

\_SL  
SEQUENCE LISTING

<110> XYLECO, INC.

<120> SOLUBILIZED ENZYME AND USES THEREOF

<130> X2002-7003wo

<140>

<141>

<150> 62/055,702

<151> 2014-09-26

<160> 23

<170> PatentIn version 3.5

<210> 1

<211> 731

<212> PRT

<213> Trichoderma reesei

<400> 1

Met Gly Asp Ser His Ser Thr Ser Gly Ala Ser Ala Glu Ala Val Val  
1 5 10 15

Pro Pro Ala Gly Thr Pro Trp Gly Thr Ala Tyr Asp Lys Ala Lys Ala  
20 25 30

Ala Leu Ala Lys Leu Asn Leu Gln Asp Lys Val Gly Ile Val Ser Gly  
35 40 45

Val Gly Trp Asn Gly Gly Pro Cys Val Gly Asn Thr Ser Pro Ala Ser  
50 55 60

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

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

Ser Thr Trp Asp Val Asn Leu Ile Arg Glu Arg Gly Gln Phe Ile Gly  
100 105 110

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

Gly Pro Leu Gly Lys Thr Pro Gln Gly Gly Arg Asn Trp Glu Gly Phe  
130 135 140

Gly Val Asp Pro Tyr Leu Thr Gly Ile Ala Met Gly Gln Thr Ile Asn  
145 150 155 160

Gly Ile Gln Ser Val Gly Val Gln Ala Thr Ala Lys His Tyr Ile Leu  
165 170 175

Asn Glu Gln Glu Leu Asn Arg Glu Thr Ile<sup>SL</sup> Ser Ser Asn Pro Asp Asp  
 180 185 190  
 Arg Thr Leu His Glu Leu Tyr Thr Trp Pro Phe Ala Asp Ala Val Gln  
 195 200 205  
 Ala Asn Val Ala Ser Val Met Cys Ser Tyr Asn Lys Val Asn Thr Thr  
 210 215 220  
 Trp Ala Cys Glu Asp Gln Tyr Thr Leu Gln Thr Val Leu Lys Asp Gln  
 225 230 235 240  
 Leu Gly Phe Pro Gly Tyr Val Met Thr Asp Trp Asn Ala Gln His Thr  
 245 250 255  
 Thr Val Gln Ser Ala Asn Ser Gly Leu Asp Met Ser Met Pro Gly Thr  
 260 265 270  
 Asp Phe Asn Gly Asn Asn Arg Leu Trp Gly Pro Ala Leu Thr Asn Ala  
 275 280 285  
 Val Asn Ser Asn Gln Val Pro Thr Ser Arg Val Asp Asp Met Val Thr  
 290 295 300  
 Arg Ile Leu Ala Ala Trp Tyr Leu Thr Gly Gln Asp Gln Ala Gly Tyr  
 305 310 315 320  
 Pro Ser Phe Asn Ile Ser Arg Asn Val Gln Gly Asn His Lys Thr Asn  
 325 330 335  
 Val Arg Ala Ile Ala Arg Asp Gly Ile Val Leu Leu Lys Asn Asp Ala  
 340 345 350  
 Asn Ile Leu Pro Leu Lys Lys Pro Ala Ser Ile Ala Val Val Gly Ser  
 355 360 365  
 Ala Ala Ile Ile Gly Asn His Ala Arg Asn Ser Pro Ser Cys Asn Asp  
 370 375 380  
 Lys Gly Cys Asp Asp Gly Ala Leu Gly Met Gly Trp Gly Ser Gly Ala  
 385 390 395 400  
 Val Asn Tyr Pro Tyr Phe Val Ala Pro Tyr Asp Ala Ile Asn Thr Arg  
 405 410 415  
 Ala Ser Ser Gln Gly Thr Gln Val Thr Leu Ser Asn Thr Asp Asn Thr  
 420 425 430  
 Ser Ser Gly Ala Ser Ala Ala Arg Gly Lys Asp Val Ala Ile Val Phe  
 435 440 445

Ile Thr Ala Asp Ser Gly Glu Gly Tyr Ile Thr Val Glu Gly Asn Ala  
 450 455 460  
 Gly Asp Arg Asn Asn Leu Asp Pro Trp His Asn Gly Asn Ala Leu Val  
 465 470 475 480  
 Gln Ala Val Ala Gly Ala Asn Ser Asn Val Ile Val Val Val His Ser  
 485 490 495  
 Val Gly Ala Ile Ile Leu Glu Gln Ile Leu Ala Leu Pro Gln Val Lys  
 500 505 510  
 Ala Val Val Trp Ala Gly Leu Pro Ser Gln Glu Ser Gly Asn Ala Leu  
 515 520 525  
 Val Asp Val Leu Trp Gly Asp Val Ser Pro Ser Gly Lys Leu Val Tyr  
 530 535 540  
 Thr Ile Ala Lys Ser Pro Asn Asp Tyr Asn Thr Arg Ile Val Ser Gly  
 545 550 555 560  
 Gly Ser Asp Ser Phe Ser Glu Gly Leu Phe Ile Asp Tyr Lys His Phe  
 565 570 575  
 Asp Asp Ala Asn Ile Thr Pro Arg Tyr Glu Phe Gly Tyr Gly Leu Ser  
 580 585 590  
 Tyr Thr Lys Phe Asn Tyr Ser Arg Leu Ser Val Leu Ser Thr Ala Lys  
 595 600 605  
 Ser Gly Pro Ala Thr Gly Ala Val Val Pro Gly Gly Pro Ser Asp Leu  
 610 615 620  
 Phe Gln Asn Val Ala Thr Val Thr Val Asp Ile Ala Asn Ser Gly Gln  
 625 630 635 640  
 Val Thr Gly Ala Glu Val Ala Gln Leu Tyr Ile Thr Tyr Pro Ser Ser  
 645 650 655  
 Ala Pro Arg Thr Pro Pro Lys Gln Leu Arg Gly Phe Ala Lys Leu Asn  
 660 665 670  
 Leu Thr Pro Gly Gln Ser Gly Thr Ala Thr Phe Asn Ile Arg Arg Arg  
 675 680 685  
 Asp Leu Ser Tyr Trp Asp Thr Ala Ser Gln Lys Trp Val Val Pro Ser  
 690 695 700  
 Gly Ser Phe Gly Ile Ser Val Gly Ala Ser Ser Arg Asp Ile Arg Leu  
 705 710 715 720

Thr Ser Thr Leu Ser Val Ala Gly Ser <sup>-SL</sup>Gly Ser  
725 730

<210> 2  
<211> 2232  
<212> DNA  
<213> Trichoderma reesei

<400> 2  
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agtcactcaa catcgggggc ctcggctgag gcagttgtac ctctgcagg gactccatgg 120  
ggaaccgcgt acgacaaggc gaaggccgca ttggcaaagc tcaatctcca agataaggtc 180  
ggcatcgtga gcggtgtcgg ctggaacggc ggtccttgcg ttggaacac atctccggcc 240  
tccaagatca gctatccatc gctatgcctt caagacggac ccctcgggtgt tcgatactcg 300  
acaggcagca cagcctttac gccgggcggt caagcggcct cgacgtggga tgtcaatttg 360  
atccgcgaac gtggacagtt catcggtgag gaggtgaagg ctcgggggat tcatgtcata 420  
cttggctcctg tggctggggc gctgggaaag actccgcagg gcggtcgcaa ctgggagggc 480  
ttcgggtgtcg atccatatct cacgggcatt gccatgggtc aaaccatcaa cggcatccag 540  
tcggtaggcg tgcaggcgac agcgaagcac tatatcctca acgagcagga gctcaatcga 600  
gaaaccattt cgagcaaccc agatgaccga actctccatg agctgtatac ttggccattt 660  
gccgacgcgg ttcaggccaa tgtcgcttct gtcattgtgtc cgtacaacaa ggtcaatacc 720  
acctgggcct gcgaggatca gtacacgctg cagactgtgc tgaaagacca gctgggggttc 780  
ccaggctatg tcatgacgga ctggaacgca cagcacacga ctgtccaaag cgcaattct 840  
gggcttgaca tgtcaatgcc tggcacagac ttcaacggta acaatcggct ctgggggtcca 900  
gctctcacca atgcggtaaa tagcaatcag gtccccacga gcagagtcga cgatatggtg 960  
actcgtatcc tcgccgatg gtacttgaca ggccaggacc aggcaggcta tccgtcgttc 1020  
aacatcagca gaaatgttca aggaaaccac aagaccaatg tcagggcaat tgccagggac 1080  
ggcatcgttc tgctcaagaa tgacgccaac atcctgccgc tcaagaagcc cgctagcatt 1140  
gccgtcgttg gatctgccgc aatcattggt aaccacgcca gaaactcgcc ctcgtgcaac 1200  
gacaaaggct gcgacgacgg ggccttgggc atggggttggg gttccggcgc cgtcaactat 1260  
ccgtacttcg tcgcgcccta cgatgccatc aataccagag cgtcttcgca gggcacccag 1320  
gttaccttga gcaacaccga caacacgtcc tcaggcgcac ctgcagcaag aggaaaggac 1380  
gtcgccatcg tcttcatcac cgccgactcg ggtgaaggct acatcaccgt ggaggggcaac 1440  
gcgggcgatc gcaacaacct ggatccgtgg cacaacggca atgccctggt ccaggcggtg 1500  
gccggtgcca acagcaacgt cattgttgtt gtccactccg ttggcgccat cattctggag 1560  
cagattcttg ctcttcgca ggtcaaggcc gttgtctggg cgggtcttcc ttctcaggag 1620  
agcggcaatg cgctcgtcga cgtgctgtgg ggagatgtca gcccttctgg caagctggtg 1680  
tacaccattg cgaagagccc caatgactat aacactcgca tcgtttccgg cggcagtgac 1740

