SEQUENCE LISTING

<110> c-LEcta GmbH New Matterhorn LLC

<120> Trehalose Phosphorylase

<130> C71105PC

<160> 201

<170> BiSSAP 1.3.6

<210> 1
<211> 737
<212> PRT
<213> Schizophyllum commune

<220>
<223> >SEQ ID NO:1

<400> 1

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

```
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
```

```
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 2
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:2

<400> 2

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
```

```
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
```

```
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Asn Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 3
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:3

<400> 3

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
```

```
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Ser Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
```

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

<210> 4
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:4

<400> 4

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
```

```
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
```

```
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Asn Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 5
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:5

<400> 5

```
Met Ser Pro Pro His Gly Phe Ser Ser Arg Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
```

```
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
```

```
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ser Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 6
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:6

<400> 6

```
Met Ser Pro Pro His Gly Phe Ser Ser Arg Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
```

```
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Phe Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
```

```
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ser Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 7
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:7

<400> 7
Met Ser Pro Pro His Gly Phe Ser Ser Arg Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Phe Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
290 295 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305 310 315 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
325 330 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
340 345 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
355 360 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
370 375 380

```
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 8
<211> 737
<212> PRT

<213> Artificial Sequence

<220>
<223> >SEQ ID NO:8

<400> 8

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

```
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ser Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Asn Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 9
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:9

<400> 9
Met Ser Pro Pro His Gly Phe Ser Ser Arg Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Phe Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
290 295 300

```
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ser Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
```

Asn Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 10
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:10

<400> 10
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu

```
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
```

660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 11
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:11

<400> 11
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220

```
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gly Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Ala Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ser Arg Phe Asp Pro Ser Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
```

```
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 12
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:12

<400> 12

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
```

```
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Tyr Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ser Arg Phe Asp Pro Ser Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
```

```
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 13
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:13

<400> 13

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
```

```
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Tyr Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Ile Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
```

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

<210> 14
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:14

<400> 14

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
```

```
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
```

500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 15
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:15

<400> 15
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60

```
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Tyr Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
```

```
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Ile Phe Arg Ala Leu Cys Gln Ala Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 16
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:16

<400> 16

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

```
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
```

```
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Ile Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ser Arg Phe Asp Pro Ser Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 17
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:17

<400> 17
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
290 295 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305 310 315 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
325 330 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
340 345 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
355 360 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
370 375 380

```
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Ala Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ser Arg Phe Asp Pro Ser Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 18
<211> 737
<212> PRT

<213> Artificial Sequence

<220>
<223> >SEQ ID NO:18

<400> 18

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

```
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Ala Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ser Arg Phe Asp Pro Ser Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 19
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:19

<400> 19
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
290 295 300

```
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Ile Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
```

```
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 20
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:20

<400> 20

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

```
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Tyr Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Ala Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
```

```
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 21
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:21

<400> 21

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

```
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Ile Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ser Arg Phe Asp Pro Ser Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
```

Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 22
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:22

<400> 22
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Val

```
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
```

```
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 23
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:23

<400> 23

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
```

```
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Gly Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
```

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

<210> 24
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:24

<400> 24

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
```

```
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
```

500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 25
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:25

<400> 25
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60

```
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu His Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
```

```
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 26
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:26

<400> 26

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

```
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser His Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
```

```
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 27
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:27

<400> 27
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
290 295 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305 310 315 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
325 330 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
340 345 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
355 360 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
370 375 380

```
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 28
<211> 737
<212> PRT

<213> Artificial Sequence

<220>
<223> >SEQ ID NO:28

<400> 28

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

```
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 29
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:29

<400> 29
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
290 295 300

```
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Tyr Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
```

Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 30
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:30

<400> 30
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu

```
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ser Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
```

660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 31
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:31

<400> 31
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220

```
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Ile Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
```

```
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 32
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:32

<400> 32

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
```

```
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ser Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
```

```
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 33
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:33

<400> 33

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
```

```
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Val Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
```

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

<210> 34
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:34

<400> 34

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
```

```
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
```

```
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 35
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:35

<400> 35

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
```

```
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
```

```
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 36
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:36

<400> 36

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

```
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
```

```
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Glu Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 37
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:37

<400> 37
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
290 295 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305 310 315 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
325 330 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
340 345 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
355 360 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
370 375 380

```
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Val Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 38
<211> 737
<212> PRT

<213> Artificial Sequence

<220>
<223> >SEQ ID NO:38

<400> 38

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

```
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Arg Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 39
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:39

<400> 39
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
290 295 300

```
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Gly Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
```

```
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 40
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:40

<400> 40

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

```
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Met Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
```

660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 41
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:41

<400> 41
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220

```
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
```

```
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 42
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:42

<400> 42

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
```

```
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
```

580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 43
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:43

<400> 43
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140

```
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
```

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

<210> 44
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:44

<400> 44

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
```

```
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
```

```
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 45
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:45

<400> 45

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
```

```
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
```

```
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Ala Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 46
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:46

<400> 46

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

```
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
```

```
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 47
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:47

<400> 47
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
290 295 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305 310 315 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
325 330 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
340 345 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
355 360 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
370 375 380

```
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Glu Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 48
<211> 737
<212> PRT

<213> Artificial Sequence

<220>
<223> >SEQ ID NO:48

<400> 48

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

```
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Lys Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 49
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:49

<400> 49
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
290 295 300

```
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Glu Pro
    690                 695                 700
```

Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 50
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:50

<400> 50
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu

```
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
```

660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 51
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:51

<400> 51
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220

```
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
```

108

Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 52
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:52

<400> 52
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser

```
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
```

580 585 590

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

Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620

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

Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655

Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670

Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685

Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700

Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720

Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735

Asp

<210> 53
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:53

<400> 53

Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15

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

Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45

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

Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80

Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95

His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110

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

Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140

```
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
```

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

<210> 54
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:54

<400> 54
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys

```
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
```

```
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 55
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:55

<400> 55

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
```

```
                                                115
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
```

Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480
Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 56
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:56

<400> 56
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr

```
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
```

```
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 57
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:57

<400> 57
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
290 295 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305 310 315 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
325 330 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
340 345 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
355 360 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
370 375 380

```
                                                120
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 58
<211> 737
<212> PRT

<213> Artificial Sequence

<220>
<223> >SEQ ID NO:58

<400> 58

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

```
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 59
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:59

<400> 59
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
290 295 300

```
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
```

```
                                                125
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 60
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:60

<400> 60

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

```
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
```

660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 61
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:61

<400> 61
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220

```
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
```

Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 62
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:62

<400> 62
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser

```
                                                130
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
```

580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 63
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:63

<400> 63
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140

```
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
```

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

<210> 64
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:64

<400> 64
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys

```
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
```

500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 65
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:65

<400> 65
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60

```
                                                136
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
```

Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 66
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:66

<400> 66
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr

```
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Tyr Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
```

```
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 67
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:67

<400> 67
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
290 295 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305 310 315 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
325 330 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
340 345 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
355 360 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
370 375 380

Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385 390 395 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
405 410 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
420 425 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
435 440 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
450 455 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 68
<211> 737
<212> PRT

<213> Artificial Sequence

<220>
<223> >SEQ ID NO:68

<400> 68

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

```
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 69
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:69

<400> 69
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
290 295 300

```
                                                145
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
```

Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 70
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:70

<400> 70
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu

```
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Tyr Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
```

660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 71
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:71

<400> 71
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220

```
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
```

```
                                                150
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 72
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:72

<400> 72

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
```

```
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Tyr Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
```

580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 73
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:73

<400> 73
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140

```
                                                153
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Tyr Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
```

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

<210> 74
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:74

<400> 74

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
```

```
                                                155
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
```

```
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 75
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:75

<400> 75

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
```

```
                                                157
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
```

Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 76
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:76

<400> 76
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr

```
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
```

160

420 425 430

Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val

435 440 445

Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp

450 455 460

Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly

465 470 475 480

Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp

485 490 495

Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys

500 505 510

Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu

515 520 525

Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile

530 535 540

Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp

545 550 555 560

Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp

565 570 575

Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu

580 585 590

Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe

595 600 605

Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala

610 615 620

Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly

625 630 635 640

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

645 650 655

Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala

660 665 670

Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala

675 680 685

Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro

690 695 700

Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro

705 710 715 720

Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln

725 730 735

Asp

<210> 77
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:77

<400> 77
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
290 295 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305 310 315 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
325 330 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
340 345 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
355 360 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
370 375 380

```
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 78
<211> 737
<212> PRT

<213> Artificial Sequence

<220>
<223> >SEQ ID NO:78

<400> 78

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

```
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 79
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:79

<400> 79
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
290 295 300

```
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gly Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
```

Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 80
<211> 696
<212> PRT
<213> Hypholoma sublateritium FD-334 SS-4

<220>
<223> >KJA27491.1

<400> 80
Met Trp Ala Ala Val Ala Gly Ala Val Ile Asn Asn Asn Thr Gln Tyr
1 5 10 15
Glu Ile Ala Val Ser Ile His Asp Ser Val Tyr Ser Thr Asp Phe Ala
20 25 30
Ser Ser Val Leu Ser Phe Asn Pro Asn Asn Pro Asp Lys Asn Ala Lys
35 40 45
Glu Ile Glu Gln Tyr Val Leu Gln Thr Leu Arg Met Phe Ser Val Gly
50 55 60
His Leu Cys Lys Phe Leu Gly Ala Gly Val Thr Leu Leu Leu Leu Lys
65 70 75 80
Glu Ser Pro Asn Leu Cys Thr Arg Leu Trp Leu Asp Met Asp Ile Val
85 90 95
Pro Phe Val Phe Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg
100 105 110
Pro Asn Ile Lys His Arg Ile Ser Ser Thr Thr Gly Ser Tyr Val Pro
115 120 125
Ser Gly Ala Asp Thr Pro Thr Val Tyr Val Asp Ser Ala His Leu Thr
130 135 140
Ala Met Ser Gly Leu Gln Thr Gly Val Ser Gly Arg Leu Pro Ile Pro
145 150 155 160
Arg Thr Leu Asp Glu Gln Ala Asp Ser Ala Ala Arg Lys Cys Leu Met
165 170 175
Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu Ser Ile Gly Pro Arg Asn
180 185 190
Gln Val Thr Val Asp Ser Ala Gly Lys Ala His Leu Ile Asp Asp Ile
195 200 205
Asp Glu Tyr Lys Ala Thr Val Gly Pro Arg Thr Trp Asn Ala Val Val
210 215 220
Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys Val Lys Ile Gly Phe Phe
225 230 235 240
Ser Ser Thr Pro Gln Gly Gly Gly Val Ala Leu Met Arg His Ala Leu
245 250 255
Ile Arg Phe Leu Thr Ala Leu Asp Val Asp Ala Ala Trp Tyr Val Pro

```
            260                 265                 270
Asn Pro Ser Pro Ser Val Phe Arg Thr Thr Lys Asn Asn His Asn Ile
        275                 280                 285
Leu Gln Gly Val Ala Ala Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys
    290                 295                 300
Asp Asn Phe Asp Ala Trp Ile Leu Lys Asn Gly Leu Arg Trp Thr Ala
305                 310                 315                 320
Glu Gly Gly Pro Leu Ala Pro Gly Gly Val Asp Ile Ala Phe Ile Asp
                325                 330                 335
Asp Pro Gln Met Pro Gly Leu Ile Pro Leu Ile Lys Lys Ile Arg Pro
            340                 345                 350
Asp Leu Pro Ile Val Tyr Arg Ser His Ile Glu Ile Arg Ser Asp Leu
        355                 360                 365
Val His Val Pro Gly Ser Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp
    370                 375                 380
Asn Asn Ile Gln Leu Ala Asp Leu Phe Ile Ser His Pro Val Asn Lys
385                 390                 395                 400
Phe Val Pro Ser Asp Val Pro Ile Glu Lys Leu Ala Leu Leu Gly Ala
                405                 410                 415
Ala Thr Asp Trp Leu Asp Gly Leu Asn Lys Glu Leu Asp Pro Trp Asp
            420                 425                 430
Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn Leu Cys Thr Lys Glu Lys
        435                 440                 445
Met His Thr Leu Asn Trp Pro Glu Arg Asp Tyr Val Val Gln Ile Ala
    450                 455                 460
Arg Phe Asp Pro Ala Lys Gly Ile Asn Asn Val Ile Asp Ser Tyr Tyr
465                 470                 475                 480
Lys Phe Arg Asn Met Leu Lys Glu Lys Ser Pro Asp Leu Thr Glu Glu
                485                 490                 495
Glu His Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val Asp Asp Pro
            500                 505                 510
Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Val Glu Ser Glu
        515                 520                 525
Pro Tyr Lys Thr Tyr Ala Lys Asp Ile Val Val Met Arg Leu Pro Pro
    530                 535                 540
Ser Asp Gln Leu Leu Asn Ala Leu Met Ala Asn Ser Arg Ile Ala Leu
545                 550                 555                 560
Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu Ala Leu
                565                 570                 575
His Ala Gly Lys Pro Val Ile Ala Ser Arg Thr Gly Gly Ile Pro Leu
            580                 585                 590
Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Thr Thr Ala Gly Asp Asn
        595                 600                 605
Ala Ala Val Ala Asn His Leu Tyr Glu Leu Tyr Thr Asp Glu Ala Leu
    610                 615                 620
Tyr Arg Lys Met Ser Gln Tyr Ala Lys Thr His Val Ser Asp Glu Val
625                 630                 635                 640
Gly Thr Val Gly Asn Ala Ala Ser Trp Leu Tyr Leu Ala Val Met Tyr
                645                 650                 655
His Arg Gly Ile Lys Ile Lys Pro Asn Gly Ala Trp Leu Asn Asp Met
```

