leu Lys Asn Val Tyr Ala Val
405 410 415

Phe Asp Lys Glu Gln Met Arg Ile Gly Lys Thr Ser Pro Arg Ala Thr
420 425 430

Ser Pro Ser Ser Pro Ala Pro Thr Arg Thr Pro Ser Pro Ala Thr Thr
435 440 445

Ser Pro Ser Ser Ala Ser Thr Pro Gly Ser Thr Pro Thr Thr Ser Ser
450 455 460

Thr Arg Thr Ala Arg Pro Ser Thr Ser Ala Pro Ser Gly Thr Ser Ser
465 470 475 480

Thr Gly Ala Pro Ser Pro Ser Ala Ser Ala Asn Arg Asp Val Leu Arg
485 490 495

Ala Lys Arg Ile Asn Met Leu Lys Ser Ile Ser Ser Phe Trp His Asp
500 505 510

Pro Cys Cys Cys Leu Phe Leu His Val Ser Ile Ser Ser Thr
515 520 525

<210> 88
<211> 2559
<212> DNA
<213> Leishmania mexicana

<400> 88
atggggaaaa ataaggcaaa ttcagtggcc gactccggct ctgcggcaac cgcacctcgt 60

gaagctcctg cccaagccaa agatgccgcc ccacaagccc agaccgcatc tccaccgcct 120

aagaagactt tgttgcccaa aacgctaaca gatgagacgg aatttgtcgg catctttccg 180

ttccctttct ggccagtacg gttcgtcgtt acggtggtgg cactcttcgg cttaggcgcc 240

agctgcctcc aagccttcac ggttcgcatg acctcggtta agatttacgg atacctgatc 300

cacgagttcg acccgtggtt caactaccgc gctgccgagt acatgtccac gcacggctgg 360

tccgccttct tcagctggtt cgactacatg agctggtacc cgctgggccg ccccgtcggc 420

tccaccacgt acccgggcct gcagttcact gccgtcgcca ttcaccgcgc actggcggct 480

gccggcatcc cgatgtctct caacgacgtg tgtgtgctga tcccggcgtg gtttggcgcc 540

atcgctaccg ctcttctggc tctttgcacg tacgaagcca gtgggtcgac ggtggcggcc 600

gccgctgccg ccctctcctt ctccatcatc ccagcccacc tgatgcggtc catggcgggt 660

gagttcgaca acgagtgcat cgccgtcgcc gccatgctgc tcaccttcta ctgctgggtg 720

cgctcgctgc gcacgcggtc ctcgtggccc atcggcgtcc tcaccggtgt cgcctacggc 780

tacatggtgg cggcgtgggg cggctacatt ttcgtgctca acatggttgc catgcatgcc 840

ggcatatcat cgatggtgga ctgggcccgc aacacgtaca acccgtcgct gctgcgtgca 900

tacacgctgt tctacgttgt cggcaccgcc atcgccgtgt gcgtgccgcc agtggggatg 960

tcgcccttca agtcgctgga gcagctgggt gcgctgctgg tgcttgtctt cctgtgcggg 1020

ctgcaggtgt gcgaggtgct gcgggcacgc gccggtgtcg aggttcgctc tcgcgcgaac 1080

ttcaagatcc gcgcgcgcgt cttcagcgcg atggctggcg gggctgcgct tgcaatcgcg 1140

ctgctggcac cgagggggta cttcgggccc ctttcggctc gtgtgcgtgc gctgttcgtg 1200

gagcacacgc gcactggcaa tccgctggtc gactcggtcg ccgaacatca acccgccagc 1260

cctgaggcaa tgtggtcgtt tcttcacgtg tgcggcgtga catggggctt gggcttcatt 1320

gtgcttgctg tctcaacgtt cgtgaactac tccccgtcga aggtcttctg ggtactgaac 1380

tctggtgccg tgtactactt cagcacccgc atggctcggc tgctgcttct ctccggtccc 1440

gctgcgtgtc tgtccactgg cattttcgtg ggggcaattc tggaagcagc ggtgcagctc 1500

agcttttggg acagtgatgc gacaaaggcc aagccccaga agcagaccca acgccaccag 1560

agggggctc gtaaggacaa caagcgaaat gacgctgaga gcggaatgac cgcgctctca 1620

ctttgcgaca tcgtgtccgg tagctctctg gcttggggcc atcgtatggt gctgtgcatc 1680

gctatgtggg ctctcgtgac gacaaccgtg gtgaccttca tcagttccgg tttcgcgtcc 1740

cactcactaa aatttgcgga gcagtcgtca aatccgatga ttgttttcgc ggcctccgtg 1800

ccaaaccgtg caacaggcaa gcctatgatg atattggtgg atgactacct gcacagctat 1860

ctctggctgc gcgataacac acccaggagt gcgcgcattt tggcctggtg ggactacggc 1920

taccagatca caggcatcgg caaccgcacc tcgctggccg atggcaacac ctggaaccac 1980

gagcacatcg ccaccatcgg caagatgttg acgtcgcccg tggcggaggc gcactcgctg 2040

gtgcgccaca tggccgacta cgtcctcatc tgggctgggc agagcggaga cttgatgaag 2100

tcaccgcaca tggcgcgcat cggcaacagt gtgtaccacg acatctgccc caacgacccg 2160

ctgtgccagc aattcggctt ttacagaaat gattaccatc gtccaacacc gatgatgcgg 2220

gcgtcgctgc tgtacaacct gcacgaggcc gggaaaacag cggccgtgaa ggtggaccca 2280

tccctctttc aggaggtgta ctcgtccaag tacggcctgg tgcgcatctt caaggtcatg 2340

aacgtgagcg cggagagcaa gaagtgggtt gctgacccgg caaaccgcgt gtgccgcccg 2400