|                                                                   |      |
|-------------------------------------------------------------------|------|
| agcttcagcg agggactgtt catcgactat aagcacttcg acgacgccaa tatcacgccg | 1800 |
| cggtacgagt tcggctatgg actgtcttac accaagttca actactcacg cctctccgtc | 1860 |
| ttgtcgaccg ccaagtctgg tcctgcgact ggggccgttg tgccgggagg cccgagtgat | 1920 |
| ctgttccaga atgtcgcgac agtcaccgtt gacatcgcaa actctggcca agtgactggt | 1980 |
| gccgaggtag cccagctgta catcacctac ccatcttcag caccaggac ccctccgaag  | 2040 |
| cagctgcgag gctttgcaa gctgaacctc acgcctggtc agagcggaac agcaacgttc  | 2100 |
| aacatccgac gacgagatct cagctactgg gacacggctt cgcagaaatg ggtggtgccg | 2160 |
| tcggggtcgt ttggcatcag cgtgggagcg agcagccggg atatcaggct gacgagcact | 2220 |
| ctgtcggtag cg                                                     | 2232 |

<210> 3

<211> 2232

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic polynucleotide

<400> 3

|                                                                    |      |
|--------------------------------------------------------------------|------|
| atgcgttatc gtacagccgc agccctggca ctggccacag gtccgttcgc acgtgccgat  | 60   |
| agtcacagta ccagcggtgc cagcgcagaa gccgtgggtc cgccggcagg cacaccgtgg  | 120  |
| ggcacagcct atgataaagc caaagccgcc ctggccaagc tgaatctgca ggataaagtg  | 180  |
| ggcatcgtga gtggcgtggg ctggaacggt ggtccgtgcg ttggcaacac cagcccggca  | 240  |
| agcaagatca gctatccgag cttatgcctg caggatggtc cgctgggcgt gcgctatagc  | 300  |
| accggtagta ccgcctttac acctggtgtg caggccgcca gtacctggga cgttaacctg  | 360  |
| atccgcgaac gtggccaatt tatcggcgaa gaagttaaag ccagcggcat tcatgttatt  | 420  |
| ctgggtccgg tggccggtcc tctgggtaaa accccgcagg gcggccgtaa ttgggaaggc  | 480  |
| ttcggcgttg atccgtattt aaccggcatc gcaatgggcc agaccattaa tggcatccag  | 540  |
| agcgtgggtg ttcaagccac cgccaaacac tacatattaa acgaacagga actgaatcgt  | 600  |
| gaaaccatca gcagcaatcc ggatgatcgc accctgcatg agctgtatac atggcctttt  | 660  |
| gccgacgcag ttcaggccaa cgtggcaagt gtgatgtgta gctataacaa ggtgaacacc  | 720  |
| acctgggcct gcgaagacca gtacaccctg cagaccgttt taaaagacca actgggcctt  | 780  |
| cctggttacg tgatgacaga ttggaatgcc cagcacacaa ccgttcagag cgcaaacagt  | 840  |
| ggcctggata tgagcatgcc gggcaccgac ttcaacggca ataatcgtct gtgggggtccg | 900  |
| gcactgacca atgccgttaa cagcaaccag gtgccgacca gtcgtgtgga cgatatggtt  | 960  |
| acccgtattc tggccgcctg gtacctgaca ggtcaagacc aggccggcta cccgagcttc  | 1020 |
| aacatcagcc gcaacgtgca gggtaatcac aagaccaacg ttcgcgcaat cgcacgcgat  | 1080 |
| ggtatcgtgc tgtaaagaa cgatgccaac attctgccgc tgaaaaaacc ggccagcatc   | 1140 |
| gccgttggtg gtagcgcagc catcattggc aaccacgcc gtaacagtcc gagctgcaat   | 1200 |

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|                                                                     |      |
|---------------------------------------------------------------------|------|
| gataaaggct gtagacgacgg tggcctgggc atggggtggg gtagtggtgc cgtgaactac  | 1260 |
| ccgtatttcg tggccccgta cgacgccatt aacacccgtg caagtagcca gggtagccag   | 1320 |
| gttaccctga gcaacaccga caacacaagc agcggtgcca gtgcagcacg tggtaaggat   | 1380 |
| gtggccatcg tgttcatcac cgccgacagc ggcgaaggct acattaccgt ggagggtaat   | 1440 |
| gccgggtgatc gcaataatct ggacccgtgg cataacggca acgccctggg tcaggcagtg  | 1500 |
| gcaggcgcaa atagcaacgt gatcgtttgt gtgcatagcg tgggtgccat cattctggag   | 1560 |
| cagatcctgg ccctgccgca agttaaggca gttgtgtggg caggtctgcc gagccaagaa   | 1620 |
| agtggcaatg ccctgggtgga cgttctgtgg ggcgatgtta gtccgagcgg caagctgggtg | 1680 |
| tatacaatcg ccaagagccc gaacgactat aacacccgca tcgttagcgg cggcagtgat   | 1740 |
| agcttcagcg agggcctggt tatcgactac aagcatttcg atgatgcaa tattaccccg    | 1800 |
| cgctacgaat ttggttatgg cctgagctat accaagttca actacagccg cctgagcggt   | 1860 |
| ttaagtaccg ccaagagtgg tccggcaaca ggtgccgtgg ttcctgggtg tccgagtgat   | 1920 |
| ctgtttcaga atgtggccac cgtgaccgtg gatatcgcca acagtgggtca ggtagccggc  | 1980 |
| gccgaagtgg cacagctgta catcacctat ccgagcagtg caccgcgcac cccgccgaaa   | 2040 |
| cagctgcgtg gcttcgcaa attaaacctg accccggggc agagcgggtac agcaaccttc   | 2100 |
| aatattcgcc gccgtgatct gagctattgg gacaccgcca gccaaaaatg ggtgggtgccg  | 2160 |
| agcggcagct ttggcattag tgtgggtgca agtagccgcg acattcgctt aacaagcacc   | 2220 |
| ctgagtgttg cc                                                       | 2232 |

<210> 4  
<211> 30  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic primer

|                                  |    |
|----------------------------------|----|
| <400> 4                          |    |
| catgccatgg gcgatagtca cagtaccagc | 30 |

<210> 5  
<211> 68  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic primer

|                                                                    |    |
|--------------------------------------------------------------------|----|
| <400> 5                                                            |    |
| cgtagggactc acaacggccg tcgccgtcgg tagtagtagt agtagtagta gtgattactt | 60 |
| tcgaaccc                                                           | 68 |