660 665 670
Leu Arg Glu Glu Thr Gly Glu Glu Tyr Val Glu Gly Glu Pro Arg Leu
675 680 685
Pro Arg Gly Gly Leu Thr Met Gln
690 695

<210> 81
<211> 732
<212> PRT
<213> Grifola frondosa

<220>
<223> ADM15725.1 trehalose synthase

<400> 81
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Val Pro Gly
20 25 30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
35 40 45
Asn Asn Asn Ser Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
50 55 60
Tyr Asn Thr Asp Phe Ala Ser Ser Ile Val Pro Tyr Ser Pro Asn Glu
65 70 75 80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
85 90 95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
100 105 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
115 120 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
130 135 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145 150 155 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
165 170 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
180 185 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
195 200 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
210 215 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225 230 235 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
245 250 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
260 265 270

```
                                                170
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Val Pro Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ala Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Ile Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Asp
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
```

Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
675 680 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
690 695 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Ala Gly Glu
705 710 715 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
725 730

<210> 82
<211> 737
<212> PRT
<213> Pleurotus ostreatus

<220>
<223> KDQ33172.1

<400> 82
Met Ser Thr His His Gln Phe Glu Ser Lys Pro Ser Thr Ala Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ser Val Ser Ser Lys Gln Arg Pro Asn Met Thr
20 25 30
Thr Thr Phe Ala Ser Leu Thr Pro Met Trp Ala Gly Val Ala Gly Thr
35 40 45
Leu Val Asn Asn Asn Thr Gln Tyr Glu Ile Ala Val Thr Val His Asp
50 55 60
Gly Val Tyr Ser Thr Asp Phe Ala Ser Val Ile Ile Pro Val Thr Pro
65 70 75 80
Gly Asp Thr Ala Lys Asn Ser Lys Asp Ile Glu Ala Gln Val Leu Asn
85 90 95
Leu Ile Arg Lys Phe Ser Ala Glu His Leu Cys Lys Phe Leu Gly Ala
100 105 110
Gly Ile Thr Leu Ala Leu Leu Lys Glu Cys Pro Asn Leu Cys Thr Arg
115 120 125
Leu Trp Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro
130 135 140
Phe His Thr Asp Ser Val Thr Arg Pro Asn Ile Lys His Arg Ile Ser
145 150 155 160
Ser Thr Thr Gly Ser Tyr Val Pro Ser Gly Ser Glu Thr Pro Thr Val
165 170 175
Tyr Val Glu Ala Ala His Leu Gly Asp Pro Ser His Leu Ser Pro Asn
180 185 190
Ala Ala Gln Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln Ser Asp
195 200 205
Ser Ala Ala Arg Lys Cys Leu Met Tyr Phe Gly Pro Asn Asn Asn Pro
210 215 220
Arg Leu Ser Ile Gly Ala Arg Asn Gln Val Thr Val Asp Ala Gly Gly
225 230 235 240
Lys Ile His Leu Ile Asp Asp Leu Glu Glu Tyr Arg Lys Thr Val Gly

```
                245                 250                 255
Thr Gly Thr Trp Asn Ala Val Ile Lys Leu Ala Asp Glu Leu Arg Glu
            260                 265                 270
Lys Lys Val Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly
        275                 280                 285
Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Leu Thr Ala Leu Asp
    290                 295                 300
Val Asp Val Ala Trp Tyr Val Pro Asn Pro Ser Pro Gln Val Phe Arg
305                 310                 315                 320
Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ala Pro Asp
                325                 330                 335
Leu Arg Leu Thr Gln Asp Ala Lys Asp Ala Phe Asp Ala Trp Ile Leu
            340                 345                 350
Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly
        355                 360                 365
Gly Val Asp Val Val Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile
    370                 375                 380
Pro Leu Ile Lys Lys Val Arg Pro Glu Val Pro Ile Val Tyr Arg Ser
385                 390                 395                 400
His Ile Glu Ile Arg Ser Asp Leu Val His Val Ala Gly Ser Pro Gln
                405                 410                 415
Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala Asp Leu
            420                 425                 430
Phe Ile Ser His Pro Val Ser Lys Phe Val Pro Ser Asp Val Pro Ile
        435                 440                 445
Glu Lys Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu
    450                 455                 460
Asn Lys Asp Leu Asp Pro Trp Asp Ser Gln Phe Tyr Met Gly Glu Phe
465                 470                 475                 480
Arg Ser Leu Cys Ala Lys Glu Lys Met Val Glu Leu Asp Trp Pro Thr
                485                 490                 495
Arg Asp Tyr Ile Val Gln Val Ala Arg Phe Asp Pro Ser Lys Gly Ile
            500                 505                 510
Pro Asn Val Val Asp Ser Tyr Tyr Lys Phe Arg Asn Leu Leu Arg Thr
        515                 520                 525
Arg Ser Pro Glu Met Glu Leu Ser Asp His Pro Gln Leu Leu Ile Cys
    530                 535                 540
Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln
545                 550                 555                 560
Ile Met Ala Leu Val Asn Ser Asp Pro Tyr Lys Glu Tyr Ala His Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Glu Leu Leu Asn Ala Met
            580                 585                 590
Met Ala Asn Ser Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Leu His Thr Gly Lys Pro Val Ile Ala
    610                 615                 620
Cys Arg Thr Gly Gly Ile Pro Leu Gln Ile Gln His Gly Lys Ser Gly
625                 630                 635                 640
Tyr Leu Thr Thr Pro Gly Asp Asn Asp Ala Val Ala Gly Tyr Leu Tyr
```

645 650 655
Asp Leu Tyr Thr Asp Glu Ala Leu Tyr Arg Arg Met Ser Asp Phe Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Val Met Tyr Ser Arg Gly Glu Lys Ile Lys Pro
690 695 700
Asn Gly Ala Trp Ile Asn Asp Leu Leu Arg Glu Glu Thr Gly Glu Pro
705 710 715 720
Tyr Lys Glu Gly Glu Thr Lys Leu Pro Arg Thr Lys Leu Asp Met Gln
725 730 735
Gly

<210> 83
<211> 751
<212> PRT
<213> Lentinus sajor-caju

<220>
<223> Q9UV63.1

<400> 83
Met Ser Thr Pro His His Gln Phe Glu Ser Lys Ser Ser Thr Ala Ile
1 5 10 15
Arg Arg Arg Leu Ser Ser Ser Val Ser Ser Lys Gln Arg Pro Asn Ile
20 25 30
Met Thr Thr Thr Phe Ala Ser Leu Thr Pro Met Trp Ala Gly Val Ala
35 40 45
Gly Thr Leu Val Asn Asn Asn Thr Gln Tyr Glu Ile Ala Val Thr Val
50 55 60
His Asp Gly Val Tyr Ser Thr Asp Phe Ala Ser Val Ile Ile Pro Val
65 70 75 80
Thr Pro Gly Asp Thr Val Lys Asn Ser Lys Asp Ile Glu Ala Gln Val
85 90 95
Leu Asn Leu Ile Arg Lys Phe Ser Ala Glu His Leu Cys Lys Phe Leu
100 105 110
Gly Ala Gly Ile Thr Leu Ala Leu Leu Lys Glu Cys Pro Asn Leu Cys
115 120 125
Thr Arg Leu Trp Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile
130 135 140
Lys Pro Phe His Thr Asp Ser Val Thr Arg Pro Asn Ile Lys His Arg
145 150 155 160
Ile Ser Ser Thr Thr Gly Ser Tyr Val Pro Ser Gly Ser Glu Thr Pro
165 170 175
Thr Val Tyr Val Glu Ala Ser His Leu Gly Asp Pro Ser His Leu Ser
180 185 190
Pro Asn Ala Ala Gln Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205

```
Ser Asp Ser Ala Ala Arg Lys Cys Leu Met Tyr Phe Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Ser Ile Gly Ala Arg Asn Pro Val Thr Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Leu Glu Glu Tyr Arg Met Thr
                245                 250                 255
Val Gly Ala Gly Thr Trp Asn Ala Val Ile Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Lys Lys Val Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Leu Thr Ala
    290                 295                 300
Leu Asp Val Asp Val Ala Trp Tyr Val Pro Asn Pro Ser Pro Gln Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ala
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Ala Phe Asp Ala Trp
            340                 345                 350
Ile Leu Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Val Val Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Val Pro Ile Val Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Asn Asp Leu Val His Val Ala Trp Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Ser Lys Phe Val Pro Ser Asp Val
        435                 440                 445
Pro Thr Glu Lys Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Asp Leu Asp Pro Trp Asp Ser Pro Phe Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Pro Arg Gly Ser His Leu Asn Arg Gly Glu Phe Arg Ser
                485                 490                 495
Leu Cys Ala Lys Glu Lys Met His Glu Leu Asn Trp Pro Ala Arg Asp
            500                 505                 510
Tyr Ile Val Gln Val Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
        515                 520                 525
Val Val Asp Ser Tyr Tyr Lys Phe Arg Asn Leu Leu Arg Thr Arg Ser
    530                 535                 540
Pro Asp Met Asp Glu Ser Glu His Pro Gln Leu Leu Ile Cys Gly His
545                 550                 555                 560
Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Ile Met
                565                 570                 575
Ala Leu Val Asn Ser Asp Pro Tyr Lys Glu Tyr Ala His Asp Ile Val
            580                 585                 590
Val Met Arg Leu Pro Pro Ser Asp Glu Leu Leu Asn Ala Met Met Ala
        595                 600                 605
```

```
                                                175
Asn Ser Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val
    610                 615                 620
Lys Val Ser Glu Ala Leu His Thr Gly Lys Pro Val Ile Ala Cys Arg
625                 630                 635                 640
Thr Gly Gly Ile Pro Leu Gln Ile Gln His Gly Lys Ser Gly Tyr Leu
                645                 650                 655
Thr Thr Pro Gly Glu Lys Asp Ala Val Ala Gly His Phe Tyr Asp Phe
            660                 665                 670
Tyr Thr Asp Glu Ala Leu Tyr Arg Lys Met Ser Asp Phe Ala Arg Thr
        675                 680                 685
His Val Ser Asn Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Leu
    690                 695                 700
Tyr Leu Ala Val Met Tyr Ser Arg Gly Glu Lys Ile Lys Pro Asn Gly
705                 710                 715                 720
Ala Trp Ile Asn Asp Phe Phe Arg Glu Glu Thr Gly Glu Pro Tyr Lys
                725                 730                 735
Glu Gly Glu Thr Lys Leu Pro Arg Thr Lys Leu Asp Met Gln Gly
            740                 745                 750
```

<210> 84
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 84

<400> 84

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
```

```
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
```

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

<210> 85
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 85

<400> 85

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
```

```
                                                178
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
```

```
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 86
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 86

<400> 86

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
```

```
                                                    180
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
```

485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 87
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 87

<400> 87
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45

```
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
```

```
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 88
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 88

<400> 88

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
```