cctgggtcgt ggatctgccc cgggcagtac ccgccggcga aggagatcca ggagatgctg 2460

gcacaccggg tctccttcga tcaggtggac aaggacaaga agcgcaaggc gacgtaccac 2520

gaggagtaca tgcgccggat gcgtgaaaac gagatctga 2559

<210> 89
<211> 852
<212> PRT
<213> Leishmania mexicana

<400> 89

Met Gly Lys Asn Lys Ala Asn Ser Val Ala Asp Ser Gly Ser Ala Ala

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1               5                   10                  15

Thr Ala Pro Arg Glu Ala Pro Ala Gln Ala Lys Asp Ala Ala Pro Gln
            20                  25                  30

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

Leu Thr Asp Glu Thr Glu Phe Val Gly Ile Phe Pro Phe Pro Phe Trp
    50                  55                  60

Pro Val Arg Phe Val Val Thr Val Val Ala Leu Phe Gly Leu Gly Ala
65                  70                  75                  80

Ser Cys Leu Gln Ala Phe Thr Val Arg Met Thr Ser Val Lys Ile Tyr
                85                  90                  95

Gly Tyr Leu Ile His Glu Phe Asp Pro Trp Phe Asn Tyr Arg Ala Ala
            100                 105                 110

Glu Tyr Met Ser Thr His Gly Trp Ser Ala Phe Phe Ser Trp Phe Asp
        115                 120                 125

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

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

Ala Gly Ile Pro Met Ser Leu Asn Asp Val Cys Val Leu Ile Pro Ala
                165                 170                 175

Trp Phe Gly Ala Ile Ala Thr Ala Leu Leu Ala Leu Cys Thr Tyr Glu
            180                 185                 190

Ala Ser Gly Ser Thr Val Ala Ala Ala Ala Ala Ala Leu Ser Phe Ser
        195                 200                 205

Ile Ile Pro Ala His Leu Met Arg Ser Met Ala Gly Glu Phe Asp Asn
    210                 215                 220

Glu Cys Ile Ala Val Ala Ala Met Leu Leu Thr Phe Tyr Cys Trp Val
225                 230                 235                 240

Arg Ser Leu Arg Thr Arg Ser Ser Trp Pro Ile Gly Val Leu Thr Gly
                245                 250                 255

Val Ala Tyr Gly Tyr Met Val Ala Ala Trp Gly Gly Tyr Ile Phe Val
            260                 265                 270

Leu Asn Met Val Ala Met His Ala Gly Ile Ser Ser Met Val Asp Trp
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        275                 280                 285

Ala Arg Asn Thr Tyr Asn Pro Ser Leu Leu Arg Ala Tyr Thr Leu Phe
    290                 295                 300

Tyr Val Val Gly Thr Ala Ile Ala Val Cys Val Pro Pro Val Gly Met
305                 310                 315                 320

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

Phe Leu Cys Gly Leu Gln Val Cys Glu Val Leu Arg Ala Arg Ala Gly
            340                 345                 350

Val Glu Val Arg Ser Arg Ala Asn Phe Lys Ile Arg Ala Arg Val Phe
        355                 360                 365

Ser Ala Met Ala Gly Gly Ala Ala Leu Ala Ile Ala Leu Leu Ala Pro
    370                 375                 380

Arg Gly Tyr Phe Gly Pro Leu Ser Ala Arg Val Arg Ala Leu Phe Val
385                 390                 395                 400

Glu His Thr Arg Thr Gly Asn Pro Leu Val Asp Ser Val Ala Glu His
                405                 410                 415

Gln Pro Ala Ser Pro Glu Ala Met Trp Ser Phe Leu His Val Cys Gly
            420                 425                 430

Val Thr Trp Gly Leu Gly Phe Ile Val Leu Ala Val Ser Thr Phe Val
        435                 440                 445