<210> 6  
<211> 800

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<212> PRT

<213> Podospora anserina

<400> 6

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

Asn Ala Val Asn Gly Val Pro Ser Cys Ala Ser Pro Tyr Leu Leu Gln  
 260 265 270  
 Thr Ile Leu Arg Glu His Trp Asn Trp Thr Glu His Asn Asn Tyr Ile  
 275 280 285  
 Thr Ser Asp Cys Glu Ala Val Leu Asp Val Ser Leu Asn His Lys Tyr  
 290 295 300  
 Ala Ala Thr Asn Ala Glu Gly Thr Ala Ile Ser Phe Glu Ala Gly Met  
 305 310 315 320  
 Asp Thr Ser Cys Glu Tyr Glu Gly Ser Ser Asp Ile Pro Gly Ala Trp  
 325 330 335  
 Ser Gln Gly Leu Leu Lys Glu Ser Thr Val Asp Arg Ala Leu Leu Arg  
 340 345 350  
 Leu Tyr Glu Gly Ile Val Arg Ala Gly Tyr Phe Asp Gly Lys Gln Ser  
 355 360 365  
 Leu Tyr Ser Ser Leu Gly Trp Ala Asp Val Asn Lys Pro Ser Ala Gln  
 370 375 380  
 Lys Leu Ser Leu Gln Ala Ala Val Asp Gly Thr Val Leu Leu Lys Asn  
 385 390 395 400  
 Asp Gly Thr Leu Pro Leu Ser Asp Leu Leu Asp Lys Ser Arg Pro Lys  
 405 410 415  
 Lys Val Ala Met Ile Gly Phe Trp Ser Asp Ala Lys Asp Lys Leu Arg  
 420 425 430  
 Gly Gly Tyr Ser Gly Thr Ala Ala Tyr Leu His Thr Pro Ala Tyr Ala  
 435 440 445  
 Ala Ser Gln Leu Gly Ile Pro Phe Ser Thr Ala Ser Gly Pro Ile Leu  
 450 455 460  
 His Ser Asp Leu Ala Ser Asn Gln Ser Trp Thr Asp Asn Ala Met Ala  
 465 470 475 480  
 Ala Ala Lys Asp Ala Asp Tyr Ile Leu Tyr Phe Gly Gly Ile Asp Thr  
 485 490 495  
 Ser Ala Ala Gly Glu Thr Lys Asp Arg Tyr Asp Leu Asp Trp Pro Gly  
 500 505 510  
 Ala Gln Leu Ser Leu Ile Asn Leu Leu Thr Thr Leu Ser Lys Pro Leu  
 515 520 525

Ile Val Leu Gln Met Gly Asp Gln Leu <sup>\_SL</sup>Asp Asn Thr Pro Leu Leu Ser  
 530 535 540  
 Asn Pro Lys Ile Asn Ala Ile Leu Trp Ala Asn Trp Pro Gly Gln Asp  
 545 550 555 560  
 Gly Gly Thr Ala Val Met Glu Leu Val Thr Gly Leu Lys Ser Pro Ala  
 565 570 575  
 Gly Arg Leu Pro Val Thr Gln Tyr Pro Ser Asn Phe Thr Glu Leu Val  
 580 585 590  
 Pro Met Thr Asp Met Ala Leu Arg Pro Ser Ala Gly Asn Ser Gln Leu  
 595 600 605  
 Gly Arg Thr Tyr Arg Trp Tyr Lys Thr Pro Val Gln Ala Phe Gly Phe  
 610 615 620  
 Gly Leu His Tyr Thr Thr Phe Ser Pro Lys Phe Gly Lys Lys Phe Pro  
 625 630 635 640  
 Ala Val Ile Asp Val Asp Glu Val Leu Glu Gly Cys Asp Asp Lys Tyr  
 645 650 655  
 Leu Asp Thr Cys Pro Leu Pro Asp Leu Pro Val Val Val Glu Asn Arg  
 660 665 670  
 Gly Asn Arg Thr Ser Asp Tyr Val Ala Leu Ala Phe Val Ser Ala Pro  
 675 680 685  
 Gly Val Gly Pro Gly Pro Trp Pro Ile Lys Thr Leu Gly Ala Phe Thr  
 690 695 700  
 Arg Leu Arg Gly Val Lys Gly Gly Glu Lys Arg Glu Gly Gly Leu Lys  
 705 710 715 720  
 Trp Asn Leu Gly Asn Leu Ala Arg His Asp Glu Glu Gly Asn Thr Val  
 725 730 735  
 Val Tyr Pro Gly Lys Tyr Glu Val Ser Leu Asp Glu Pro Pro Lys Ala  
 740 745 750  
 Arg Leu Arg Phe Glu Ile Val Arg Gly Gly Lys Gly Lys Gly Lys Val  
 755 760 765  
 Lys Gly Lys Gly Lys Ala Ala Gln Lys Gly Gly Val Val Leu Asp Arg  
 770 775 780  
 Trp Pro Lys Pro Pro Lys Gly Gln Glu Pro Pro Ala Ile Glu Arg Val  
 785 790 795 800

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<210> 7

<211> 316

<212> PRT

<213> Trichoderma reesei

<400> 7

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

Ser Met Ala Gln Ile Ser Asp Asp Phe Glu Ser Gly Trp Asp Gln Thr  
20 25 30

Lys Trp Pro Ile Ser Ala Pro Asp Cys Asn Gln Gly Gly Thr Val Ser  
35 40 45

Leu Asp Thr Thr Val Ala His Ser Gly Ser Asn Ser Met Lys Val Val  
50 55 60

Gly Gly Pro Asn Gly Tyr Cys Gly His Ile Phe Phe Gly Thr Thr Gln  
65 70 75 80

Val Pro Thr Gly Asp Val Tyr Val Arg Ala Trp Ile Arg Leu Gln Thr  
85 90 95

Ala Leu Gly Ser Asn His Val Thr Phe Ile Ile Met Pro Asp Thr Ala  
100 105 110

Gln Gly Gly Lys His Leu Arg Ile Gly Gly Gln Ser Gln Val Leu Asp  
115 120 125

Tyr Asn Arg Glu Ser Asp Asp Ala Thr Leu Pro Asp Leu Ser Pro Asn  
130 135 140

Gly Ile Ala Ser Thr Val Thr Leu Pro Thr Gly Ala Phe Gln Cys Phe  
145 150 155 160

Glu Tyr His Leu Gly Thr Asp Gly Thr Ile Glu Thr Trp Leu Asn Gly  
165 170 175

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

Asp Ala Gly Trp Thr Arg Ala Ser Tyr Ile Pro Glu Ile Thr Gly Val  
195 200 205

Asn Phe Gly Trp Glu Ala Tyr Ser Gly Asp Val Asn Thr Val Trp Phe  
210 215 220

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

Pro Gly Gly Pro Gly Ser Ser Thr Thr Gly Arg Ser Ser Thr Ser Gly  
245 250 255

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Pro Thr Ser Thr Ser Arg Pro Ser Thr Thr Ile Pro Pro Pro Thr Ser  
260 265 270

Arg Thr Thr Thr Ala Thr Gly Pro Thr Gln Thr His Tyr Gly Gln Cys  
275 280 285

Gly Gly Ile Gly Tyr Ser Gly Pro Thr Val Cys Ala Ser Gly Thr Thr  
290 295 300

Cys Gln Val Leu Asn Pro Tyr Tyr Ser Gln Cys Leu  
305 310 315

<210> 8

<211> 460

<212> PRT

<213> Trichoderma reesei

<400> 8

Met Ala Ser Arg Phe Phe Ala Leu Leu Leu Leu Ala Ile Pro Ile Gln  
1 5 10 15

Ala Gln Ser Pro Val Trp Gly Gln Cys Gly Gly Ile Gly Trp Ser Gly  
20 25 30

Pro Thr Thr Cys Val Gly Gly Ala Thr Cys Val Ser Tyr Asn Pro Tyr  
35 40 45

Tyr Ser Gln Cys Ile Pro Ser Thr Gln Ala Ser Ser Ser Ile Ala Ser  
50 55 60

Thr Thr Leu Val Thr Ser Phe Thr Thr Thr Thr Ala Thr Arg Thr Ser  
65 70 75 80

Ala Ser Thr Pro Pro Ala Ser Ser Thr Gly Ala Gly Gly Ala Thr Cys  
85 90 95

Ser Ala Leu Pro Gly Ser Ile Thr Leu Arg Ser Asn Ala Lys Leu Asn  
100 105 110

Asp Leu Phe Thr Met Phe Asn Gly Asp Lys Val Thr Thr Lys Asp Lys  
115 120 125

Phe Ser Cys Arg Gln Ala Glu Met Ser Glu Leu Ile Gln Arg Tyr Glu  
130 135 140

Leu Gly Thr Leu Pro Gly Arg Pro Ser Thr Leu Thr Ala Ser Phe Ser  
145 150 155 160