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

185

405 410 415

Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
420 425 430

Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
435 440 445

Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
450 455 460

Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480

Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495

Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510

Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525

Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540

Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560

Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575

Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590

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

Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620

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

Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655

Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670

Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685

Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700

Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720

Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735

Asp

<210> 89
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 89

<400> 89

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

```
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 90

<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 90

<400> 90

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

```
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
```

725 730 735
Asp

<210> 91
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 91

<400> 91
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285

```
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
```

Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 92
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 92

<400> 92
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Ile Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr

```
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
```

645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 93
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 93

<400> 93
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205

```
                                                195
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Leu Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
```

Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 94
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 94

<400> 94
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu

```
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Met Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
```

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

<210> 95
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 95

<400> 95
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125

```
                                                199
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Leu
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
```

200
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 96
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 96

<400> 96
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys

```
                                                    201
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Val Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
```

485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 97
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 97

<400> 97
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45

```
                                                    203
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Ala Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
```

Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
450 455 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 98
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 98

<400> 98
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg

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

405 410 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
420 425 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
435 440 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
450 455 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 99
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 99

<400> 99

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

208

```
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Met Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 100

<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 100

<400> 100

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

```
                                                    210
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Asn Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
```

725 730 735
Asp

<210> 101
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 101

<400> 101
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285

```
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Cys Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
```

Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 102
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 102

<400> 102
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr

```
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Gln Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
```

```
                                                    215
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 103
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 103

<400> 103

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

```
                                                216
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Ser Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
```

Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 104
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 104

<400> 104
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu

```
                                                    218
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Thr Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
```

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

<210> 105
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 105

<400> 105
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125

```
                                                220
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gly Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
```

Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 106
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 106

<400> 106
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys

```
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp
```

485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 107
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 107

<400> 107
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45

```
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
```

```
                                                225
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Met Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 108
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 108

<400> 108
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg

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

405 410 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
420 425 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
435 440 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
450 455 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Pro Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 109
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 109

<400> 109

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

```
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Gly Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 110

<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 110

<400> 110

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

```
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
```

725 730 735
Asp

<210> 111
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 111

<400> 111
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285

```
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
```

Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 112
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 112

<400> 112
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr

```
                                                235
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
```

645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 113
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 113

<400> 113
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205

```
                                                237
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
```

Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 114
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 114

<400> 114
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu

```
                                                239
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
```

```
                                                240
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 115
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 115

<400> 115

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
```

```
                                                  241
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
```

Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 116
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 116

<400> 116
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys

```
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
```

```
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 117
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 117

<400> 117

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
```

```
                                                245
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
```

Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
450 455 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 118
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 118

<400> 118
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg

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

405 410 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
420 425 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
435 440 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
450 455 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 119
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 119

<400> 119

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

```
                                                250
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 120

<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 120

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

325 330 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
340 345 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
355 360 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
370 375 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385 390 395 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
405 410 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
420 425 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
435 440 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
450 455 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln

725 730 735
Asp

<210> 121
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 121

<400> 121
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285

```
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
```

```
                                            255
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 122
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 122

<400> 122

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

```
                                                    256
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
```

645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 123
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 123

<400> 123
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205

```
                                                  258
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
```

Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 124
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 124

<400> 124
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu

```
                                                260
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
```

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

<210> 125
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 125

<400> 125
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125

```
                                                  262
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
```

Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 126
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 126

<400> 126
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys

```
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
```

```
                                                265
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 127
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 127

<400> 127

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
```

```
                                                    266
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
```

Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
450 455 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 128
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 128

<400> 128
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg

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

405 410 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
420 425 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
435 440 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
450 455 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 129
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 129

<400> 129

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

```
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 130

<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 130

<400> 130

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

```
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
```

725 730 735
Asp

<210> 131
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 131

<400> 131
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285

```
                                                275
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
```

```
                                                276
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 132
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 132

<400> 132

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

```
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Tyr Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
```

645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 133
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 133

<400> 133
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205

```
                                                279
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Tyr Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
```

```
                                                280
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 134
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 134

```
<400> 134
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
```

```
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
```

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

<210> 135
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 135

<400> 135
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125

```
                                                  283
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
```

```
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 136
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 136

<400> 136

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
```

```
                                                    285
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
```

485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 137
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 137

<400> 137
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45

```
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
```

```
                                                288
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 138
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 138

<400> 138
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg

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

```
                                                290
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 139
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 139

<400> 139

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

```
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 140

<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 140

<400> 140

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

```
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
```

725 730 735
Asp

<210> 141
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 141

<400> 141
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285

```
                                                296
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
```

Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 142
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 142

<400> 142
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr

```
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
```

645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 143
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 143

<400> 143
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205

```
                                                300
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
```

301
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 144
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 144

<400> 144
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu

```
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
```

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

<210> 145
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 145

<400> 145
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125

```
                                                304
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
```

```
                                                305
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 146
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 146

<400> 146

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
```

```
                                                    306
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
```

485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 147
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 147

<400> 147
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45

```
                                                    308
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
```

```
                                                309
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 148
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 148

<400> 148
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg

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

405 410 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
420 425 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
435 440 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
450 455 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 149
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 149

<400> 149

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

313

Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
370 375 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385 390 395 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
405 410 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
420 425 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
435 440 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
450 455 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 150

<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 150

<400> 150

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

```
                                                315
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
```

725 730 735
Asp

<210> 151
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 151

<400> 151
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
245 250 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285

```
                                                317
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
```

Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 152
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 152

<400> 152
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
165 170 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
180 185 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr

```
                                                    319
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Ala Gln Val Ala Arg His Met Tyr
```

```
                                                320
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 153
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 153

<400> 153

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

```
                                                321
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
```

Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 154
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQIDNO:154

<400> 154
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
130 135 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145 150 155 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu

```
                                                    323
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
```

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

<210> 155
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQIDNO:155

<400> 155
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
85 90 95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
100 105 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
115 120 125

```
                                                325
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
```

Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 156
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQIDNO:156

<400> 156
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
50 55 60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65 70 75 80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys

```
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
```

485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 157
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQIDNO:157

<400> 157
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1 5 10 15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
20 25 30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
35 40 45

```
                                                    329
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
```

```
                                                330
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 158
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQIDNO:158

<400> 158
```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
```

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

405 410 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
420 425 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
435 440 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
450 455 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 159
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQIDNO:159

<400> 159
```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
1               5                  10                  15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Thr
            20                  25                  30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35                  40                  45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50                  55                  60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65                  70                  75                  80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85                  90                  95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100                 105                 110
Phe Ile Gly Ala Gly Val Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115                 120                 125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130                 135                 140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145                 150                 155                 160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165                 170                 175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180                 185                 190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195                 200                 205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210                 215                 220
Val Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225                 230                 235                 240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245                 250                 255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260                 265                 270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275                 280                 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ile
    290                 295                 300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305                 310                 315                 320
Phe Arg Ile Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340                 345                 350
Ile Thr Lys Asn Ala Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
```

```
                                                334
Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Ala Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 160

<211> 732
<212> PRT
<213> Grifola frondosa

<220>
<223> SEQ ID NO: 160

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

```
                                                  336
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705                 710                 715                 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
```

725 730

<210> 161
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 161

<400> 161

```
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1               5                  10                  15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
            20                  25                  30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
        35                  40                  45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
    50                  55                  60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65                  70                  75                  80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
                85                  90                  95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Ile Gly Ala Gly Val
            100                 105                 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
        115                 120                 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
                165                 170                 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
```

```
                                                  338
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
```

339
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705 710 715 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
725 730

<210> 162
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 162

<400> 162
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
20 25 30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
35 40 45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
50 55 60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65 70 75 80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
85 90 95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Ile
100 105 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
115 120 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
130 135 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145 150 155 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
165 170 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
180 185 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
195 200 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
210 215 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225 230 235 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
245 250 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
260 265 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala

```
                                                340
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
```

675 680 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
690 695 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705 710 715 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
725 730

<210> 163
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 163

<400> 163
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
20 25 30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
35 40 45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
50 55 60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65 70 75 80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
85 90 95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
100 105 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
115 120 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
130 135 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145 150 155 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
165 170 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
180 185 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
195 200 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Val Pro Arg Leu
210 215 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225 230 235 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
245 250 255

```
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
```

```
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705                 710                 715                 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
                725                 730
```

<210> 164
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 164

<400> 164

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

```
                                                344
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ile Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
```

```
                                                345
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705                 710                 715                 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
                725                 730
```

<210> 165
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 165

<400> 165

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

```
                                                  346
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Ile Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
```

```
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705                 710                 715                 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
                725                 730
```

<210> 166
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 166

<400> 166

```
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
            20                  25                  30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
        35                  40                  45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
    50                  55                  60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65                  70                  75                  80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
                85                  90                  95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
            100                 105                 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
        115                 120                 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
                165                 170                 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
```

```
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
```

```
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705                 710                 715                 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
                725                 730
```

<210> 167
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 167

<400> 167

```
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
            20                  25                  30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
        35                  40                  45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
    50                  55                  60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65                  70                  75                  80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
                85                  90                  95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
            100                 105                 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
        115                 120                 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145                 150                 155                 160
```

```
                                                350
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
                165                 170                 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
```

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

<210> 168
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 168

<400> 168
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
20 25 30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
35 40 45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
50 55 60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65 70 75 80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
85 90 95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
100 105 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
115 120 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His

```
                                                    352
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
                165                 170                 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
```

530 535 540

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

<210> 169
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 169

<400> 169
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
20 25 30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
35 40 45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
50 55 60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65 70 75 80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
85 90 95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
100 105 110

```
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
        115                 120                 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
                165                 170                 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
```

```
                                                355
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Glu Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705                 710                 715                 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
                725                 730
```

<210> 170
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 170

<400> 170

```
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
            20                  25                  30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
        35                  40                  45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
    50                  55                  60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65                  70                  75                  80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
```

```
                                                    356
                85                  90                  95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
            100                 105                 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
        115                 120                 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
                165                 170                 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
```

485 490 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
500 505 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
515 520 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
530 535 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545 550 555 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
565 570 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
580 585 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
595 600 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
610 615 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625 630 635 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
645 650 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
660 665 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
675 680 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
690 695 700
Asn Asp Met Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705 710 715 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
725 730

<210> 171
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 171

<400> 171
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
20 25 30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
35 40 45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
50 55 60

```
                                                    358
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65                  70                  75                  80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
                85                  90                  95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Ile Gly Ala Gly Val
            100                 105                 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
        115                 120                 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
                165                 170                 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Val Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
```

359

His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465 470 475 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
485 490 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
500 505 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
515 520 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
530 535 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545 550 555 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
565 570 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
580 585 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
595 600 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
610 615 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625 630 635 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
645 650 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
660 665 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
675 680 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
690 695 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705 710 715 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
725 730

<210> 172
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 172

<400> 172
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
20 25 30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val

```
                                                    360
        35                  40                  45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
    50                  55                  60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65                  70                  75                  80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
                85                  90                  95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Ile Gly Ala Gly Val
            100                 105                 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
        115                 120                 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
                165                 170                 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ile Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
```

435 440 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
450 455 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465 470 475 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
485 490 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
500 505 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
515 520 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
530 535 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545 550 555 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
565 570 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
580 585 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
595 600 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
610 615 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625 630 635 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
645 650 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
660 665 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
675 680 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
690 695 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705 710 715 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
725 730

<210> 173
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 173

<400> 173
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15

```
                                                    362
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
            20                  25                  30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
        35                  40                  45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
    50                  55                  60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65                  70                  75                  80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
                85                  90                  95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Ile Gly Ala Gly Val
            100                 105                 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
        115                 120                 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
                165                 170                 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Ile Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
```

```
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705                 710                 715                 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
                725                 730
```

<210> 174
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 174

<400> 174

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

```
                                            365
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Ala Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705                 710                 715                 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
                725                 730
```

<210> 175
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 175

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

```
                                                367
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705                 710                 715                 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
                725                 730
```

<210> 176
<211> 732
<212> PRT

<213> Artificial Sequence

<220>
<223> SEQ ID NO: 176

<400> 176

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

```
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705                 710                 715                 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
                725                 730
```

<210> 177
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 177

<400> 177

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

```
                                                    371
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705                 710                 715                 720
```

Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
725 730

<210> 178
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 178

<400> 178
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
20 25 30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
35 40 45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
50 55 60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65 70 75 80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
85 90 95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
100 105 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
115 120 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
130 135 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145 150 155 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
165 170 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
180 185 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
195 200 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Val Pro Arg Leu
210 215 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225 230 235 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
245 250 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
260 265 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
275 280 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp

```
                                                    373
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
```

690 695 700

Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705 710 715 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
725 730

<210> 179
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 179

<400> 179
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
20 25 30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
35 40 45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
50 55 60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65 70 75 80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
85 90 95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
100 105 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
115 120 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
130 135 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145 150 155 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
165 170 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
180 185 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
195 200 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
210 215 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225 230 235 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
245 250 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
260 265 270

```
                                                375
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ile Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
```

Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
675 680 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
690 695 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705 710 715 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
725 730

<210> 180
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 180

<400> 180
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
20 25 30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
35 40 45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
50 55 60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65 70 75 80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
85 90 95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
100 105 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
115 120 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
130 135 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145 150 155 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
165 170 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
180 185 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
195 200 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
210 215 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225 230 235 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly

```
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Ile Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
```

645 650 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
660 665 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
675 680 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
690 695 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705 710 715 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
725 730

<210> 181
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 181

<400> 181
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
20 25 30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
35 40 45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
50 55 60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65 70 75 80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
85 90 95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
100 105 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
115 120 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
130 135 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145 150 155 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
165 170 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
180 185 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
195 200 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
210 215 220

```
                                                379
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Tyr Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
```

```
                                                380
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705                 710                 715                 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
                725                 730
```

<210> 182
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 182

<400> 182

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

```
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Ala Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
```

595 600 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
610 615 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625 630 635 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
645 650 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
660 665 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
675 680 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
690 695 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705 710 715 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
725 730

<210> 183
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 183

<400> 183
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
20 25 30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
35 40 45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
50 55 60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65 70 75 80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
85 90 95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
100 105 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
115 120 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
130 135 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145 150 155 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
165 170 175

```
                                                  383
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Ile
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
```

```
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705                 710                 715                 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
                725                 730
```

<210> 184
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 184

<400> 184

```
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
            20                  25                  30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
        35                  40                  45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
    50                  55                  60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65                  70                  75                  80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
                85                  90                  95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
            100                 105                 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
        115                 120                 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
```

```
                                                385
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
                165                 170                 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
```

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

<210> 185
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 185

<400> 185
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
20 25 30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
35 40 45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
50 55 60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65 70 75 80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
85 90 95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
100 105 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
115 120 125

```
                                                  387
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
                165                 170                 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Ala Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
```

Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
530 535 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Glu Leu Ile
545 550 555 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
565 570 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
580 585 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
595 600 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
610 615 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625 630 635 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
645 650 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
660 665 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
675 680 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
690 695 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705 710 715 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
725 730

<210> 186
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 186

<400> 186
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
20 25 30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
35 40 45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
50 55 60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65 70 75 80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
85 90 95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val

```
            100                 105                 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
        115                 120                 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
                165                 170                 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
```

```
                                                390
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Ile
    530                 535                 540
Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp Gln Val Leu Gln Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705                 710                 715                 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
                725                 730
```

<210> 187
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 187

<400> 187

```
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
            20                  25                  30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
        35                  40                  45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
    50                  55                  60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65                  70                  75                  80
```

```
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
                85                  90                  95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
            100                 105                 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
        115                 120                 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
                165                 170                 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
```

Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
485 490 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
500 505 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
515 520 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Ile
530 535 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Glu Leu Ile
545 550 555 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
565 570 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
580 585 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
595 600 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
610 615 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625 630 635 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
645 650 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
660 665 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
675 680 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
690 695 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705 710 715 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
725 730

<210> 188
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 188

<400> 188
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
20 25 30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
35 40 45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val

```
    50                  55                  60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65                  70                  75                  80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
                85                  90                  95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
            100                 105                 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
        115                 120                 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
                165                 170                 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
```

```
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Val
    530                 535                 540
Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp Gln Val Leu Glu Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705                 710                 715                 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
                725                 730
```

<210> 189
<211> 732
<212> PRT
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 189

<400> 189

```
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
            20                  25                  30
```

```
                                                  395
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
        35                  40                  45
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
    50                  55                  60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65                  70                  75                  80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
                85                  90                  95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
            100                 105                 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
        115                 120                 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
                165                 170                 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Val Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
```

```
                                                396
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450                 455                 460
His Leu Asp Ala Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe Arg Asn
465                 470                 475                 480
Leu Cys Ala Lys Glu Lys Met Asn Glu Leu Gly Trp Pro Ala Arg Glu
                485                 490                 495
Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Cys Val Asp Lys Val
        515                 520                 525
Met Glu Asp Asp Ile Pro Gln Leu Leu Leu Cys Gly His Gly Ala Ile
    530                 535                 540
Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Leu Glu Leu Ile
545                 550                 555                 560
His Ala Lys Tyr Lys Glu Tyr Ala Pro Asp Ile Val Val Met Arg Cys
                565                 570                 575
Pro Pro Ser Asp Gln Leu Leu Asn Thr Leu Met Ala Asn Ala Lys Phe
            580                 585                 590
Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu
        595                 600                 605
Ala Leu His Ala Gly Lys Pro Val Ile Ala Cys Arg Thr Gly Gly Ile
    610                 615                 620
Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly
625                 630                 635                 640
Asp Asn Ala Ala Val Ala Gln His Met Leu Asp Leu Tyr Thr Asp Glu
                645                 650                 655
Asp Leu Tyr Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp
            660                 665                 670
Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val
        675                 680                 685
Met Tyr Val Ser Arg Gly Val Lys Leu Arg Pro His Gly Ala Trp Ile
    690                 695                 700
Asn Asp Leu Met Arg Thr Glu Met Gly Glu Pro Tyr Arg Pro Gly Glu
705                 710                 715                 720
Pro Arg Leu Pro Arg Gly Glu Leu His Val Gln Gly
                725                 730
```

<210> 190
<211> 737
<212> PRT
<213> Artificial Sequence

<220>
<223> >SEQ ID NO:190

<400> 190

```
Met Ser Pro Pro His Gly Phe Ser Ser Val Pro Ser Thr Ala Ala Arg
```

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

405 410 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
420 425 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
435 440 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
450 455 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465 470 475 480
Glu Phe Arg Ala Leu Cys Leu Lys Asp Lys Met Asn Thr Leu Asp Trp
485 490 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
500 505 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
515 520 525
Asn Glu Ala Gly Asp Val Asp Ala Asp Asp Gln Pro Gln Leu Leu Ile
530 535 540
Cys Gly His Gly Ala Ile Asp Asp Pro Asp Ala Thr Ile Ile Tyr Asp
545 550 555 560
Gln Val Leu Glu Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
565 570 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Cys Leu
580 585 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Val His Ala Gly Lys Pro Ile Ile Ala
610 615 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625 630 635 640
Phe Leu Thr Glu Pro Gly Asp Asn Glu Gln Val Ala Arg His Met Tyr
645 650 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
660 665 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
690 695 700
Lys Gly Ala Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Thr Pro
705 710 715 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
725 730 735
Asp

<210> 191
<211> 737
<212> PRT
<213> Schizophyllum commune H4-8

<220>
<223> >XP_003035156.1 glycosyltransferase family 4 protein [Schizophyllum commune H4-8] >EFJ00254.1 glycosyltransferase family 4 protein [Schizophyllum commune H4-8]

<400> 191
Met Ser Pro Pro His Gly Phe Ser Ser Lys Pro Ser Thr Ala Ala Arg
1   5   10   15
Arg Arg Leu Ser Ser Lys Ala Ser Leu Thr Asn Arg Pro Thr Phe Ser
            20   25   30
Lys Ile Thr Thr Gln Thr Tyr Ala Ser Leu Thr Pro Met Trp Ala Gly
        35   40   45
Ile Ala Gly Ala Pro Ile Asn Asn Gly Ser Gln Phe Glu Leu Ala Ile
    50   55   60
Ser Val His Asp Ser Val Tyr Ser Thr Asp Phe Ala Ser Phe Val Ile
65   70   75   80
Asp His Thr Pro Leu Asp Pro Glu Lys Ala Ala Lys Glu Ile Glu Lys
                85   90   95
His Val Leu Asp Ala Leu Arg Lys Phe Ser Gln Glu His Leu Cys Lys
            100   105   110
Phe Leu Gly Ala Gly Ile Thr Leu Ala Leu Leu Arg Glu Ser Pro Asn
        115   120   125
Ile Cys Thr Arg Leu Trp Leu Asp Leu Asp Ile Val Pro Ile Val Phe
    130   135   140
Asn Ile Lys Pro Phe His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys
145   150   155   160
His Arg Ile Ser Ser Thr Ser Gly Ser Tyr Val Pro Ser Gly Ala Glu
                165   170   175
Thr Pro Thr Val Tyr Val Glu Ala Ser His Leu Gly Asn Asn Leu Ser
            180   185   190
Ala Gly Thr Ala Ser Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
        195   200   205
Ala Asp Ser Ala Ala Arg Lys Ala Ile Met Tyr Tyr Gly Pro Asn Asn
    210   215   220
Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala
225   230   235   240
Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr
                245   250   255
Val Gly Pro Ser Thr Trp Thr Ala Val Asn Lys Leu Ala Asp Glu Leu
            260   265   270
Arg Glu Arg Gln Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
        275   280   285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Phe Ser Ala
    290   295   300
Leu Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val
305   310   315   320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ser
                325   330   335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Asn Phe Asp Ala Trp
            340   345   350

