SEQUENCE LISTING

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<120> HIV VACCINE BASED ON TARGETING MAXIMIZED GAG AND NEF TO DENDRITIC CELLS

<130> BHCS:2210

<140> PCT/US09/50903
<141> 2009-07-16

<150> US 61/081,234
<151> 2008-07-16

<160> 32

<170> PatentIn version 3.5

<210> 1
<211> 701
<212> PRT
<213> Artificial Sequence

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<400> 1

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Gln Val Thr Leu Lys Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser Gln
1               5                  10                  15

Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Ser
            20                  25                  30

Gly Met Gly Leu Ser Trp Ile Arg Gln Pro Ser Gly Lys Gly Leu Glu
        35                  40                  45

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

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

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

Cys Ala Arg Ser Ser His Tyr Tyr Gly Tyr Gly Tyr Gly Gly Tyr Phe
            100                 105                 110
```

```
Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr
        115                 120                 125

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

Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu
145                 150                 155                 160

Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His
                165                 170                 175

Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser
            180                 185                 190

Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys
        195                 200                 205

Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu
    210                 215                 220

Ser Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu
225                 230                 235                 240

Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
                245                 250                 255

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
            260                 265                 270

Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu
        275                 280                 285

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr
    290                 295                 300

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
305                 310                 315                 320

Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser
                325                 330                 335

Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
            340                 345                 350

Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val
        355                 360                 365
```

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

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
385                 390                 395                 400

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr
                405                 410                 415

Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val
            420                 425                 430

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
        435                 440                 445

Ser Leu Gly Lys Ala Ser Asp Met Ala Lys Lys Glu Thr Val Trp Arg
    450                 455                 460

Leu Glu Glu Phe Gly Arg Pro Ile Val Gln Asn Ile Gln Gly Gln Met
465                 470                 475                 480

Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val
                485                 490                 495

Val Glu Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala
            500                 505                 510

Leu Ser Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr
        515                 520                 525

Val Gly Gly His Gln Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn
    530                 535                 540

Glu Glu Ala Ala Glu Trp Asp Arg Val His Pro Val His Ala Gly Pro
545                 550                 555                 560

Ile Ala Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly
                565                 570                 575

Thr Thr Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Asn Asn Pro
            580                 585                 590

Pro Ile Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu
        595                 600                 605

Asn Lys Ile Val Arg Met Tyr Ser Pro Thr Ser Ile Leu Asp Ile Arg
    610                 615                 620
```

```
Gln Gly Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys
625                 630                 635                 640

Thr Leu Arg Ala Glu Gln Ala Ser Gln Glu Val Lys Asn Trp Met Thr
                645                 650                 655

Glu Thr Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu
            660                 665                 670

Lys Ala Leu Gly Pro Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys
        675                 680                 685

Gln Gly Val Gly Gly Pro Gly His Lys Ala Arg Val Leu
    690                 695                 700
```

<210> 2
<211> 783
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

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Glu Ile Gln Leu Gln Gln Thr Gly Pro Glu Leu Val Lys Pro Gly Ala
1               5                   10                  15

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

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

Gly Asn Ile Ser Pro Tyr Tyr Gly Thr Thr Asn Tyr Asn Leu Lys Phe
    50                  55                  60

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

Met Gln Leu Asn Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Ser Pro Asn Trp Asp Gly Ala Trp Phe Ala His Trp Gly Gln
            100                 105                 110

Gly Ala Leu Val Thr Val Ser Ala Ala Lys Thr Lys Gly Pro Ser Val
        115                 120                 125
```

```
Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala
    130                 135                 140

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
145                 150                 155                 160

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
                165                 170                 175

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro
            180                 185                 190

Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn Val Asp His Lys
        195                 200                 205

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

Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu Gly Gly Pro Ser Val
225                 230                 235                 240

Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr
                245                 250                 255

Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp Pro Glu
            260                 265                 270

Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys
        275                 280                 285

Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr Arg Val Val Ser
    290                 295                 300

Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys
305                 310                 315                 320

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

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

Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu
        355                 360                 365

Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn
    370                 375                 380
```

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

Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg
405 410 415

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

His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys Ala
435 440 445

Ser Asp Thr Thr Glu Pro Ala Thr Pro Thr Thr Pro Val Thr Thr Asp
450 455 460

Thr Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr Val Asp
465 470 475 480

Thr Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn Leu Leu
485 490 495

Glu Asp Ser His Asn Gly Lys Leu Cys Arg Leu Lys Gly Ile Ala Pro
500 505 510

Leu Gln Leu Gly Lys Cys Asn Ile Ala Gly Trp Leu Leu Gly Asn Pro
515 520 525

Glu Cys Asp Pro Leu Leu Pro Val Arg Ser Trp Ser Tyr Ile Val Glu
530 535 540

Thr Pro Asn Ser Glu Asn Gly Ile Cys Tyr Pro Gly Asp Phe Ile Asp
545 550 555 560

Tyr Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe Glu Arg
565 570 575

Phe Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Asn Thr Asn
580 585 590

Gly Val Thr Ala Ala Cys Ser His Glu Gly Lys Ser Ser Phe Tyr Arg
595 600 605

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

Asn Ser Tyr Val Asn Lys Lys Gly Lys Glu Val Leu Val Leu Trp Gly

625 630 635 640

Ile His His Pro Pro Asn Ser Lys Glu Gln Gln Asn Leu Tyr Gln Asn
645 650 655

Glu Asn Ala Tyr Val Ser Val Val Thr Ser Asn Tyr Asn Arg Arg Phe
660 665 670

Thr Pro Glu Ile Ala Glu Arg Pro Lys Val Arg Asp Gln Ala Gly Arg
675 680 685

Met Asn Tyr Tyr Trp Thr Leu Leu Lys Pro Gly Asp Thr Ile Ile Phe
690 695 700

Glu Ala Asn Gly Asn Leu Ile Ala Pro Met Tyr Ala Phe Ala Leu Ser
705 710 715 720

Arg Gly Phe Gly Ser Gly Ile Ile Thr Ser Asn Ala Ser Met His Glu
725 730 735

Cys Asn Thr Lys Cys Gln Thr Pro Leu Gly Ala Ile Asn Ser Ser Leu
740 745 750

Pro Tyr Gln Asn Ile His Pro Val Thr Ile Gly Glu Cys Leu Lys Tyr
755 760 765

Val Arg Ser Ala Lys Leu Arg Met Val His His His His His His
770 775 780

<210> 3
<211> 734
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 3

Gln Val Thr Leu Lys Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser Gln
1 5 10 15

Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Ser
20 25 30

Gly Met Gly Leu Ser Trp Ile Arg Gln Pro Ser Gly Lys Gly Leu Glu
35 40 45

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

```
Leu Lys Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Ser Asn Gln Val
65                  70                  75                  80

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

Cys Ala Arg Ser Ser His Tyr Tyr Gly Tyr Gly Tyr Gly Gly Tyr Phe
            100                 105                 110

Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr
        115                 120                 125

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

Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu
145                 150                 155                 160

Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His
                165                 170                 175

Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser
            180                 185                 190

Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys
        195                 200                 205

Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu
    210                 215                 220

Ser Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu
225                 230                 235                 240

Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
                245                 250                 255

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
            260                 265                 270

Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu
        275                 280                 285

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr
    290                 295                 300

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
```

```
305                 310                 315                 320

Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser
                325                 330                 335

Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
            340                 345                 350

Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val
        355                 360                 365

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

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
385                 390                 395                 400

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr
                405                 410                 415

Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val
            420                 425                 430

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
        435                 440                 445

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

Pro Thr Asn Asn Ser Thr Pro Thr Asn Asn Ser Asn Pro Lys Pro Asn
465                 470                 475                 480

Pro Ala Ser Val Asp Ser Glu Phe Ala Gln Gln Ala Ala Ala Asp Thr
                485                 490                 495

Gly His Ser Asn Gln Val Ser Gln Asn Tyr Pro Ile Val Gln Asn Ile
            500                 505                 510

Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala
        515                 520                 525

Trp Val Lys Val Val Glu Glu Lys Ala Phe Ser Pro Glu Val Ile Pro
    530                 535                 540

Met Phe Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr
545                 550                 555                 560
```

```
Met Leu Asn Thr Val Gly Gly His Gln Ala Ala Met Gln Met Leu Lys
                565                 570                 575

Glu Thr Ile Asn Glu Glu Ala Ala Glu Trp Asp Arg Val His Pro Val
            580                 585                 590

His Ala Gly Pro Ile Ala Pro Gly Gln Met Arg Glu Pro Arg Gly Ser
        595                 600                 605

Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln Glu Gln Ile Gly Trp Met
    610                 615                 620

Thr His Asn Pro Pro Ile Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile
625                 630                 635                 640

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

Leu Asp Ile Arg Gln Gly Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp
            660                 665                 670

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

Asn Trp Met Thr Glu Thr Leu Leu Val Gln Asn Ala Asn Pro Asp Cys
    690                 695                 700