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

Phe Thr Val Thr Ile Thr Tyr Pro Ser Ser<sup>-SL</sup> Gly Thr Ala Pro Tyr Pro  
 180 185 190  
 Ala Ile Ile Gly Tyr Gly Gly Gly Ser Leu Pro Ala Pro Ala Gly Val  
 195 200 205  
 Ala Met Ile Asn Phe Asn Asn Asp Asn Ile Ala Ala Gln Val Asn Thr  
 210 215 220  
 Gly Ser Arg Gly Gln Gly Lys Phe Tyr Asp Leu Tyr Gly Ser Ser His  
 225 230 235 240  
 Ser Ala Gly Ala Met Thr Ala Trp Ala Trp Gly Val Ser Arg Val Ile  
 245 250 255  
 Asp Ala Leu Glu Leu Val Pro Gly Ala Arg Ile Asp Thr Thr Lys Ile  
 260 265 270  
 Gly Val Thr Gly Cys Ser Arg Asn Gly Lys Gly Ala Met Val Ala Gly  
 275 280 285  
 Ala Phe Glu Lys Arg Ile Val Leu Thr Leu Pro Gln Glu Ser Gly Ala  
 290 295 300  
 Gly Gly Ser Ala Cys Trp Arg Ile Ser Asp Tyr Leu Lys Ser Gln Gly  
 305 310 315 320  
 Ala Asn Ile Gln Thr Ala Ser Glu Ile Ile Gly Glu Asp Pro Trp Phe  
 325 330 335  
 Ser Thr Thr Phe Asn Ser Tyr Val Asn Gln Val Pro Val Leu Pro Phe  
 340 345 350  
 Asp His His Ser Leu Ala Ala Leu Ile Ala Pro Arg Gly Leu Phe Val  
 355 360 365  
 Ile Asp Asn Asn Ile Asp Trp Leu Gly Pro Gln Ser Cys Phe Gly Cys  
 370 375 380  
 Met Thr Ala Ala His Met Ala Trp Gln Ala Leu Gly Val Ser Asp His  
 385 390 395 400  
 Met Gly Tyr Ser Gln Ile Gly Ala His Ala His Cys Ala Phe Pro Ser  
 405 410 415  
 Asn Gln Gln Ser Gln Leu Thr Ala Phe Val Gln Lys Phe Leu Leu Gly  
 420 425 430  
 Gln Ser Thr Asn Thr Ala Ile Phe Gln Ser Asp Phe Ser Ala Asn Gln  
 435 440 445

Ser Gln Trp Ile Asp Trp Thr Thr Pro Thr <sup>SL</sup>Leu Ser  
 450 455 460

<210> 9  
 <211> 466  
 <212> PRT  
 <213> Trichoderma reesei

<400> 9  
 Met Leu Pro Lys Asp Phe Gln Trp Gly Phe Ala Thr Ala Ala Tyr Gln  
 1 5 10 15

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

Thr Phe Cys Ala Gln Pro Gly Lys Ile Ala Asp Gly Ser Ser Gly Val  
 35 40 45

Thr Ala Cys Asp Ser Tyr Asn Arg Thr Ala Glu Asp Ile Ala Leu Leu  
 50 55 60

Lys Ser Leu Gly Ala Lys Ser Tyr Arg Phe Ser Ile Ser Trp Ser Arg  
 65 70 75 80

Ile Ile Pro Glu Gly Gly Arg Gly Asp Ala Val Asn Gln Ala Gly Ile  
 85 90 95

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

Pro Phe Ile Thr Leu Phe His Trp Asp Leu Pro Glu Gly Leu His Gln  
 115 120 125

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

Asn Tyr Ala Arg Val Met Phe Arg Ala Leu Pro Lys Val Arg Asn Trp  
 145 150 155 160

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

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

Gly His Asn Ile Leu Val Ala His Gly Arg Ala Val Lys Ala Tyr Arg  
 195 200 205

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

Asn Gly Asp Phe Thr Tyr Pro Trp Asp Ala Ala Asp Pro Ala Asp Lys  
 225 230 235 240

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Glu Ala Ala Glu Arg Arg Leu Glu Phe Phe Thr Ala Trp Phe Ala Asp  
245 250 255

Pro Ile Tyr Leu Gly Asp Tyr Pro Ala Ser Met Arg Lys Gln Leu Gly  
260 265 270

Asp Arg Leu Pro Thr Phe Thr Pro Glu Glu Arg Ala Leu Val His Gly  
275 280 285

Ser Asn Asp Phe Tyr Gly Met Asn His Tyr Thr Ser Asn Tyr Ile Arg  
290 295 300

His Arg Ser Ser Pro Ala Ser Ala Asp Asp Thr Val Gly Asn Val Asp  
305 310 315 320

Val Leu Phe Thr Asn Lys Gln Gly Asn Cys Ile Gly Pro Glu Thr Gln  
325 330 335

Ser Pro Trp Leu Arg Pro Cys Ala Ala Gly Phe Arg Asp Phe Leu Val  
340 345 350

Trp Ile Ser Lys Arg Tyr Gly Tyr Pro Pro Ile Tyr Val Thr Glu Asn  
355 360 365

Gly Thr Ser Ile Lys Gly Glu Ser Asp Leu Pro Lys Glu Lys Ile Leu  
370 375 380

Glu Asp Asp Phe Arg Val Lys Tyr Tyr Asn Glu Tyr Ile Arg Ala Met  
385 390 395 400

Val Thr Ala Val Glu Leu Asp Gly Val Asn Val Lys Gly Tyr Phe Ala  
405 410 415

Trp Ser Leu Met Asp Asn Phe Glu Trp Ala Asp Gly Tyr Val Thr Arg  
420 425 430

Phe Gly Val Thr Tyr Val Asp Tyr Glu Asn Gly Gln Lys Arg Phe Pro  
435 440 445

Lys Lys Ser Ala Lys Ser Leu Lys Pro Leu Phe Asp Glu Leu Ile Ala  
450 455 460

Ala Ala  
465

<210> 10  
<211> 744  
<212> PRT  
<213> Trichoderma reesei

<400> 10

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

Thr Thr Val Gln Ser Ala Asn Ser Gly Leu<sup>SL</sup> Asp Met Ser Met Pro Gly  
 275 280 285

Thr Asp Phe Asn Gly Asn Asn Arg Leu Trp Gly Pro Ala Leu Thr Asn  
 290 295 300

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

Thr Arg Ile Leu Ala Ala Trp Tyr Leu Thr Gly Gln Asp Gln Ala Gly  
 325 330 335

Tyr Pro Ser Phe Asn Ile Ser Arg Asn Val Gln Gly Asn His Lys Thr  
 340 345 350

Asn Val Arg Ala Ile Ala Arg Asp Gly Ile Val Leu Leu Lys Asn Asp  
 355 360 365

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

Ser Ala Ala Ile Ile Gly Asn His Ala Arg Asn Ser Pro Ser Cys Asn  
 385 390 395 400

Asp Lys Gly Cys Asp Asp Gly Ala Leu Gly Met Gly Trp Gly Ser Gly  
 405 410 415

Ala Val Asn Tyr Pro Tyr Phe Val Ala Pro Tyr Asp Ala Ile Asn Thr  
 420 425 430

Arg Ala Ser Ser Gln Gly Thr Gln Val Thr Leu Ser Asn Thr Asp Asn  
 435 440 445

Thr Ser Ser Gly Ala Ser Ala Ala Arg Gly Lys Asp Val Ala Ile Val  
 450 455 460

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

Ala Gly Asp Arg Asn Asn Leu Asp Pro Trp His Asn Gly Asn Ala Leu  
 485 490 495

Val Gln Ala Val Ala Gly Ala Asn Ser Asn Val Ile Val Val Val His  
 500 505 510

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

Lys Ala Val Val Trp Ala Gly Leu Pro Ser Gln Glu Ser Gly Asn Ala  
 530 535 540

Leu Val Asp Val Leu Trp Gly Asp Val Ser <sup>SL</sup>Pro Ser Gly Lys Leu Val  
 545 550 555 560  
 Tyr Thr Ile Ala Lys Ser Pro Asn Asp Tyr Asn Thr Arg Ile Val Ser  
 565 570 575  
 Gly Gly Ser Asp Ser Phe Ser Glu Gly Leu Phe Ile Asp Tyr Lys His  
 580 585 590  
 Phe Asp Asp Ala Asn Ile Thr Pro Arg Tyr Glu Phe Gly Tyr Gly Leu  
 595 600 605  
 Ser Tyr Thr Lys Phe Asn Tyr Ser Arg Leu Ser Val Leu Ser Thr Ala  
 610 615 620  
 Lys Ser Gly Pro Ala Thr Gly Ala Val Val Pro Gly Gly Pro Ser Asp  
 625 630 635 640  
 Leu Phe Gln Asn Val Ala Thr Val Thr Val Asp Ile Ala Asn Ser Gly  
 645 650 655  
 Gln Val Thr Gly Ala Glu Val Ala Gln Leu Tyr Ile Thr Tyr Pro Ser  
 660 665 670  
 Ser Ala Pro Arg Thr Pro Pro Lys Gln Leu Arg Gly Phe Ala Lys Leu  
 675 680 685  
 Asn Leu Thr Pro Gly Gln Ser Gly Thr Ala Thr Phe Asn Ile Arg Arg  
 690 695 700  
 Arg Asp Leu Ser Tyr Trp Asp Thr Ala Ser Gln Lys Trp Val Val Pro  
 705 710 715 720  
 Ser Gly Ser Phe Gly Ile Ser Val Gly Ala Ser Ser Arg Asp Ile Arg  
 725 730 735  
 Leu Thr Ser Thr Leu Ser Val Ala  
 740