```
                                                400
Ile Thr Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Val Ala Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Leu Pro Ile Ile Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Ile Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Lys Ala Phe Val Pro Glu Asp Val
        435                 440                 445
Pro Ile Glu Arg Val Ala Leu Leu Pro Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Glu Leu Ser Asp Trp Asp Arg Gln Tyr Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ala Leu Cys Gln Lys Asp Lys Met Asn Thr Leu Asp Trp
                485                 490                 495
Pro Asn Arg Glu Tyr Cys Ile Gln Ile Ala Arg Phe Asp Pro Ala Lys
            500                 505                 510
Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Leu Leu
        515                 520                 525
Asn Glu Ala Gly Asp Val Glu Pro Asp Asp Gln Pro Gln Leu Leu Ile
    530                 535                 540
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
545                 550                 555                 560
Gln Val Leu Thr Leu Ile His Glu Lys Tyr Ala Glu Phe Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asp Cys Leu
            580                 585                 590
Met Ala Asn Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Ile His Ala Gly Lys Pro Ile Ile Ala
    610                 615                 620
Ala Thr Thr Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly
625                 630                 635                 640
Phe Leu Thr Glu Pro Gly Asp Asn Val Gln Val Ala Arg His Met Tyr
                645                 650                 655
Asp Leu Tyr Thr Asp Val Ala Leu Tyr Asp Arg Met Ser Gln Tyr Ala
            660                 665                 670
Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala
        675                 680                 685
Trp Leu Tyr Leu Ala Ala Val Tyr Thr Arg Gly Gln Lys Leu Ala Pro
    690                 695                 700
Lys Gly Ala Trp Leu Asn Asp Leu Leu Arg Glu Glu Thr Gly Thr Pro
705                 710                 715                 720
Tyr Val Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Ile Lys Val Gln
                725                 730                 735
Asp
```

<210> 192
<211> 626
<212> PRT
<213> Trametes cinnabarina

<220>
<223> >CDO74881.1 Glycosyltransferase Family 4 protein [Trametes cinnabarina]

<400> 192
Met Pro Ala Ile Gly Ser Arg Gln Ala Asn Leu Ala Gln Ala Pro Asn
1 5 10 15
Leu Cys Thr Arg Leu Trp Leu Glu Leu Asp Ile Val Pro Ile Val Phe
20 25 30
Asn Ile Lys Pro Tyr His Thr Asp Ser Ile Thr Arg Pro Asn Ile Arg
35 40 45
His Arg Ile Ser Ser Thr Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu
50 55 60
Thr Pro Thr Val Tyr Tyr Asp Pro Ser Gln Leu Pro Gly Ala Gln Ala
65 70 75 80
Asn Leu Thr Ala Thr Gln Asn Lys Leu Pro Ile Pro Arg Thr Val Asp
85 90 95
Glu Gln Ala Asp Ser Ala Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro
100 105 110
Ser Asn Asn Pro Arg Leu Thr Ile Gly Pro Arg Asn Gln Val Ala Val
115 120 125
Asp Ala Gly Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg
130 135 140
Lys Gly Val Gly Lys Gly Thr Trp Asn Cys Val Asn Lys Leu Ala Asp
145 150 155 160
Glu Leu Arg Glu Lys Lys Ile Lys Met Ala Phe Phe Ser Ser Thr Pro
165 170 175
Gln Gly Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Leu
180 185 190
Asn Leu Leu Asp Val Asp Cys Ala Trp Tyr Val Pro Asn Pro Ser Pro
195 200 205
Thr Val Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val
210 215 220
Ala Asp Pro Asn Leu Arg Leu Thr Lys Glu Ala Lys Asp Asn Phe Asp
225 230 235 240
Ala Trp Ile Leu Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro
245 250 255
Leu Ala Pro Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met
260 265 270
Pro Gly Leu Ile Pro Leu Ile Arg Arg Val Arg Pro Asp Leu Pro Ile
275 280 285
Ile Tyr Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Val Ala
290 295 300

402

Gly Ser Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln
305 310 315 320
His Ala Asp Met Phe Ile Ser His Pro Val Asn Lys Phe Val Pro Ser
325 330 335
Asp Val Pro Thr Asp Lys Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp
340 345 350
Leu Asp Gly Leu Asn Lys Pro Leu Asp Gln Trp Asp Leu Gln Tyr Tyr
355 360 365
Met Gly Glu Phe Arg Ser Leu Cys Val Lys Glu Lys Met Thr Glu Leu
370 375 380
Gly Trp Pro Ala Arg Glu Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro
385 390 395 400
Ser Lys Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys
405 410 415
Leu Leu Ala Glu Lys Glu Pro Asp Ile Glu Pro Pro Gln Met Leu Ile
420 425 430
Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp
435 440 445
Gln Thr Met Gln Leu Ile His Asn Lys Tyr Ala Gln Tyr Ala Gly Asp
450 455 460
Phe Val Val Met Arg Cys Pro Pro Ser Asp Gln Leu Leu Asn Ala Leu
465 470 475 480
Met Glu Asn Ser Lys Phe Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
485 490 495
Glu Val Lys Val Ser Glu Ala Leu His Ala Gly Lys Pro Val Ile Ala
500 505 510
Ser Arg Thr Gly Gly Ile Pro Leu Gln Ile Glu His Gly Lys Ser Gly
515 520 525
Tyr Leu Cys Glu Pro Gly Asp Asn Ala Ala Val Ala Gln His Met Phe
530 535 540
Asp Leu Tyr Thr Asp Asp Asp Leu Phe Asp Gln Met Ser Glu Tyr Ala
545 550 555 560
Arg Thr His Val Ser Asp Glu Val Ser Thr Val Gly Asn Ala Thr Ala
565 570 575
Trp Met Tyr Leu Ala Val Met Tyr Cys Ser Arg Gly Val Arg Leu Gln
580 585 590
Pro Asn Gly Ala Trp Leu Asn Asp Leu Met Arg Thr Glu Cys Gly Glu
595 600 605
Pro Tyr Gln Pro Gly Glu Pro Arg Leu Pro Arg Gly Gly Leu Asn Val
610 615 620
Gln Gly
625

<210> 193
<211> 735
<212> PRT
<213> Hypsizygus marmoreus

<220>

<223> >KYQ39707.1 Trehalose phosphorylase [Hypsizygus marmoreus]

<400> 193
```
Met Ala Pro Tyr His Gln Phe Glu Ser Lys Pro Ser Leu Ala Met Arg
1               5                  10                  15
Arg Arg Leu Ser Ser Ser Val Ser Thr Arg Pro Glu Val Thr Ala Thr
            20                  25                  30
Phe Ala Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Asn Pro Ile
        35                  40                  45
Ser Asn Asn Thr His Tyr Glu Ile Ala Ile Ser Ile His Asp Ser Val
    50                  55                  60
Tyr Ser Thr Asp Phe Ser Ser Thr Val Ile Ser Tyr Phe Pro Asp Glu
65                  70                  75                  80
Pro Glu Lys Thr Ala Lys Ser Ile Gln Ala His Val Leu Glu Thr Leu
                85                  90                  95
Arg Lys Phe Ser Lys Glu His Leu Cys Lys Phe Leu Gly Ala Gly Val
            100                 105                 110
Thr Leu Ser Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
        115                 120                 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Tyr His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Ile Lys His Arg Ile Ser Ser Thr
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Ile
                165                 170                 175
Asp Ser Ala Gln Leu Thr Ala Ala Gly Leu Leu Pro Thr Gly Leu Ser
            180                 185                 190
Asp Arg Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Asn Asn Asn Pro Arg Leu
    210                 215                 220
Ser Ile Gly Pro Arg Asn Gln Val Thr Val Asp Ala Ala Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Leu Asp Glu Tyr Lys Lys Thr Val Gly Pro Gly
                245                 250                 255
Thr Trp Asn Ala Val Val Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Val Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Leu Ile Arg Phe Leu Thr Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Pro Pro Asp Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Lys Glu Asn Phe Asp Ala Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu
```

```
                                                    404
    370                 375                 380
Ile Lys Arg Val Arg Pro Gly Met Pro Ile Val Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Pro Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Lys Tyr Leu Trp Asn Asn Ile Lys Leu Ala Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Ser Lys Phe Val Pro Ser Asp Val Pro Glu Ala Lys
        435                 440                 445
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Asn Lys
    450                 455                 460
His Leu Asp Pro Trp Asp Ala Gln Phe Tyr Met Gly Glu Phe Arg Ser
465                 470                 475                 480
Leu Cys Ala Lys Glu Lys Met Asn Glu Leu Gln Trp Pro Gln Arg Asp
                485                 490                 495
Tyr Val Ile Gln Val Ala Arg Phe Asp Pro Ala Lys Gly Ile Pro Asn
            500                 505                 510
Val Ile Asp Ser Tyr Cys Lys Phe Arg His Leu Leu Thr Gln Pro Pro
        515                 520                 525
Val Leu Thr Ser Asp Glu Tyr Pro Gln Leu Leu Ile Cys Gly His Gly
    530                 535                 540
Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Val Met Gln
545                 550                 555                 560
Leu Ile Asn Ser Glu Lys Tyr Ala Glu Tyr Ala Gln Asp Ile Val Val
                565                 570                 575
Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Ala Leu Met Ala Asn
            580                 585                 590
Ala Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys
        595                 600                 605
Val Ser Glu Ala Val His Ala Gly Ile Pro Val Ile Ala Ser Gln Thr
    610                 615                 620
Gly Gly Ile Pro Leu Gln Val Glu His Gly Lys Ser Gly Tyr Leu Thr
625                 630                 635                 640
Ala Pro Gly Asp Asn Ala Ala Val Ala Gln His Leu Tyr Glu Leu Tyr
                645                 650                 655
Thr Asp Glu Gly Leu Tyr Arg Arg Ile Ser Ala Tyr Ala Lys Thr His
            660                 665                 670
Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Leu Tyr
        675                 680                 685
Leu Ala Val Met Tyr His Arg Gly Val Lys Ile Arg Pro Gln Gly Ala
    690                 695                 700
Trp Leu Asn Asp Met Leu Arg Glu Glu Thr Gly Glu Ala Tyr Val Glu
705                 710                 715                 720
Gly Glu Pro Arg Leu Pro Arg Gly Gly Leu Val Val Gln Gly Asn
                725                 730                 735
```

<210> 194
<211> 735
<212> PRT
<213> Trametes versicolor

<220>
<223> >XP_008036133.1 trehalose synthase [Trametes versicolor FP-101664 SS1] >EIW60750.1 trehalose synthase [Trametes versicolor FP-101664 SS1]

<400> 194
Met Ala Pro Ser Ser Pro His His Gln Phe Gln Ser Lys Thr Ser Asp
1 5 10 15
Ala Ile Arg Arg Arg Leu Ser Ser Val Val Ser Ser Lys Arg Pro Asn
            20 25 30
Val Gln Ala Tyr Ser Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly
        35 40 45
Thr Val Ile Asn Asn Asn Thr Ala Leu Glu Leu Ala Ile Ser Ile His
    50 55 60
Asp Ser Val Tyr Asn Thr Asp Phe Ala Ser Ser Thr Val Pro Tyr Asn
65 70 75 80
Pro Asn Asn Pro Glu Glu Gln Ala Ser Asn Val Glu Lys His Val Leu
                85 90 95
Glu Leu Leu Arg Lys Phe Ala Thr Glu His Met Cys Lys Phe Leu Gly
            100 105 110
Ala Gly Val Thr Val Ser Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr
        115 120 125
Arg Leu Trp Phe Asp Leu Asp Ile Val Pro Ile Val Phe Asn Ile Lys
    130 135 140
Pro Phe His Thr Asp Ser Val Thr Arg Pro Asn Ile Lys His Arg Ile
145 150 155 160
Ser Ser Thr Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr
                165 170 175
Val Tyr Tyr Asp Pro Ala Gln Leu Pro Ala Gly Gln Ala Asn Val Thr
            180 185 190
Ala Thr Gln Asn Lys Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala
        195 200 205
Asp Ser Ala Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn
    210 215 220
Pro Arg Leu Ser Ile Gly Ala Arg Asn Gln Val Thr Val Asp Ala Gly
225 230 235 240
Gly Lys Ile His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Gly Asn
                245 250 255
Ser Lys Gly Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg
            260 265 270
Glu Lys Lys Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly
        275 280 285
Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Leu Asn Leu Leu
    290 295 300
Asp Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe
305 310 315 320
Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro
                325 330 335

```
                                                406
Asn Leu Arg Leu Ser Lys Glu Ala Lys Asp Asn Phe Asp Ala Trp Ile
            340                 345                 350
Leu Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro
        355                 360                 365
Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu
    370                 375                 380
Ile Pro Leu Ile Lys Arg Val Arg Pro Asp Leu Pro Ile Ile Tyr Arg
385                 390                 395                 400
Ser His Ile Glu Ile Arg Ser Asp Leu Val His Val Ala Gly Ser Pro
                405                 410                 415
Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln His Ala Asp
            420                 425                 430
Leu Phe Ile Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro
        435                 440                 445
Pro Glu Lys Leu Thr Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly
    450                 455                 460
Leu Asn Lys Pro Leu Gly Asp Trp Asp Leu Gln Tyr Tyr Met Gly Glu
465                 470                 475                 480
Phe Arg Gln Leu Cys Val Lys Glu Lys Met Asn Glu Leu Gly Trp Pro
                485                 490                 495
Leu Arg Asp Tyr Ile Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly
            500                 505                 510
Ile Pro Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Lys Leu Leu Ala
        515                 520                 525
Glu Lys Glu Pro Ala Thr Glu Pro Pro Gln Met Leu Ile Cys Gly His
    530                 535                 540
Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Glu Thr Met
545                 550                 555                 560
Gln Leu Ile His Thr Lys Tyr Ala Glu Tyr Ala Lys Asp Phe Val Val
                565                 570                 575
Met Arg Cys Pro Pro Ser Asp Gln Leu Leu Asn Ala Leu Met Glu Asn
            580                 585                 590
Ser Lys Phe Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys
        595                 600                 605
Val Ser Glu Ala Leu His Ala Gly Lys Pro Val Ile Ala Ser Arg Thr
    610                 615                 620
Gly Gly Ile Pro Leu Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys
625                 630                 635                 640
Glu Pro Gly Asp Asn Ala Ala Val Ala Ser His Met Phe Asp Leu Tyr
                645                 650                 655
Thr Asp Asp Asp Leu Phe Asp Thr Met Ser Glu Tyr Ala Arg Thr His
            660                 665                 670
Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr
        675                 680                 685
Leu Ala Val Met Tyr Cys Ser Arg Gly Val Arg Leu Gln Pro Lys Gly
    690                 695                 700
Ala Trp Leu Asn Asp Leu Met Arg Thr Glu Cys Gly Glu Pro Tyr Ala
705                 710                 715                 720
Pro Asn Glu Pro Arg Leu Pro Arg Ala Gly Leu Asn Val Gln Gly
                725                 730                 735
```

<210> 195
<211> 739
<212> PRT
<213> Pleurotus pulmonarius

<220>
<223> >A6YRN9.1 RecName: Full=Trehalose phosphorylase; AltName:
Full=Trehalose synthase; Short=TSase; Flags: Precursor
>ABR88135.1 trehalose phosphorylase [Pleurotus pulmonarius]

<400> 195
Met Ser Thr Pro His His Gln Phe Glu Ser Lys Ser Ser Thr Ala Ile
1 5 10 15
Arg Arg Arg Leu Ser Ser Ser Val Ser Ser Lys Gln Arg Pro Asn Ile
20 25 30
Met Thr Thr Thr Phe Ala Ser Leu Thr Pro Met Trp Ala Gly Val Ala
35 40 45
Gly Thr Leu Val Asn Asn Asn Thr Gln Tyr Glu Ile Ala Val Thr Val
50 55 60
His Asp Gly Val Tyr Ser Thr Asp Phe Ala Ser Val Ile Ile Pro Val
65 70 75 80
Thr Pro Gly Asp Thr Val Lys Asn Ser Lys Asp Ile Glu Ala Gln Val
85 90 95
Leu Asn Leu Ile Arg Lys Phe Ser Ala Glu His Leu Cys Lys Phe Leu
100 105 110
Gly Ala Gly Ile Thr Leu Ala Leu Leu Lys Glu Cys Pro Asn Leu Cys
115 120 125
Thr Arg Leu Trp Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile
130 135 140
Lys Pro Phe His Thr Asp Ser Val Thr Arg Pro Asn Ile Lys His Arg
145 150 155 160
Ile Ser Ser Thr Thr Gly Ser Tyr Val Pro Ser Gly Ser Glu Thr Pro
165 170 175
Thr Val Tyr Val Glu Ala Ser His Leu Asp Asp Pro Ser His Leu Ser
180 185 190
Pro Asn Ala Ala Gln Lys Leu Pro Ile Pro Arg Thr Leu Asp Glu Gln
195 200 205
Ser Asp Ser Ala Ala Arg Lys Cys Leu Met Tyr Phe Gly Pro Asn Asn
210 215 220
Asn Pro Arg Leu Ser Ile Gly Ala Arg Asn Gln Val Thr Val Asp Ala
225 230 235 240
Gly Gly Lys Ile His Leu Ile Asp Asp Leu Glu Glu Tyr Arg Glu Thr
245 250 255
Val Gly Ala Gly Thr Trp Asn Ala Val Ile Lys Leu Ala Asp Glu Leu
260 265 270
Arg Glu Lys Lys Val Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly
275 280 285
Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Leu Thr Ala