Asn Tyr Ser Pro Ser Lys Val Phe Trp Val Leu Asn Ser Gly Ala Val
    450                 455                 460

Tyr Tyr Phe Ser Thr Arg Met Ala Arg Leu Leu Leu Leu Ser Gly Pro
465                 470                 475                 480

Ala Ala Cys Leu Ser Thr Gly Ile Phe Val Gly Ala Ile Leu Glu Ala
                485                 490                 495

Ala Val Gln Leu Ser Phe Trp Asp Ser Asp Ala Thr Lys Ala Lys Pro
            500                 505                 510

Gln Lys Gln Thr Gln Arg His Gln Arg Gly Ala Arg Lys Asp Asn Lys
        515                 520                 525

Arg Asn Asp Ala Glu Ser Gly Met Thr Ala Leu Ser Leu Cys Asp Ile
    530                 535                 540

Val Ser Gly Ser Ser Leu Ala Trp Gly His Arg Met Val Leu Cys Ile
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545 550 555 560

Ala Met Trp Ala Leu Val Thr Thr Thr Val Val Thr Phe Ile Ser Ser
565 570 575

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

Met Ile Val Phe Ala Ala Ser Val Pro Asn Arg Ala Thr Gly Lys Pro
595 600 605

Met Met Ile Leu Val Asp Asp Tyr Leu His Ser Tyr Leu Trp Leu Arg
610 615 620

Asp Asn Thr Pro Arg Ser Ala Arg Ile Leu Ala Trp Trp Asp Tyr Gly
625 630 635 640

Tyr Gln Ile Thr Gly Ile Gly Asn Arg Thr Ser Leu Ala Asp Gly Asn
645 650 655

Thr Trp Asn His Glu His Ile Ala Thr Ile Gly Lys Met Leu Thr Ser
660 665 670

Pro Val Ala Glu Ala His Ser Leu Val Arg His Met Ala Asp Tyr Val
675 680 685

Leu Ile Trp Ala Gly Gln Ser Gly Asp Leu Met Lys Ser Pro His Met
690 695 700

Ala Arg Ile Gly Asn Ser Val Tyr His Asp Ile Cys Pro Asn Asp Pro
705 710 715 720

Leu Cys Gln Gln Phe Gly Phe Tyr Arg Asn Asp Tyr His Arg Pro Thr
725 730 735

Pro Met Met Arg Ala Ser Leu Leu Tyr Asn Leu His Glu Ala Gly Lys
740 745 750

Thr Ala Ala Val Lys Val Asp Pro Ser Leu Phe Gln Glu Val Tyr Ser
755 760 765

Ser Lys Tyr Gly Leu Val Arg Ile Phe Lys Val Met Asn Val Ser Ala
770 775 780

Glu Ser Lys Lys Trp Val Ala Asp Pro Ala Asn Arg Val Cys Arg Pro
785 790 795 800

Pro Gly Ser Trp Ile Cys Pro Gly Gln Tyr Pro Pro Ala Lys Glu Ile
805 810 815

Gln Glu Met Leu Ala His Arg Val Ser Phe Asp Gln Val Asp Lys Asp

eolf-seql

820 825 830

Lys Lys Arg Lys Ala Thr Tyr His Glu Glu Tyr Met Arg Arg Met Arg
835 840 845

Glu Asn Glu Ile
850

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<211> 2565
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Ala Lys Thr Ala Ala Leu Pro Val Lys Pro Phe Val Leu Pro Asn Thr
35 40 45

Leu Thr Asp Glu Glu Glu Phe Val Gly Ile Phe Pro Cys Pro Phe Trp
50 55 60

Pro Val Arg Phe Val Ile Thr Val Met Ala Leu Val Leu Leu Gly Ala
65 70 75 80

Ser Cys Ile Arg Ala Phe Thr Ile Arg Met Leu Ser Val Gln Leu Tyr
85 90 95

Gly Tyr Ile Ile His Glu Phe Asp Pro Trp Phe Asn Tyr Arg Ala Ala

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Glu Tyr Met Ser Ala His Gly Trp Ser Ala Phe Phe Ser Trp Phe Asp
        115                 120                 125

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

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

Ala Gly Val Pro Met Ser Leu Asn Asn Val Cys Val Leu Ile Pro Ala
                165                 170                 175

Trp Tyr Gly Ala Ile Ala Thr Ala Ile Leu Ala Leu Cys Ala Tyr Glu
            180                 185                 190

Val Ser Arg Ser Met Val Ala Ala Ala Val Ala Ala Leu Ser Phe Ser
        195                 200                 205

Ile Ile Pro Ala His Leu Met Arg Ser Met Ala Gly Glu Phe Asp Asn
    210                 215                 220

Glu Cys Ile Ala Val Ala Ala Met Leu Leu Thr Phe Tyr Leu Trp Val
225                 230                 235                 240