<210> 11  
 <211> 418  
 <212> PRT  
 <213> Trichoderma reesei

<400> 11  
 Met Asn Lys Ser Val Ala Pro Leu Leu Leu Ala Ala Ser Ile Leu Tyr  
 1 5 10 15  
 Gly Gly Ala Ala Ala Gln Gln Thr Val Trp Gly Gln Cys Gly Gly Ile  
 20 25 30  
 Gly Trp Ser Gly Pro Thr Asn Cys Ala Pro Gly Ser Ala Cys Ser Thr  
 35 40 45

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Leu Asn Pro Tyr Tyr Ala Gln Cys Ile Pro Gly Ala Thr Thr Ile Thr  
50 55 60

Thr Ser Thr Arg Pro Pro Ser Gly Pro Thr Thr Thr Thr Arg Ala Thr  
65 70 75 80

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

Gly Val Asn Ile Ala Gly Phe Asp Phe Gly Cys Thr Thr Asp Gly Thr  
100 105 110

Cys Val Thr Ser Lys Val Tyr Pro Pro Leu Lys Asn Phe Thr Gly Ser  
115 120 125

Asn Asn Tyr Pro Asp Gly Ile Gly Gln Met Gln His Phe Val Asn Asp  
130 135 140

Asp Gly Met Thr Ile Phe Arg Leu Pro Val Gly Trp Gln Tyr Leu Val  
145 150 155 160

Asn Asn Asn Leu Gly Gly Asn Leu Asp Ser Thr Ser Ile Ser Lys Tyr  
165 170 175

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

Asp Ile His Asn Tyr Ala Arg Trp Asn Gly Gly Ile Ile Gly Gln Gly  
195 200 205

Gly Pro Thr Asn Ala Gln Phe Thr Ser Leu Trp Ser Gln Leu Ala Ser  
210 215 220

Lys Tyr Ala Ser Gln Ser Arg Val Trp Phe Gly Ile Met Asn Glu Pro  
225 230 235 240

His Asp Val Asn Ile Asn Thr Trp Ala Ala Thr Val Gln Glu Val Val  
245 250 255

Thr Ala Ile Arg Asn Ala Gly Ala Thr Ser Gln Phe Ile Ser Leu Pro  
260 265 270

Gly Asn Asp Trp Gln Ser Ala Gly Ala Phe Ile Ser Asp Gly Ser Ala  
275 280 285

Ala Ala Leu Ser Gln Val Thr Asn Pro Asp Gly Ser Thr Thr Asn Leu  
290 295 300

Ile Phe Asp Val His Lys Tyr Leu Asp Ser Asp Asn Ser Gly Thr His  
305 310 315 320

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

Thr Trp Leu Arg Gln Asn Asn Arg Gln Ala Ile Leu Thr Glu Thr Gly  
340 345 350

Gly Gly Asn Val Gln Ser Cys Ile Gln Asp Met Cys Gln Gln Ile Gln  
355 360 365

Tyr Leu Asn Gln Asn Ser Asp Val Tyr Leu Gly Tyr Val Gly Trp Gly  
370 375 380

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

Ser Gly Asn Ser Trp Thr Asp Thr Ser Leu Val Ser Ser Cys Leu Ala  
405 410 415

Arg Lys

<210> 12

<211> 471

<212> PRT

<213> Trichoderma reesei

<400> 12

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

Ala Ser Val Pro Leu Glu Glu Arg Gln Ala Cys Ser Ser Val Trp Gly  
20 25 30

Gln Cys Gly Gly Gln Asn Trp Ser Gly Pro Thr Cys Cys Ala Ser Gly  
35 40 45

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

Ala Ala Ser Ser Ser Ser Ser Thr Arg Ala Ala Ser Thr Thr Ser Arg  
65 70 75 80

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

Ser Thr Thr Thr Arg Val Pro Pro Val Gly Ser Gly Thr Ala Thr Tyr  
100 105 110

Ser Gly Asn Pro Phe Val Gly Val Thr Pro Trp Ala Asn Ala Tyr Tyr  
115 120 125

Ala Ser Glu Val Ser Ser Leu Ala Ile Pro Ser Leu Thr Gly Ala Met  
 130 135 140

Ala Thr Ala Ala Ala Val Ala Lys Val Pro Ser Phe Met Trp Leu  
 145 150 155 160

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

Arg Thr Ala Asn Lys Asn Gly Gly Asn Tyr Ala Gly Gln Phe Val Val  
 180 185 190

Tyr Asp Leu Pro Asp Arg Asp Cys Ala Ala Leu Ala Ser Asn Gly Glu  
 195 200 205

Tyr Ser Ile Ala Asp Gly Gly Val Ala Lys Tyr Lys Asn Tyr Ile Asp  
 210 215 220

Thr Ile Arg Gln Ile Val Val Glu Tyr Ser Asp Ile Arg Thr Leu Leu  
 225 230 235 240

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

Pro Lys Cys Ala Asn Ala Gln Ser Ala Tyr Leu Glu Cys Ile Asn Tyr  
 260 265 270

Ala Val Thr Gln Leu Asn Leu Pro Asn Val Ala Met Tyr Leu Asp Ala  
 275 280 285

Gly His Ala Gly Trp Leu Gly Trp Pro Ala Asn Gln Asp Pro Ala Ala  
 290 295 300

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

Arg Gly Leu Ala Thr Asn Val Ala Asn Tyr Asn Gly Trp Asn Ile Thr  
 325 330 335

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

Tyr Ile His Ala Ile Gly Pro Leu Leu Ala Asn His Gly Trp Ser Asn  
 355 360 365

Ala Phe Phe Ile Thr Asp Gln Gly Arg Ser Gly Lys Gln Pro Thr Gly  
 370 375 380

Gln Gln Gln Trp Gly Asp Trp Cys Asn Val Ile Gly Thr Gly Phe Gly  
 385 390 395 400

Ile Arg Pro Ser Ala Asn Thr Gly Asp Ser<sup>SL</sup> Leu Leu Asp Ser Phe Val  
405 410 415

Trp Val Lys Pro Gly Gly Glu Cys Asp Gly Thr Ser Asp Ser Ser Ala  
420 425 430

Pro Arg Phe Asp Ser His Cys Ala Leu Pro Asp Ala Leu Gln Pro Ala  
435 440 445

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

Asn Ala Asn Pro Ser Phe Leu  
465 470

<210> 13  
<211> 514  
<212> PRT  
<213> Trichoderma reesei

<400> 13  
Met Tyr Arg Lys Leu Ala Val Ile Ser Ala Phe Leu Ala Thr Ala Arg  
1 5 10 15