```
                                                    408
    290                 295                 300
Leu Asp Val Asp Val Ala Trp Tyr Val Pro Asn Pro Ser Pro Gln Val
305                 310                 315                 320
Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ala
                325                 330                 335
Pro Asp Leu Arg Leu Thr Gln Glu Ala Lys Asp Ala Phe Asp Ala Trp
            340                 345                 350
Ile Leu Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala
        355                 360                 365
Pro Gly Gly Val Asp Val Val Phe Ile Asp Asp Pro Gln Met Pro Gly
    370                 375                 380
Leu Ile Pro Leu Ile Lys Lys Val Arg Pro Glu Val Pro Ile Val Tyr
385                 390                 395                 400
Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Val Ala Gly Ser
                405                 410                 415
Pro Gln Glu Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Leu Ala
            420                 425                 430
Asp Leu Phe Ile Ser His Pro Val Ser Lys Phe Val Pro Ser Asp Val
        435                 440                 445
Pro Thr Glu Lys Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp
    450                 455                 460
Gly Leu Asn Lys Asp Leu Asp Pro Trp Asp Ser Gln Phe Tyr Met Gly
465                 470                 475                 480
Glu Phe Arg Ser Pro Cys Ala Lys Glu Lys Met His Glu Leu Asn Trp
                485                 490                 495
Pro Ala Arg Asp Tyr Ile Val Gln Val Ala Arg Phe Asp Pro Ser Lys
            500                 505                 510
Gly Ile Pro Asn Val Val Asp Ser Tyr Tyr Lys Phe Arg Asn Leu Leu
        515                 520                 525
Arg Thr Arg Ser Pro Asp Met Asp Glu Ser Glu His Pro Gln Leu Leu
    530                 535                 540
Ile Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr
545                 550                 555                 560
Asp Gln Ile Met Ala Leu Val Asn Ser Asp Pro Tyr Lys Glu Tyr Ala
                565                 570                 575
His Asp Ile Val Val Met Arg Leu Pro Pro Ser Asp Glu Leu Leu Asn
            580                 585                 590
Ala Met Met Ala Asn Ser Arg Ile Ala Leu Gln Leu Ser Thr Arg Glu
        595                 600                 605
Gly Phe Glu Val Lys Val Ser Glu Ala Leu His Thr Gly Lys Pro Val
    610                 615                 620
Ile Ala Cys Arg Thr Gly Gly Ile Pro Leu Gln Ile Gln His Gly Lys
625                 630                 635                 640
Ser Gly Tyr Leu Thr Thr Pro Gly Asp Asn Asp Ala Val Ala Gly His
                645                 650                 655
Leu Tyr Asp Leu Tyr Thr Asp Glu Ala Leu Tyr Arg Lys Met Ser Asp
            660                 665                 670
Phe Ala Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala
        675                 680                 685
Ala Ala Trp Leu Tyr Leu Ala Val Met Tyr Ser Arg Gly Glu Lys Ile
```

```
                                                409
    690                 695                 700
Lys Pro Asn Gly Ala Trp Ile Asn Asp Leu Leu Arg Glu Glu Thr Gly
705                 710                 715                 720
Glu Pro Tyr Lys Glu Gly Glu Thr Lys Leu Pro Arg Thr Lys Leu Asp
                725                 730                 735
Met Gln Gly
```

<210> 196
<211> 737
<212> PRT
<213> Agaricus bisporus

<220>
<223> >XP_006458503.1 hypothetical protein AGABI2DRAFT_190782 [Agaricus bisporus var. bisporus H97] >EKV50461.1 hypothetical protein AGABI2DRAFT_190782 [Agaricus bisporus var. bisporus H97]

<400> 196

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

```
                                                410
Arg Val His Leu Leu Asp Asp Leu Asp Glu Tyr Arg Asn Thr Val Gly
                245                 250                 255
Pro Arg Thr Trp Asn Ala Val Ile Lys Leu Ala Asp Glu Leu Arg Glu
            260                 265                 270
Lys Lys Val Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly
        275                 280                 285
Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Leu Thr Ala Leu Asp
    290                 295                 300
Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ala Val Phe Arg
305                 310                 315                 320
Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ala Pro Asp
                325                 330                 335
Leu Arg Leu Thr Glu Glu Ala Arg Asp Ala Phe Asp Ala Trp Ile Leu
            340                 345                 350
Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Arg Gly
        355                 360                 365
Gly Val Asp Val Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile
    370                 375                 380
Pro Leu Ile Lys Lys Ile Arg Pro Glu Leu Pro Ile Val Tyr Arg Ser
385                 390                 395                 400
His Ile Glu Ile Arg Ser Asp Leu Val His Val Pro Gly Ser Pro Gln
                405                 410                 415
Glu Glu Val Trp Lys Tyr Leu Trp Lys Asn Ile Gln Leu Ala Asp Leu
            420                 425                 430
Phe Ile Ser His Pro Val Ser Lys Phe Val Pro Gln Asp Val Pro Leu
        435                 440                 445
Glu Lys Val Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu
    450                 455                 460
Asn Lys Asp Leu Asp Pro Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe
465                 470                 475                 480
Arg Ala Leu Cys Ala Arg Glu Arg Met Leu Glu Leu Arg Trp Pro Gln
                485                 490                 495
Arg Asp Tyr Ile Ile Gln Val Ala Arg Phe Asp Pro Ser Lys Gly Ile
            500                 505                 510
Pro Asn Val Ile Asp Ser Tyr Val Lys Phe Arg Glu Leu Leu Lys Leu
        515                 520                 525
Lys Ser Pro Glu Leu Asp Asp Glu Asp His Pro Gln Leu Leu Val Cys
    530                 535                 540
Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln
545                 550                 555                 560
Ile Met Gln Ile Ile Asn Ser Glu Gln Tyr Glu Ala Tyr Ala Lys Asp
                565                 570                 575
Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Ser Leu
            580                 585                 590
Met Ser Asn Ala Lys Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
        595                 600                 605
Glu Val Lys Val Ser Glu Ala Leu His Thr Gly Lys Pro Val Ile Ala
    610                 615                 620
Ser Arg Thr Gly Gly Ile Pro Leu Gln Ile Glu His Gly Lys Ser Gly
625                 630                 635                 640
```

Tyr Leu Cys Thr Pro Gly Asp Asn Glu Ala Val Ala Gly His Leu Tyr
645 650 655
Asp Leu Tyr Thr Asp Glu Ile Leu Tyr Lys Thr Met Ser Asp Tyr Ala
660 665 670
Lys Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Thr Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Val Met Tyr Asn Arg Gly Ile Lys Ile Lys Pro
690 695 700
Asn Gly Ala Trp Leu Asn Asp Leu Leu Arg Thr Glu Thr Gly Glu Asp
705 710 715 720
Tyr Glu Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Leu Lys Met Gln
725 730 735
Gly

<210> 197
<211> 737
<212> PRT
<213> Agaricus bisporus

<220>
<223> >XP_007326883.1 hypothetical protein AGABI1DRAFT_111552 [Agaricus bisporus var. burnettii JB137-S8] >EKM83027.1 hypothetical protein AGABI1DRAFT_111552 [Agaricus bisporus var. burnettii JB137-S8]

<400> 197
Met Ala His Thr Ala His Pro Phe Tyr Ser Val Pro Ser Ala Ala Val
1 5 10 15
Arg Arg Arg Leu Ser Ser Ser Val Ser Ala Lys Lys Pro Leu Val Thr
20 25 30
Ala Thr Phe Ser Ser Leu Thr Pro Met Trp Ala Gly Val Ala Gly Val
35 40 45
Ile Ile Asn Asn Asn Thr Glu Phe Glu Val Ala Val Ser Val His Asp
50 55 60
Ser Val Tyr Ser Thr Asp Phe Ala Ser Val Val Leu Pro Tyr Asp Pro
65 70 75 80
Asn Asp Pro Glu Lys Asn Ala Lys Thr Ile Glu Gln Tyr Ile Leu Gln
85 90 95
Val Leu Arg Arg Phe Ser Val Glu His Leu Cys Lys Phe Leu Gly Ala
100 105 110
Gly Val Thr Leu Thr Leu Leu Arg Glu Val Pro Asn Val Cys Thr Arg
115 120 125
Leu Trp Leu Asp Leu Asp Ile Val Pro Phe Val Phe Asn Ile Lys Gln
130 135 140
Tyr His Thr Asp Ser Leu Thr Arg Pro Asn Ile Lys His Arg Leu Ser
145 150 155 160
Ser Ala Thr Gly Ser Tyr Val Ala Ser Gly Ala Glu Thr Pro Thr Val
165 170 175