Lys Thr Ile Leu Lys Ala Leu Gly Pro Gly Ala Thr Leu Glu Glu Met
705                 710                 715                 720

Met Thr Ala Cys Gln Gly Val Gly His His His His His His
                725                 730
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<210> 4
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 4

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Gln Thr Pro Thr Asn Thr Ile Ser Val Thr Pro Thr Asn Asn Ser Thr
1               5                   10                  15

Pro Thr Asn Asn Ser Asn Pro Lys Pro Asn Pro
            20                  25
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<210> 5

<211> 1853
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 5

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

Ile Phe Ala Ala Met Ile Pro Gln Thr Val Ser Ala Ala Thr Met Thr
            20                  25                  30

Val Glu Ile Gly Lys Val Thr Ala Ala Val Gly Ser Lys Val Glu Ile
        35                  40                  45

Pro Ile Thr Leu Lys Gly Val Pro Ser Lys Gly Met Ala Asn Cys Asp
    50                  55                  60

Phe Val Leu Gly Tyr Asp Pro Asn Val Leu Glu Val Thr Glu Val Lys
65                  70                  75                  80

Pro Gly Ser Ile Ile Lys Asp Pro Asp Pro Ser Lys Ser Phe Asp Ser
                85                  90                  95

Ala Ile Tyr Pro Asp Arg Lys Met Ile Val Phe Leu Phe Ala Glu Asp
            100                 105                 110

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

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

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

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

Pro Asn Val Pro Ser Asp Gly Val Val Val Glu Ile Gly Lys Val Thr
            180                 185                 190

Gly Ser Val Gly Thr Thr Val Glu Ile Pro Val Tyr Phe Arg Gly Val
        195                 200                 205

Pro Ser Lys Gly Ile Ala Asn Cys Asp Phe Val Phe Arg Tyr Asp Pro
    210                 215                 220
```

Asn Val Leu Glu Ile Ile Gly Ile Asp Pro Gly Asp Ile Ile Val Asp
225 230 235 240

Pro Asn Pro Thr Lys Ser Phe Asp Thr Ala Ile Tyr Pro Asp Arg Lys
245 250 255

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

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

Ser Ala Pro Gly Tyr Ile Thr Phe Asp Glu Val Gly Gly Phe Ala Asp
290 295 300

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

Val Gly Asn Ala Thr Pro Thr Lys Gly Ala Thr Pro Thr Asn Thr Ala
325 330 335

Thr Pro Thr Lys Ser Ala Thr Ala Thr Pro Thr Arg Pro Ser Val Pro
340 345 350

Thr Asn Thr Pro Thr Asn Thr Pro Ala Asn Thr Pro Val Ser Gly Asn
355 360 365

Leu Lys Val Glu Phe Tyr Asn Ser Asn Pro Ser Asp Thr Thr Asn Ser
370 375 380

Ile Asn Pro Gln Phe Lys Val Thr Asn Thr Gly Ser Ser Ala Ile Asp
385 390 395 400

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

Asp Gln Thr Phe Trp Cys Asp His Ala Ala Ile Ile Gly Ser Asn Gly
420 425 430

Ser Tyr Asn Gly Ile Thr Ser Asn Val Lys Gly Thr Phe Val Lys Met
435 440 445

Ser Ser Ser Thr Asn Asn Ala Asp Thr Tyr Leu Glu Ile Ser Phe Thr
450 455 460

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

```
465                 470                 475                 480

Ala Lys Asn Asp Trp Ser Asn Tyr Thr Gln Ser Asn Asp Tyr Ser Phe
                485                 490                 495

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

Asn Gly Val Leu Val Trp Gly Lys Glu Pro Gly Gly Ser Val Val Pro
        515                 520                 525

Ser Thr Gln Pro Val Thr Thr Pro Pro Ala Thr Thr Lys Pro Pro Ala
    530                 535                 540

Thr Thr Lys Pro Pro Ala Thr Thr Ile Pro Pro Ser Asp Asp Pro Asn
545                 550                 555                 560

Ala Ile Lys Ile Lys Val Asp Thr Val Asn Ala Lys Pro Gly Asp Thr
                565                 570                 575

Val Asn Ile Pro Val Arg Phe Ser Gly Ile Pro Ser Lys Gly Ile Ala
            580                 585                 590

Asn Cys Asp Phe Val Tyr Ser Tyr Asp Pro Asn Val Leu Glu Ile Ile
        595                 600                 605