Ala Gln Ser Ala Cys Thr Leu Gln Ser Glu Thr His Pro Pro Leu Thr  
20 25 30

Trp Gln Lys Cys Ser Ser Gly Gly Thr Cys Thr Gln Gln Thr Gly Ser  
35 40 45

Val Val Ile Asp Ala Asn Trp Arg Trp Thr His Ala Thr Asn Ser Ser  
50 55 60

Thr Asn Cys Tyr Asp Gly Asn Thr Trp Ser Ser Thr Leu Cys Pro Asp  
65 70 75 80

Asn Glu Thr Cys Ala Lys Asn Cys Cys Leu Asp Gly Ala Ala Tyr Ala  
85 90 95

Ser Thr Tyr Gly Val Thr Thr Ser Gly Asn Ser Leu Ser Ile Gly Phe  
100 105 110

Val Thr Gln Ser Ala Gln Lys Asn Val Gly Ala Arg Leu Tyr Leu Met  
115 120 125

Ala Ser Asp Thr Thr Tyr Gln Glu Phe Thr Leu Leu Gly Asn Glu Phe  
130 135 140

Ser Phe Asp Val Asp Val Ser Gln Leu Pro Cys Gly Leu Asn Gly Ala  
145 150 155 160

Leu Tyr Phe Val Ser Met Asp Ala Asp Gly Gly Val Ser Lys Tyr Pro  
165 170 175

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Thr Asn Thr Ala Gly Ala Lys Tyr Gly Thr Gly Tyr Cys Asp Ser Gln  
180 185 190

Cys Pro Arg Asp Leu Lys Phe Ile Asn Gly Gln Ala Asn Val Glu Gly  
195 200 205

Trp Glu Pro Ser Ser Asn Asn Ala Asn Thr Gly Ile Gly Gly His Gly  
210 215 220

Ser Cys Cys Ser Glu Met Asp Ile Trp Glu Ala Asn Ser Ile Ser Glu  
225 230 235 240

Ala Leu Thr Pro His Pro Cys Thr Thr Val Gly Gln Glu Ile Cys Glu  
245 250 255

Gly Asp Gly Cys Gly Gly Thr Tyr Ser Asp Asn Arg Tyr Gly Gly Thr  
260 265 270

Cys Asp Pro Asp Gly Cys Asp Trp Asn Pro Tyr Arg Leu Gly Asn Thr  
275 280 285

Ser Phe Tyr Gly Pro Gly Ser Ser Phe Thr Leu Asp Thr Thr Lys Lys  
290 295 300

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

Tyr Val Gln Asn Gly Val Thr Phe Gln Gln Pro Asn Ala Glu Leu Gly  
325 330 335

Ser Tyr Ser Gly Asn Glu Leu Asn Asp Asp Tyr Cys Thr Ala Glu Glu  
340 345 350

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

Phe Lys Lys Ala Thr Ser Gly Gly Met Val Leu Val Met Ser Leu Trp  
370 375 380

Asp Asp Tyr Tyr Ala Asn Met Leu Trp Leu Asp Ser Thr Tyr Pro Thr  
385 390 395 400

Asn Glu Thr Ser Ser Thr Pro Gly Ala Val Arg Gly Ser Cys Ser Thr  
405 410 415

Ser Ser Gly Val Pro Ala Gln Val Glu Ser Gln Ser Pro Asn Ala Lys  
420 425 430

Val Thr Phe Ser Asn Ile Lys Phe Gly Pro Ile Gly Ser Thr Gly Asn  
435 440 445

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Pro Ser Gly Gly Asn Pro Pro Gly Gly Asn Pro Pro Gly Thr Thr Thr  
450 455 460

Thr Arg Arg Pro Ala Thr Thr Thr Gly Ser Ser Pro Gly Pro Thr Gln  
465 470 475 480

Ser His Tyr Gly Gln Cys Gly Gly Ile Gly Tyr Ser Gly Pro Thr Val  
485 490 495

Cys Ala Ser Gly Thr Thr Cys Gln Val Leu Asn Pro Tyr Tyr Ser Gln  
500 505 510

Cys Leu

<210> 14

<211> 459

<212> PRT

<213> Trichoderma reesei

<400> 14

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

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

His Pro Lys Leu Thr Thr Tyr Lys Cys Thr Lys Ser Gly Gly Cys Val  
35 40 45

Ala Gln Asp Thr Ser Val Val Leu Asp Trp Asn Tyr Arg Trp Met His  
50 55 60

Asp Ala Asn Tyr Asn Ser Cys Thr Val Asn Gly Gly Val Asn Thr Thr  
65 70 75 80

Leu Cys Pro Asp Glu Ala Thr Cys Gly Lys Asn Cys Phe Ile Glu Gly  
85 90 95

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

Met Asn Gln Tyr Met Pro Ser Ser Ser Gly Gly Tyr Ser Ser Val Ser  
115 120 125

Pro Arg Leu Tyr Leu Leu Asp Ser Asp Gly Glu Tyr Val Met Leu Lys  
130 135 140

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

Cys Gly Glu Asn Gly Ser Leu Tyr Leu Ser<sup>SL</sup> Gln Met Asp Glu Asn Gly  
 165 170 175  
 Gly Ala Asn Gln Tyr Asn Thr Ala Gly Ala Asn Tyr Gly Ser Gly Tyr  
 180 185 190  
 Cys Asp Ala Gln Cys Pro Val Gln Thr Trp Arg Asn Gly Thr Leu Asn  
 195 200 205  
 Thr Ser His Gln Gly Phe Cys Cys Asn Glu Met Asp Ile Leu Glu Gly  
 210 215 220  
 Asn Ser Arg Ala Asn Ala Leu Thr Pro His Ser Cys Thr Ala Thr Ala  
 225 230 235 240  
 Cys Asp Ser Ala Gly Cys Gly Phe Asn Pro Tyr Gly Ser Gly Tyr Lys  
 245 250 255  
 Ser Tyr Tyr Gly Pro Gly Asp Thr Val Asp Thr Ser Lys Thr Phe Thr  
 260 265 270  
 Ile Ile Thr Gln Phe Asn Thr Asp Asn Gly Ser Pro Ser Gly Asn Leu  
 275 280 285  
 Val Ser Ile Thr Arg Lys Tyr Gln Gln Asn Gly Val Asp Ile Pro Ser  
 290 295 300  
 Ala Gln Pro Gly Gly Asp Thr Ile Ser Ser Cys Pro Ser Ala Ser Ala  
 305 310 315 320  
 Tyr Gly Gly Leu Ala Thr Met Gly Lys Ala Leu Ser Ser Gly Met Val  
 325 330 335  
 Leu Val Phe Ser Ile Trp Asn Asp Asn Ser Gln Tyr Met Asn Trp Leu  
 340 345 350  
 Asp Ser Gly Asn Ala Gly Pro Cys Ser Ser Thr Glu Gly Asn Pro Ser  
 355 360 365  
 Asn Ile Leu Ala Asn Asn Pro Asn Thr His Val Val Phe Ser Asn Ile  
 370 375 380  
 Arg Trp Gly Asp Ile Gly Ser Thr Thr Asn Ser Thr Ala Pro Pro Pro  
 385 390 395 400  
 Pro Pro Ala Ser Ser Thr Thr Phe Ser Thr Thr Arg Arg Ser Ser Thr  
 405 410 415  
 Thr Ser Ser Ser Pro Ser Cys Thr Gln Thr His Trp Gly Gln Cys Gly  
 420 425 430

Gly Ile Gly Tyr Ser Gly Cys Lys Thr Cys Thr Ser Gly Thr Thr Cys  
 435 440 445

Gln Tyr Ser Asn Asp Tyr Tyr Ser Gln Cys Leu  
 450 455

<210> 15  
 <211> 234  
 <212> PRT  
 <213> Trichoderma reesei

<400> 15  
 Met Lys Phe Leu Gln Val Leu Pro Ala Leu Ile Pro Ala Ala Leu Ala  
 1 5 10 15

Gln Thr Ser Cys Asp Gln Trp Ala Thr Phe Thr Gly Asn Gly Tyr Thr  
 20 25 30

Val Ser Asn Asn Leu Trp Gly Ala Ser Ala Gly Ser Gly Phe Gly Cys  
 35 40 45

Val Thr Ala Val Ser Leu Ser Gly Gly Ala Ser Trp His Ala Asp Trp  
 50 55 60

Gln Trp Ser Gly Gly Gln Asn Asn Val Lys Ser Tyr Gln Asn Ser Gln  
 65 70 75 80

Ile Ala Ile Pro Gln Lys Arg Thr Val Asn Ser Ile Ser Ser Met Pro  
 85 90 95

Thr Thr Ala Ser Trp Ser Tyr Ser Gly Ser Asn Ile Arg Ala Asn Val  
 100 105 110

Ala Tyr Asp Leu Phe Thr Ala Ala Asn Pro Asn His Val Thr Tyr Ser  
 115 120 125

Gly Asp Tyr Glu Leu Met Ile Trp Leu Gly Lys Tyr Gly Asp Ile Gly  
 130 135 140

Pro Ile Gly Ser Ser Gln Gly Thr Val Asn Val Gly Gly Gln Ser Trp  
 145 150 155 160