```
                                                  412
Tyr Val Asp Ser Ala His Leu Lys Ala Met Ser Gly Leu Gln Thr Gly
            180                 185                 190
Val Ser Gly Arg Leu Pro Ile Gln Arg Thr Leu Asp Glu Gln Ala Asp
        195                 200                 205
Ser Ala Ala Arg Lys Cys Leu Met Asn Phe Gly Pro Gly Asn Asn Pro
    210                 215                 220
Arg Leu Asn Ile Gly Pro Arg Asn Gln Val Leu Val Asp Asp Gly Gly
225                 230                 235                 240
Arg Val His Leu Leu Asp Asp Leu Asp Glu Tyr Arg Asn Thr Val Gly
                245                 250                 255
Pro Arg Thr Trp Asn Ala Val Ile Lys Leu Ala Asp Glu Leu Arg Glu
            260                 265                 270
Lys Lys Val Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly
        275                 280                 285
Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Leu Thr Ala Leu Asp
    290                 295                 300
Val Asp Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ala Val Phe Arg
305                 310                 315                 320
Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Ala Pro Asp
                325                 330                 335
Leu Arg Leu Thr Glu Glu Ala Arg Asp Ala Phe Asp Ala Trp Ile Leu
            340                 345                 350
Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Arg Gly
        355                 360                 365
Gly Val Asp Val Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile
    370                 375                 380
Pro Leu Ile Lys Lys Ile Arg Pro Glu Leu Pro Ile Val Tyr Arg Ser
385                 390                 395                 400
His Ile Glu Ile Arg Ser Asp Leu Val His Val Pro Gly Ser Pro Gln
                405                 410                 415
Glu Glu Val Trp Lys Tyr Leu Trp Lys Asn Ile Gln Leu Ala Asp Leu
            420                 425                 430
Phe Ile Ser His Pro Val Ser Lys Phe Val Pro Gln Asp Val Pro Leu
        435                 440                 445
Glu Lys Val Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu
    450                 455                 460
Asn Lys Asp Leu Asp Pro Trp Asp Ser Gln Tyr Tyr Met Gly Glu Phe
465                 470                 475                 480
Arg Ala Leu Cys Ala Arg Glu Arg Met Leu Glu Leu Arg Trp Pro Gln
                485                 490                 495
Arg Asp Tyr Ile Ile Gln Val Ala Arg Phe Asp Pro Ser Lys Gly Ile
            500                 505                 510
Pro Asn Val Ile Asp Ser Tyr Val Lys Phe Arg Glu Leu Leu Lys Leu
        515                 520                 525
Lys Ser Pro Glu Leu Glu Asp Glu Asp His Pro Gln Leu Leu Val Cys
    530                 535                 540
Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln
545                 550                 555                 560
Ile Met Gln Ile Val Asn Ser Glu Pro Tyr Glu Ala Tyr Ala Lys Asp
                565                 570                 575
```

Ile Val Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn Ser Leu
580 585 590
Met Ser Asn Ala Lys Ile Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe
595 600 605
Glu Val Lys Val Ser Glu Ala Leu His Thr Gly Lys Pro Val Ile Ala
610 615 620
Ser Arg Thr Gly Gly Ile Pro Leu Gln Ile Glu His Gly Lys Ser Gly
625 630 635 640
Tyr Leu Cys Thr Pro Gly Asp Asn Glu Ala Val Ala Gly His Leu Tyr
645 650 655
Asp Leu Tyr Thr Asp Glu Ile Leu Tyr Lys Thr Met Ser Asp Tyr Ala
660 665 670
Lys Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Thr Ala Ala
675 680 685
Trp Leu Tyr Leu Ala Val Met Tyr Asn Arg Gly Ile Lys Ile Lys Pro
690 695 700
Asn Gly Ala Trp Leu Asn Asp Leu Leu Arg Thr Glu Thr Gly Glu Asp
705 710 715 720
Tyr Glu Glu Gly Glu Pro Arg Leu Pro Arg Gly Gly Leu Lys Met Gln
725 730 735
Gly

<210> 198
<211> 733
<212> PRT
<213> Laetiporus sulphureus

<220>
<223> >KZT11205.1 glycosyltransferase family 4 protein [Laetiporus sulphureus 93-53]

<400> 198
Met Ala Pro Pro His Ser Phe Thr Ser Lys Pro Ser Val Ala Thr Arg
1 5 10 15
Arg Arg Leu Ser Ser Val Val Thr Pro Asn Arg Pro Asn Val Pro Gly
20 25 30
Phe Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Thr Ile Ile
35 40 45
Asn Asp Asn Thr Ala Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
50 55 60
Tyr Cys Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Asp Ala Thr Asp
65 70 75 80
Pro Glu Lys Gln Ser Val Ala Ile Glu Lys His Val Leu Asp Thr Leu
85 90 95
Arg Lys Phe Ser Asn Glu His Leu Cys Lys Phe Leu Gly Ala Gly Val
100 105 110
Thr Leu Ser Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
115 120 125

```
                                                414
Leu Glu Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Tyr His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Lys His Arg Ile Ser Ser Thr
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Val
                165                 170                 175
Asp Ala Ser Gln Leu Gln Asp Gln Ser Lys Leu Thr Thr Gly Ala Gln
            180                 185                 190
Gln Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Ser Ile Ala Pro Arg Asn Gln Val Ala Val Asp Ser Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Leu Asp Glu Tyr Arg Lys Thr Val His Lys Gly
                245                 250                 255
Thr Trp Asn Ala Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Arg Phe Ala Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Leu Ile Arg Phe Phe Gln Ala Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Gln Asp Gln Lys Glu Asn Phe Asp Ala Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Lys Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Val Asp Asp Pro Gln Met Pro Gly Leu Ile Pro
    370                 375                 380
Leu Ile Lys Arg Val Arg Pro Asp Met Pro Ile Val Tyr Arg Ser His
385                 390                 395                 400
Ile Glu Ile Arg Ser Asp Leu Val Ser Val Ala Gly Ser Pro Gln Glu
                405                 410                 415
Glu Val Trp Lys Tyr Leu Trp Asn Asn Ile Gln Tyr Ala Asp Met Phe
            420                 425                 430
Ile Ser His Pro Val Asn Lys Phe Val Pro Thr Asp Val Pro Leu Glu
        435                 440                 445
Lys Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Asn
    450                 455                 460
Lys His Leu His Pro Trp Asp Thr Gln Tyr Tyr Met Gly Glu Phe Arg
465                 470                 475                 480
Gln Leu Cys Ala Arg Glu Lys Met His Glu Leu Leu Trp Pro Val Arg
                485                 490                 495
Asp Tyr Val Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro
            500                 505                 510
Asn Val Ile Asp Ser Tyr Ala Arg Phe Arg Arg Met Met Lys Ser Asn
        515                 520                 525
```

```
                                            415
Ala Pro Asn Glu Asp Pro Pro Gln Leu Leu Val Cys Gly His Gly Ala
    530                 535                 540
Val Asp Asp Pro Asp Ala Ser Ile Ile Tyr Asp Gln Ile Ile Ala Leu
545                 550                 555                 560
Val Thr Gly Pro Tyr Lys Glu Tyr Glu Gln Asp Met Ile Val Met Arg
                565                 570                 575
Cys Pro Pro Ser Asp Gln Leu Leu Asn Val Leu Met Ala Asn Ser Arg
            580                 585                 590
Val Ala Leu Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser
        595                 600                 605
Glu Ala Leu His Ala Gly Lys Pro Val Ile Ala Ser Arg Thr Gly Gly
    610                 615                 620
Ile Pro Leu Gln Ile Glu His Gly Lys Ser Gly Phe Leu Cys Asp Ala
625                 630                 635                 640
Gly Asp Asn Glu Ala Val Ala Lys His Met Phe Asp Leu Ile Thr Asn
                645                 650                 655
Glu Asp Leu Tyr Glu Glu Met Ser Glu Tyr Ala Arg Thr His Val Ser
            660                 665                 670
Asp Glu Val Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala
        675                 680                 685
Val Met Tyr Cys Ser Arg Gly Val Lys Leu Gln Pro Lys Gly Ala Trp
    690                 695                 700
Val Asn Asp Met Met Arg Glu Glu Thr Gly Glu Pro Tyr Glu Pro Gly
705                 710                 715                 720
Glu Pro Arg Leu Pro Arg Gly His Ile His Val Gln Gly
                725                 730
```

<210> 199
<211> 736
<212> PRT
<213> Gloeophyllum trabeum

<220>
<223> >XP_007863746.1 trehalose synthase [Gloeophyllum trabeum ATCC 11539] >EPQ58616.1 trehalose synthase [Gloeophyllum trabeum ATCC 11539]

<400> 199

```
Met Ser Pro Thr Gln His Phe Gln Ser Lys Pro Pro Asp Ser Tyr Arg
1               5                   10                  15
Arg Arg Leu Ser Ser Val Ile Ser Arg Arg Arg Pro Asn Val Pro Gln
            20                  25                  30
Phe Ser Ser Leu Gln Ala Met Trp Ala Gly Ile Ala Gly Gly Val Val
        35                  40                  45
Asn Asn Asn Thr Gln Phe Glu Ile Ala Ile Ser Ile His Asp Ser Val
    50                  55                  60
Tyr Ala Thr Asp Tyr Ala Ser Met Gln Ile Pro Tyr Ser Pro Asn Gly
65                  70                  75                  80
Asp Asn Gly Asp Lys Ile Glu Gln Gln Ile Leu Ser Thr Leu Arg Lys
```

```
                                                    416
                85                  90                  95
Phe Ser Ala Asp His Leu Cys Lys Phe Leu Gly Ala Gly Val Thr Leu
            100                 105                 110
Ser Leu Leu Lys Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp Leu Thr
        115                 120                 125
Leu Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Tyr His Thr Asp
    130                 135                 140
Ser Val Thr Arg Pro Asn Ile Lys His Arg Leu Tyr Ser Gln Thr Gly
145                 150                 155                 160
Ser Phe Ala Pro Ser Gly Ala Asp Thr Pro Thr Val Tyr Val Asp Pro
                165                 170                 175
Thr Pro Leu Ala Lys Asn Asn Val Leu Ala Pro Gly Thr Ala Ala Asn
            180                 185                 190
Leu Gly Thr Pro Thr Thr Lys Gly Leu Pro Ile Pro Arg Thr Met Asp
        195                 200                 205
Glu Gln Ala Asp Ser Ala Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro
    210                 215                 220
Gly Asn Asn Pro Arg Leu Ser Ile Gly Pro Arg Asn Gln Val Leu Val
225                 230                 235                 240
Asp Ser Ala Gly Lys Ile His Leu Ile Asp Asp Leu Asp Glu Tyr Arg
                245                 250                 255
Lys Thr Val Ser Ser Gly Thr Trp Asn Ala Val Asn Lys Leu Ala Asp
            260                 265                 270
Glu Leu Arg Glu Lys Lys Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro
        275                 280                 285
Gln Gly Gly Gly Val Ala Leu Met Arg His Ala Leu Ile Arg Phe Leu
    290                 295                 300
Thr Leu Leu Asp Val Asp Ala Ser Trp Tyr Val Pro Asn Pro Ser Pro
305                 310                 315                 320
Ser Val Phe Arg Thr Thr Lys Asn Asn His Asn Ile Leu Gln Gly Val
                325                 330                 335
Ala Ala Pro Ser Leu Arg Leu Thr Gln Asp Gln Lys Asp Asn Phe Asp
            340                 345                 350
Ala Trp Ile Gln Lys Asn Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro
        355                 360                 365
Leu Ala Gln Gly Gly Val Asp Ile Ala Phe Ile Asp Asp Pro Gln Met
    370                 375                 380
Pro Gly Leu Ile Pro Leu Ile Lys Gln Val Arg Pro Asp Met Pro Ile
385                 390                 395                 400
Ile Tyr Arg Ser His Ile Glu Ile Arg Ser Asp Leu Val His Val Lys
                405                 410                 415
Gly Ser Pro Gln Glu Glu Val Trp Asn Tyr Leu Trp Lys Asn Ile Gln
            420                 425                 430
Leu Ala Asp Met Phe Ile Ser His Pro Val Lys Lys Phe Val Pro Ser
        435                 440                 445
Asp Val Pro Thr Glu Lys Leu Ala Phe Leu Gly Ala Ala Thr Asp Trp
    450                 455                 460
Leu Asp Gly Leu Asn Lys Pro Leu Asp Thr Trp Asp Ser Gln Tyr Tyr
465                 470                 475                 480
Met Gly Glu Phe Arg Ser Leu Cys Val Arg Glu Lys Met His Glu Leu
```

485 490 495
Lys Trp Pro Ala Arg Glu Tyr Val Val Gln Ile Ala Arg Phe Asp Pro
500 505 510
Ser Lys Gly Ile Pro Asn Val Ile Asp Ser Tyr Ala Lys Phe Arg Lys
515 520 525
Met Leu Ala Glu Lys Thr Glu Leu Glu Glu Asp Ile Met Pro Gln Leu
530 535 540
Leu Ile Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile Ile
545 550 555 560
Tyr Asp Gln Val Thr Gly Leu Ile His Ser Gln Tyr Ser Gln Tyr Ser
565 570 575
Asn Asp Ile Ile Val Met Arg Leu Pro Pro Ser Asp Gln Leu Leu Asn
580 585 590
Ala Leu Met Asp Asn Ala Lys Ile Ala Leu Gln Leu Ser Thr Arg Glu
595 600 605
Gly Phe Glu Val Lys Val Ser Glu Ala Leu His Thr Gly Lys Pro Val
610 615 620
Val Ala Ser Arg Thr Gly Gly Ile Pro Leu Gln Ile Glu His Gly Lys
625 630 635 640
Ser Gly Tyr Leu Val Glu Val Gly Asp Asn Glu Thr Val Ala Lys His
645 650 655
Leu Phe Asp Leu Tyr Thr Asp Glu Lys Leu Tyr Asp Thr Met Ser Glu
660 665 670
Tyr Ala Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn Ala
675 680 685
Ala Ala Trp Leu Tyr Leu Ala Met Met Tyr Cys Ser Arg Gly Glu Lys
690 695 700
Val Lys Pro Asn Gly Ala Trp Leu Asn Asp Leu Met Arg Glu Val Thr
705 710 715 720
Gly Glu Pro Tyr Ala Pro Asp Glu Pro Lys Leu Pro Arg Val Val Asn
725 730 735

<210> 200
<211> 693
<212> PRT
<213> Grifola frondosa

<220>
<223> >OBZ75413.1 Trehalose phosphorylase [Grifola frondosa]

<400> 200
Met Ala Pro Pro His Gln Phe Gln Ser Lys Pro Ser Asp Val Ile Arg
1 5 10 15
Arg Arg Leu Ser Ser Ala Val Ser Ser Lys Arg Pro Asn Ile Pro Gly
20 25 30
Tyr Thr Ser Leu Thr Pro Met Trp Ala Gly Ile Ala Gly Ala Val Val
35 40 45