Arg Ser Leu Arg Thr Arg Cys Ser Trp Pro Ile Gly Ile Leu Thr Gly
                245                 250                 255

Ile Ala Tyr Gly Tyr Met Val Ala Ala Trp Gly Gly Tyr Ile Phe Val
            260                 265                 270

Leu Asn Met Val Ala Met His Ala Gly Ile Ser Ser Met Val Asp Trp
        275                 280                 285

Ala Arg Asn Thr Tyr Asn Pro Ser Leu Leu Arg Ala Tyr Ala Leu Phe
    290                 295                 300

Tyr Val Val Gly Thr Ala Ile Ala Thr Arg Val Pro Pro Val Gly Met
305                 310                 315                 320

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

Phe Leu Cys Gly Leu Gln Ala Cys Glu Val Phe Arg Ala Arg Ala Asp
            340                 345                 350

Val Glu Val Arg Ser Arg Ala Asn Phe Lys Ile Arg Met Arg Ala Phe
        355                 360                 365

Ser Val Met Ala Gly Val Gly Ala Leu Ala Ile Ala Val Leu Ser Pro
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    370                 375                 380

Thr Gly Tyr Phe Gly Pro Leu Thr Ala Arg Val Arg Ala Leu Phe Met
385                 390                 395                 400

Glu His Thr Arg Thr Gly Asn Pro Leu Val Asp Ser Val Ala Glu His
                405                 410                 415

His Pro Ala Ser Pro Glu Ala Met Trp Thr Phe Leu His Val Cys Gly
            420                 425                 430

Val Thr Trp Gly Leu Gly Ser Ile Val Leu Leu Val Ser Leu Leu Val
        435                 440                 445

Asp Tyr Ser Ser Ala Lys Leu Phe Trp Leu Met Asn Ser Gly Ala Val
    450                 455                 460

Tyr Tyr Phe Ser Thr Arg Met Ser Arg Leu Leu Leu Leu Thr Gly Pro
465                 470                 475                 480

Ala Ala Cys Leu Ser Thr Gly Cys Phe Val Gly Thr Leu Leu Glu Ala
                485                 490                 495

Ala Ile Gln Phe Thr Phe Trp Ser Ser Asp Ala Thr Lys Ala Lys Lys
            500                 505                 510

Gln Gln Glu Thr Gln Leu His Gln Lys Gly Ala Arg Lys His Ser Asp
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Arg Ser Asn Ser Lys Asn Ala Leu Thr Val Arg Thr Leu Gly Asp Val
    530                 535                 540

Leu Arg Ser Thr Ser Leu Ala Trp Gly His Arg Met Val Leu Cys Phe
545                 550                 555                 560

Ala Met Trp Ala Leu Val Ile Thr Val Ala Val Cys Leu Leu Gly Ser
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Asp Phe Thr Ser His Ala Thr Met Phe Ala Arg Gln Thr Ser Asn Pro
            580                 585                 590

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

Thr Gln Val Leu Val Asp Asp Tyr Leu Arg Ser Tyr Leu Trp Leu Arg
    610                 615                 620

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

Tyr Gln Ile Thr Gly Ile Gly Asn Arg Thr Ser Leu Ala Asp Gly Asn
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Thr Trp Asn His Glu His Ile Ala Thr Ile Gly Lys Met Leu Thr Ser
660 665 670

Pro Val Ala Glu Ala His Ser Leu Val Arg His Met Ala Asp Tyr Val
675 680 685

Leu Ile Trp Ala Gly Gln Gly Gly Asp Leu Met Lys Ser Pro His Met
690 695 700

Ala Arg Ile Gly Asn Ser Val Tyr His Asp Ile Cys Pro Asn Asp Pro
705 710 715 720

Leu Cys Gln His Phe Gly Phe Tyr Lys Asn Asp Arg Asn Arg Pro Lys
725 730 735

Pro Met Met Arg Ala Ser Leu Leu Tyr Asn Leu His Glu Ala Gly Arg
740 745 750

Ser Ala Gly Val Lys Val Asp Pro Ser Leu Phe Gln Glu Val Tyr Ser
755 760 765

Ser Lys Tyr Gly Leu Val Arg Ile Phe Lys Val Met Asn Val Ser Ala
770 775 780

Glu Ser Lys Lys Trp Val Ala Asp Pro Ala Asn Arg Val Cys His Pro
785 790 795 800

Pro Gly Ser Trp Ile Cys Pro Gly Gln Tyr Pro Pro Ala Lys Glu Ile
805 810 815

Gln Glu Met Leu Ala His Arg Val Pro Phe Asp His Val Asn Ser Phe
820 825 830

Ser Arg Lys Lys Ala Gly Ser Tyr His Glu Glu Tyr Met Arg Arg Met
835 840 845

Arg Glu Glu Gln Asp Arg
850