Thr Leu Tyr Tyr Gly Tyr Asn Gly Ala Met Gln Val Tyr Ser Phe Val  
 165 170 175

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

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

Leu Ser Tyr Gln Phe Gly Thr Glu Pro Phe Thr Gly Ser Gly Thr Leu  
 210 215 220

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Asn Val Ala Ser Trp Thr Ala Ser Ile Asn  
225 230

<210> 16  
<211> 242  
<212> PRT  
<213> Trichoderma reesei

<400> 16  
Met Lys Ala Thr Leu Val Leu Gly Ser Leu Ile Val Gly Ala Val Ser  
1 5 10 15

Ala Tyr Lys Ala Thr Thr Thr Arg Tyr Tyr Asp Gly Gln Glu Gly Ala  
20 25 30

Cys Gly Cys Gly Ser Ser Ser Gly Ala Phe Pro Trp Gln Leu Gly Ile  
35 40 45

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

Ala Gly Ala Ser Trp Cys Gly Ala Gly Cys Gly Lys Cys Tyr Gln Leu  
65 70 75 80

Thr Ser Thr Gly Gln Ala Pro Cys Ser Ser Cys Gly Thr Gly Gly Ala  
85 90 95

Ala Gly Gln Ser Ile Ile Val Met Val Thr Asn Leu Cys Pro Asn Asn  
100 105 110

Gly Asn Ala Gln Trp Cys Pro Val Val Gly Gly Thr Asn Gln Tyr Gly  
115 120 125

Tyr Ser Tyr His Phe Asp Ile Met Ala Gln Asn Glu Ile Phe Gly Asp  
130 135 140

Asn Val Val Val Asp Phe Glu Pro Ile Ala Cys Pro Gly Gln Ala Ala  
145 150 155 160

Ser Asp Trp Gly Thr Cys Leu Cys Val Gly Gln Gln Glu Thr Asp Pro  
165 170 175

Thr Pro Val Leu Gly Asn Asp Thr Gly Ser Thr Pro Pro Gly Ser Ser  
180 185 190

Pro Pro Ala Thr Ser Ser Ser Pro Pro Ser Gly Gly Gly Gln Gln Thr  
195 200 205

Leu Tyr Gly Gln Cys Gly Gly Ala Gly Trp Thr Gly Pro Thr Thr Cys  
210 215 220

Gln Ala Pro Gly Thr Cys Lys Val Gln Asn <sup>SL</sup>Gln Trp Tyr Ser Gln Cys  
 225 230 235 240

Leu Pro

<210> 17  
 <211> 838  
 <212> PRT  
 <213> Trichoderma reesei

<400> 17  
 Met Lys Val Ser Arg Val Leu Ala Leu Val Leu Gly Ala Val Ile Pro  
 1 5 10 15

Ala His Ala Ala Phe Ser Trp Lys Asn Val Lys Leu Gly Gly Gly Gly  
 20 25 30

Gly Phe Val Pro Gly Ile Ile Phe His Pro Lys Thr Lys Gly Val Ala  
 35 40 45

Tyr Ala Arg Thr Asp Ile Gly Gly Leu Tyr Arg Leu Asn Ala Asp Asp  
 50 55 60

Ser Trp Thr Ala Val Thr Asp Gly Ile Ala Asp Asn Ala Gly Trp His  
 65 70 75 80

Asn Trp Gly Ile Asp Ala Val Ala Leu Asp Pro Gln Asp Asp Gln Lys  
 85 90 95

Val Tyr Ala Ala Val Gly Met Tyr Thr Asn Ser Trp Asp Pro Ser Asn  
 100 105 110

Gly Ala Ile Ile Arg Ser Ser Asp Arg Gly Ala Thr Trp Ser Phe Thr  
 115 120 125

Asn Leu Pro Phe Lys Val Gly Gly Asn Met Pro Gly Arg Gly Ala Gly  
 130 135 140

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

Ala Arg Ser Gly Asn Gly Leu Trp Lys Ser Thr Asp Gly Gly Val Thr  
 165 170 175

Phe Ser Lys Val Ser Ser Phe Thr Ala Thr Gly Thr Tyr Ile Pro Asp  
 180 185 190

Pro Ser Asp Ser Asn Gly Tyr Asn Ser Asp Lys Gln Gly Leu Met Trp  
 195 200 205

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

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

Thr Asn Ala Gly Ser Thr Trp Ser Ala Val Pro Gly Gln Pro Gly Lys  
245 250 255

Tyr Phe Pro His Lys Ala Lys Leu Gln Pro Ala Glu Lys Ala Leu Tyr  
260 265 270

Leu Thr Tyr Ser Asp Gly Thr Gly Pro Tyr Asp Gly Thr Leu Gly Ser  
275 280 285

Val Trp Arg Tyr Asp Ile Ala Gly Gly Thr Trp Lys Asp Ile Thr Pro  
290 295 300

Val Ser Gly Ser Asp Leu Tyr Phe Gly Phe Gly Gly Leu Gly Leu Asp  
305 310 315 320

Leu Gln Lys Pro Gly Thr Leu Val Val Ala Ser Leu Asn Ser Trp Trp  
325 330 335

Pro Asp Ala Gln Leu Phe Arg Ser Thr Asp Ser Gly Thr Thr Trp Ser  
340 345 350

Pro Ile Trp Ala Trp Ala Ser Tyr Pro Thr Glu Thr Tyr Tyr Tyr Ser  
355 360 365

Ile Ser Thr Pro Lys Ala Pro Trp Ile Lys Asn Asn Phe Ile Asp Val  
370 375 380

Thr Ser Glu Ser Pro Ser Asp Gly Leu Ile Lys Arg Leu Gly Trp Met  
385 390 395 400

Ile Glu Ser Leu Glu Ile Asp Pro Thr Asp Ser Asn His Trp Leu Tyr  
405 410 415

Gly Thr Gly Met Thr Ile Phe Gly Gly His Asp Leu Thr Asn Trp Asp  
420 425 430

Thr Arg His Asn Val Ser Ile Gln Ser Leu Ala Asp Gly Ile Glu Glu  
435 440 445

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

Ala Ala Val Gly Asp Asp Asn Gly Phe Thr Phe Ala Ser Arg Asn Asp  
465 470 475 480

Leu Gly Thr Ser Pro Gln Thr Val Trp Ala Thr Pro Thr Trp Ala Thr  
485 490 495

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Ser Thr Ser Val<sub>500</sub> Asp Tyr Ala Gly Asn<sub>505</sub> Ser Val Lys Ser Val<sub>510</sub> Val Arg  
Val Gly Asn<sub>515</sub> Thr Ala Gly Thr Gln<sub>520</sub> Gln Val Ala Ile Ser<sub>525</sub> Ser Asp Gly  
Gly Ala Thr Trp Ser Ile Asp<sub>535</sub> Tyr Ala Ala Asp Thr<sub>540</sub> Ser Met Asn Gly  
Gly Thr Val Ala Tyr Ser<sub>550</sub> Ala Asp Gly Asp Thr<sub>555</sub> Ile Leu Trp Ser Thr<sub>560</sub>  
Ala Ser Ser Gly Val<sub>565</sub> Gln Arg Ser Gln Phe<sub>570</sub> Gln Gly Ser Phe Ala<sub>575</sub> Ser  
Val Ser Ser Leu<sub>580</sub> Pro Ala Gly Ala Val<sub>585</sub> Ile Ala Ser Asp Lys<sub>590</sub> Lys Thr  
Asn Ser Val<sub>595</sub> Phe Tyr Ala Gly Ser<sub>600</sub> Gly Ser Thr Phe Tyr<sub>605</sub> Val Ser Lys  
Asp Thr<sub>610</sub> Gly Ser Ser Phe Thr<sub>615</sub> Arg Gly Pro Lys Leu<sub>620</sub> Gly Ser Ala Gly  
Thr<sub>625</sub> Ile Arg Asp Ile Ala<sub>630</sub> Ala His Pro Thr Thr<sub>635</sub> Ala Gly Thr Leu Tyr<sub>640</sub>  
Val Ser Thr Asp Val<sub>645</sub> Gly Ile Phe Arg Ser<sub>650</sub> Thr Asp Ser Gly Thr<sub>655</sub> Thr  
Phe Gly Gln Val<sub>660</sub> Ser Thr Ala Leu Thr<sub>665</sub> Asn Thr Tyr Gln Ile<sub>670</sub> Ala Leu  
Gly Val Gly<sub>675</sub> Ser Gly Ser Asn Trp<sub>680</sub> Asn Leu Tyr Ala Phe<sub>685</sub> Gly Thr Gly  
Pro Ser<sub>690</sub> Gly Ala Arg Leu Tyr<sub>695</sub> Ala Ser Gly Asp Ser<sub>700</sub> Gly Ala Ser Trp  
Thr<sub>705</sub> Asp Ile Gln Gly Ser<sub>710</sub> Gln Gly Phe Gly Ser<sub>715</sub> Ile Asp Ser Thr Lys<sub>720</sub>  
Val Ala Gly Ser Gly<sub>725</sub> Ser Thr Ala Gly Gln<sub>730</sub> Val Tyr Val Gly Thr<sub>735</sub> Asn  
Gly Arg Gly Val<sub>740</sub> Phe Tyr Ala Gln Gly<sub>745</sub> Thr Val Gly Gly Gly<sub>750</sub> Thr Gly  
Gly Thr Ser<sub>755</sub> Ser Ser Thr Lys Gln<sub>760</sub> Ser Ser Ser Ser Thr<sub>765</sub> Ser Ser Ala