```
                                                    418
Asn Asn Asn Thr Gln Phe Glu Val Ala Ile Ser Ile His Asp Ser Val
    50                  55                  60
Tyr Asn Thr Asp Phe Ala Ser Ser Val Val Pro Tyr Ser Pro Asn Glu
65                  70                  75                  80
Pro Glu Ala Gln Ala Gly Ile Ile Glu Lys His Val Leu Glu Thr Leu
                85                  90                  95
Arg Lys Phe Ser Thr Glu His Met Cys Lys Phe Leu Gly Ala Gly Val
            100                 105                 110
Thr Val Ile Leu Leu Arg Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp
        115                 120                 125
Leu Asp Met Asp Ile Val Pro Ile Val Phe Asn Ile Lys Pro Phe His
    130                 135                 140
Thr Asp Ser Ile Thr Arg Pro Asn Val Arg His Arg Ile Ser Ser Thr
145                 150                 155                 160
Thr Gly Ser Tyr Val Pro Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr
                165                 170                 175
Asp Pro Ala Gln Leu Gln Asp Pro Asn Lys Leu Ser Ala Asn Val Gln
            180                 185                 190
Thr Arg Leu Pro Ile Pro Arg Thr Val Asp Glu Gln Ala Asp Ser Ala
        195                 200                 205
Ala Arg Lys Cys Ile Met Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu
    210                 215                 220
Gln Ile Gly Pro Arg Asn Gln Val Ala Val Asp Ala Gly Gly Lys Ile
225                 230                 235                 240
His Leu Ile Asp Asp Ile Asp Glu Tyr Arg Lys Thr Val Gly Lys Gly
                245                 250                 255
Thr Trp Asn Ser Val Ile Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys
            260                 265                 270
Ile Lys Ile Gly Phe Phe Ser Ser Thr Pro Gln Gly Gly Gly Val Ala
        275                 280                 285
Leu Met Arg His Ala Ile Ile Arg Phe Phe Thr Val Leu Asp Val Asp
    290                 295                 300
Ala Ala Trp Tyr Val Pro Asn Pro Ser Pro Ser Val Phe Arg Thr Thr
305                 310                 315                 320
Lys Asn Asn His Asn Ile Leu Gln Gly Val Ala Asp Pro Ser Leu Arg
                325                 330                 335
Leu Thr Lys Glu Ala Ala Asp Asn Phe Asp Ser Trp Ile Leu Lys Asn
            340                 345                 350
Gly Leu Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val
        355                 360                 365
Asp Ile Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu
    370                 375                 380
Ile Lys Arg Ile Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile
385                 390                 395                 400
Glu Ile Arg Ser Asp Leu Val His Val Lys Gly Ser Pro Gln Glu Glu
                405                 410                 415
Val Trp Asn Tyr Leu Trp Asn Asn Ile Gln His Ser Asp Leu Phe Ile
            420                 425                 430
Ser His Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Leu Glu Lys
        435                 440                 445
```

                                                    419
Leu Ala Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Ser Lys
    450   455   460
His Leu Asp Ala Trp Asp Ala Gln Tyr Tyr Met Gly Ser Ser Ala Thr
465   470   475   480
Tyr Arg Ser Leu Arg Pro Val Gln Gly Tyr Pro Glu Arg Asp Arg Leu
                485   490   495
Leu Leu Leu Cys Gly His Gly Ala Val Asp Asp Pro Asp Ala Ser Ile
            500   505   510
Ile Tyr Asp Gln Val Leu Gln Leu Ile His Ala Lys Tyr Lys Glu Tyr
        515   520   525
Ala Pro Asp Ile Val Val Met Arg Cys Pro Pro Ser Asp Gln Leu Leu
    530   535   540
Asn Thr Leu Met Ala Asn Ala Lys Phe Ala Leu Gln Leu Ser Thr Arg
545   550   555   560
Glu Gly Phe Glu Val Lys Val Ser Glu Ala Leu His Ala Gly Lys Pro
                565   570   575
Val Ile Ala Cys Arg Thr Gly Gly Ile Pro Leu Gln Ile Glu His Gly
            580   585   590
Lys Ser Gly Tyr Leu Cys Glu Pro Gly Asp Asn Ala Ala Val Ala Gln
        595   600   605
His Met Leu Asp Leu Tyr Thr Asp Glu Asp Leu Tyr Asp Thr Met Ser
    610   615   620
Glu Tyr Ala Arg Thr His Val Ser Asp Glu Val Gly Thr Val Gly Asn
625   630   635   640
Ala Ala Ala Trp Met Tyr Leu Ala Val Met Tyr Val Ser Arg Gly Val
                645   650   655
Lys Leu Arg Pro His Gly Ala Trp Ile Asn Asp Leu Met Arg Thr Glu
            660   665   670
Met Gly Glu Pro Tyr Arg Ala Gly Glu Pro Arg Leu Pro Arg Gly Glu
        675   680   685
Leu His Val Gln Gly
    690

<210> 201
<211> 650
<212> PRT
<213> Trametes pubescens

<220>
<223> >OJT04097.1 Trehalose phosphorylase [Trametes pubescens]

<400> 201
Met Trp Ala Gly Ile Ala Gly Thr Val Ile Asn Asn Asn Thr Ala Leu
1   5   10   15
Glu Leu Ala Ile Ser Ile His Asp Ser Val Tyr Asn Thr Asp Phe Ala
            20   25   30
Ser Ser Thr Val Pro Tyr Asn Pro Asn Asn Pro Glu Glu Gln Ala Ser
        35   40   45
Asn Val Glu Lys His Val Leu Glu Leu Leu Arg Lys Phe Ala Thr Glu

```
                                                420
    50                  55                  60
His Met Cys Lys Phe Leu Gly Ala Gly Val Thr Val Ser Leu Leu Arg
65                  70                  75                  80
Glu Ala Pro Asn Leu Cys Thr Arg Leu Trp Phe Asp Leu Asp Ile Val
                85                  90                  95
Pro Ile Val Phe Asn Ile Lys Pro Phe His Thr Asp Ser Val Thr Arg
            100                 105                 110
Pro Asn Ile Lys His Arg Ile Ser Ser Thr Thr Gly Ser Tyr Val Pro
        115                 120                 125
Ser Gly Ala Glu Thr Pro Thr Val Tyr Tyr Asp Pro Ala Gln Leu Pro
    130                 135                 140
Ala Gly Gln Ala Asn Val Ala Ala Thr Gln Asn Lys Leu Pro Ile Pro
145                 150                 155                 160
Arg Thr Val Asp Glu Gln Ala Asp Ser Ala Ala Arg Lys Cys Ile Met
                165                 170                 175
Tyr Phe Gly Pro Gly Asn Asn Pro Arg Leu Ser Ile Gly Ala Arg Asn
            180                 185                 190
Gln Val Thr Val Asp Ala Gly Gly Lys Ile His Leu Ile Asp Asp Ile
        195                 200                 205
Asp Glu Tyr Arg Lys Gly Asn Ser Lys Gly Thr Trp Asn Ser Val Ile
    210                 215                 220
Lys Leu Ala Asp Glu Leu Arg Glu Lys Lys Ile Lys Ile Gly Phe Phe
225                 230                 235                 240
Ser Ser Thr Pro Gln Gly Gly Val Ala Asp Pro Asn Leu Arg Leu Ser
                245                 250                 255
Lys Glu Ala Lys Asp Asn Phe Asp Ala Trp Ile Leu Lys Asn Gly Leu
            260                 265                 270
Arg Trp Thr Ala Glu Gly Gly Pro Leu Ala Pro Gly Gly Val Asp Ile
        275                 280                 285
Ala Phe Ile Asp Asp Pro Gln Met Pro Gly Leu Ile Pro Leu Ile Lys
    290                 295                 300
Arg Val Arg Pro Asp Leu Pro Ile Ile Tyr Arg Ser His Ile Glu Ile
305                 310                 315                 320
Arg Ser Asp Leu Val His Val Ala Gly Ser Pro Gln Glu Glu Val Trp
                325                 330                 335
Lys Tyr Leu Trp Asn Asn Ile Gln His Ala Asp Leu Phe Ile Ser His
            340                 345                 350
Pro Val Asn Lys Phe Val Pro Ser Asp Val Pro Pro Glu Lys Leu Thr
        355                 360                 365
Leu Leu Gly Ala Ala Thr Asp Trp Leu Asp Gly Leu Asn Lys Pro Leu
    370                 375                 380
Gly Asp Trp Asp Leu Gln Tyr Tyr Met Gly Glu Phe Arg Gln Leu Cys
385                 390                 395                 400
Val Lys Glu Lys Met Thr Glu Leu Gly Trp Pro Leu Arg Asp Tyr Ile
                405                 410                 415
Val Gln Ile Ala Arg Phe Asp Pro Ser Lys Gly Ile Pro Asn Val Ile
            420                 425                 430
Asp Ser Tyr Ala Arg Phe Arg Lys Leu Leu Ala Glu Lys Glu Pro Gly
        435                 440                 445
Thr Glu Pro Pro Gln Met Leu Ile Cys Gly His Gly Ala Val Asp Asp
```

```
                                                421
    450                 455                 460
Pro Asp Ala Ser Ile Ile Tyr Asp Glu Thr Met Gln Leu Ile His Thr
465                 470                 475                 480
Lys Tyr Ala Glu Tyr Ala Lys Asp Phe Val Val Met Arg Cys Pro Pro
                485                 490                 495
Ser Asp Gln Leu Leu Asn Ala Leu Met Glu Asn Ser Lys Phe Ala Leu
            500                 505                 510
Gln Leu Ser Thr Arg Glu Gly Phe Glu Val Lys Val Ser Glu Ala Leu
        515                 520                 525
His Ala Gly Lys Pro Val Ile Ala Ser Arg Thr Gly Gly Ile Pro Leu
    530                 535                 540
Gln Ile Glu His Gly Lys Ser Gly Tyr Leu Cys Glu Pro Gly Asp Asn
545                 550                 555                 560
Ala Ala Val Ala Ser His Met Phe Asp Leu Tyr Thr Asp Asp Asp Leu
                565                 570                 575
Phe Asp Thr Met Ser Glu Tyr Ala Arg Thr His Val Ser Asp Glu Val
            580                 585                 590
Gly Thr Val Gly Asn Ala Ala Ala Trp Met Tyr Leu Ala Val Met Tyr
        595                 600                 605
Val Ser Arg Gly Val Arg Leu Gln Pro Lys Gly Ala Trp Leu Asn Asp
    610                 615                 620
Leu Met Arg Thr Glu Cys Gly Glu Pro Tyr Ala Pro Asn Glu Pro Arg
625                 630                 635                 640
Leu Pro Arg Ala Gly Leu Asn Val Gln Gly
                645                 650
```