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Ser Ser Ser Thr Thr Leu Arg Ser Ser Val Val Ser Thr Thr Arg Ala  
770 775 780

Ser Thr Val Thr Ser Ser Arg Thr Ser Ser Ala Ala Gly Pro Thr Gly  
785 790 795 800

Ser Gly Val Ala Gly His Tyr Ala Gln Cys Gly Gly Ile Gly Trp Thr  
805 810 815

Gly Pro Thr Gln Cys Val Ala Pro Tyr Val Cys Gln Lys Gln Asn Asp  
820 825 830

Tyr Tyr Tyr Gln Cys Val  
835

<210> 18

<211> 373

<212> PRT

<213> Podospira anserina

<400> 18

Met Lys Gly Leu Phe Ala Phe Gly Leu Gly Leu Leu Ser Leu Val Asn  
1 5 10 15

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

Ser Gly Thr Arg Phe Val Ile Asp Gly Lys Thr Gly Tyr Phe Ala Gly  
35 40 45

Thr Asn Ser Tyr Trp Ile Gly Phe Leu Thr Asn Asn Arg Asp Val Asp  
50 55 60

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

Trp Gly Phe Asn Asp Val Asn Asn Gln Pro Ser Gly Asn Thr Val Trp  
85 90 95

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

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

Ile Lys Leu Ile Ile Ala Leu Val Asn Tyr Trp Asp Asp Phe Gly Gly  
130 135 140

Met Lys Ala Tyr Val Asn Ala Phe Gly Gly Thr Lys Glu Ser Trp Tyr  
145 150 155 160

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

<210> 19  
 <211> 469  
 <212> PRT  
 <213> Podospora anserina

<400> 19  
 Met Val Lys Leu Leu Asp Ile Gly Leu Phe Ala Leu Ala Leu Ala Ser  
 1 5 10 15

Ser Ala Val Ala Lys Pro Cys Lys Pro Arg Asp Gly Pro Val Thr Tyr  
 20 25 30

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Glu Ala Glu Asp Ala Ile Leu Thr Gly Thr Thr Val Asp Thr Ala Gln  
35 40 45

Val Gly Tyr Thr Gly Arg Gly Tyr Val Thr Gly Phe Asp Glu Gly Ser  
50 55 60

Asp Lys Ile Thr Phe Gln Ile Ser Ser Ala Thr Thr Lys Leu Tyr Asp  
65 70 75 80

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

Val Leu Asn Asn Gly Ala Val Ser Glu Val Phe Phe Pro Ala Gly Asp  
100 105 110

Ser Phe Thr Ser Val Ala Ala Gly Gln Val Leu Leu Asn Ala Gly Gln  
115 120 125

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

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

Asn Leu Asn Asn Pro Asn Ala Asp Thr Asn Ala Lys Lys Leu Tyr Ser  
165 170 175

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

Leu His His Ala Glu Trp Ile Arg Gln Gln Thr Gly Lys Thr Pro Ala  
195 200 205

Leu Val Ala Val Asp Leu Met Asp Tyr Ser Pro Ser Arg Val Glu Arg  
210 215 220

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

Gly Gly Ile Val Ser Val Leu Trp His Trp Asn Ala Pro Val Gly Leu  
245 250 255

Tyr Asp Thr Glu Glu Asn Lys Trp Trp Ser Gly Phe Tyr Thr Arg Ala  
260 265 270

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

Tyr Thr Leu Leu Ile Arg Asp Ile Asp Ala Ile Ala Val Gln Leu Lys  
290 295 300

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Arg Leu Glu Ala Ala Gly Val Pro Val Leu Trp Arg Pro Leu His Glu  
305 310 315 320

Ala Glu Gly Gly Trp Phe Trp Trp Gly Ala Lys Gly Pro Glu Pro Ala  
325 330 335

Lys Gln Leu Trp Asp Ile Leu Tyr Glu Arg Leu Thr Val His His Gly  
340 345 350

Leu Asp Asn Leu Ile Trp Val Trp Asn Ser Ile Leu Glu Asp Trp Tyr  
355 360 365

Pro Gly Asp Asp Thr Val Asp Ile Leu Ser Ala Asp Val Tyr Ala Gln  
370 375 380

Gly Asn Gly Pro Met Ser Thr Gln Tyr Asn Glu Leu Ile Ala Leu Gly  
385 390 395 400

Arg Asp Lys Lys Met Ile Ala Ala Ala Glu Val Gly Ala Ala Pro Leu  
405 410 415

Pro Gly Leu Leu Gln Ala Tyr Gln Ala Asn Trp Leu Trp Phe Ala Val  
420 425 430

Trp Gly Asp Asp Phe Ile Asn Asn Pro Ser Trp Asn Thr Val Ala Val  
435 440 445

Leu Asn Glu Ile Tyr Asn Ser Asp Tyr Val Leu Thr Leu Asp Glu Ile  
450 455 460

Gln Gly Trp Arg Ser  
465

<210> 20

<211> 493

<212> PRT

<213> Trichoderma reesei

<400> 20

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

Ser Ile Gln Gln Asn Cys Ala Ala Leu Phe Gly Gln Cys Gly Gly Ile  
20 25 30

Gly Trp Ser Gly Thr Thr Cys Cys Val Ala Gly Ala Gln Cys Ser Phe  
35 40 45

Val Asn Asp Trp Tyr Ser Gln Cys Leu Ala Ser Thr Gly Gly Asn Pro  
50 55 60

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

Asp Ser Ile His Leu Asp Leu Ser Asp Ile Ala Met Gly Arg Leu Gln  
 340 345 350  
 Gly Asn Gly Ser Leu Thr Asn Gly Val Ile Pro Thr Arg Tyr Arg Arg  
 355 360 365  
 Val Gln Cys Pro Lys Val Gly Asn Ala Tyr Ile Trp Leu Arg Asn Gly  
 370 375 380  
 Gly Gly Pro Tyr Tyr Phe Ala Leu Thr Ala Val Asn Thr Asn Gly Pro  
 385 390 395 400  
 Gly Ser Val Thr Lys Ile Glu Ile Lys Gly Ala Asp Thr Asp Asn Trp  
 405 410 415  
 Val Ala Leu Val His Asp Pro Asn Tyr Thr Ser Ser Arg Pro Gln Glu  
 420 425 430  
 Arg Tyr Gly Ser Trp Val Ile Pro Gln Gly Ser Gly Pro Phe Asn Leu  
 435 440 445  
 Pro Val Gly Ile Arg Leu Thr Ser Pro Thr Gly Glu Gln Ile Val Asn  
 450 455 460  
 Glu Gln Ala Ile Lys Thr Phe Thr Pro Pro Ala Thr Gly Asp Pro Asn  
 465 470 475 480  
 Phe Tyr Tyr Ile Asp Ile Gly Val Gln Phe Ser Gln Asn  
 485 490

<210> 21  
 <211> 8  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 8xHis tag

<400> 21  
 His His His His His His His His  
 1 5

<210> 22  
 <211> 6  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 6xHis tag

<400> 22  
 His His His His His His  
 1 5

\_SL

<210> 23

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 23

Gly Ser Gly Ser

1