Glu Ile Lys Pro Gly Glu Leu Ile Val Asp Pro Asn Pro Asp Lys Ser
    610                 615                 620

Phe Asp Thr Ala Val Tyr Pro Asp Arg Lys Ile Ile Val Phe Leu Phe
625                 630                 635                 640

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

Phe Ala Thr Ile Val Ala Lys Val Lys Ser Gly Ala Pro Asn Gly Leu
            660                 665                 670

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

Val Glu Gln Arg Thr Gln Phe Phe Asp Gly Gly Val Asn Val Gly Asp
    690                 695                 700

Thr Thr Val Pro Thr Thr Pro Thr Thr Pro Val Thr Thr Pro Thr Asp
705                 710                 715                 720
```

```
Asp Ser Asn Ala Val Arg Ile Lys Val Asp Thr Val Asn Ala Lys Pro
                725                 730                 735

Gly Asp Thr Val Arg Ile Pro Val Arg Phe Ser Gly Ile Pro Ser Lys
            740                 745                 750

Gly Ile Ala Asn Cys Asp Phe Val Tyr Ser Tyr Asp Pro Asn Val Leu
        755                 760                 765

Glu Ile Ile Glu Ile Glu Pro Gly Asp Ile Ile Val Asp Pro Asn Pro
    770                 775                 780

Asp Lys Ser Phe Asp Thr Ala Val Tyr Pro Asp Arg Lys Ile Ile Val
785                 790                 795                 800

Phe Leu Phe Ala Glu Asp Ser Gly Thr Gly Ala Tyr Ala Ile Thr Lys
                805                 810                 815

Asp Gly Val Phe Ala Thr Ile Val Ala Lys Val Lys Ser Gly Ala Pro
            820                 825                 830

Asn Gly Leu Ser Val Ile Lys Phe Val Glu Val Gly Gly Phe Ala Asn
        835                 840                 845

Asn Asp Leu Val Glu Gln Lys Thr Gln Phe Phe Asp Gly Gly Val Asn
    850                 855                 860

Val Gly Asp Thr Thr Glu Pro Ala Thr Pro Thr Thr Pro Val Thr Thr
865                 870                 875                 880

Pro Thr Thr Thr Asp Asp Leu Asp Ala Val Arg Ile Lys Val Asp Thr
                885                 890                 895

Val Asn Ala Lys Pro Gly Asp Thr Val Arg Ile Pro Val Arg Phe Ser
            900                 905                 910

Gly Ile Pro Ser Lys Gly Ile Ala Asn Cys Asp Phe Val Tyr Ser Tyr
        915                 920                 925

Asp Pro Asn Val Leu Glu Ile Ile Glu Ile Glu Pro Gly Asp Ile Ile
    930                 935                 940

Val Asp Pro Asn Pro Asp Lys Ser Phe Asp Thr Ala Val Tyr Pro Asp
945                 950                 955                 960

Arg Lys Ile Ile Val Phe Leu Phe Ala Glu Asp Ser Gly Thr Gly Ala
                965                 970                 975
```

Tyr Ala Ile Thr Lys Asp Gly Val Phe Ala Thr Ile Val Ala Lys Val
980 985 990

Lys Ser Gly Ala Pro Asn Gly Leu Ser Val Ile Lys Phe Val Glu Val
995 1000 1005

Gly Gly Phe Ala Asn Asn Asp Leu Val Glu Gln Lys Thr Gln Phe
1010 1015 1020

Phe Asp Gly Gly Val Asn Val Gly Asp Thr Thr Glu Pro Ala Thr
1025 1030 1035

Pro Thr Thr Pro Val Thr Thr Pro Thr Thr Thr Asp Asp Leu Asp
1040 1045 1050

Ala Val Arg Ile Lys Val Asp Thr Val Asn Ala Lys Pro Gly Asp
1055 1060 1065

Thr Val Arg Ile Pro Val Arg Phe Ser Gly Ile Pro Ser Lys Gly
1070 1075 1080

Ile Ala Asn Cys Asp Phe Val Tyr Ser Tyr Asp Pro Asn Val Leu
1085 1090 1095

Glu Ile Ile Glu Ile Glu Pro Gly Asp Ile Ile Val Asp Pro Asn
1100 1105 1110

Pro Asp Lys Ser Phe Asp Thr Ala Val Tyr Pro Asp Arg Lys Ile
1115 1120 1125

Ile Val Phe Leu Phe Ala Glu Asp Ser Gly Thr Gly Ala Tyr Ala
1130 1135 1140

Ile Thr Lys Asp Gly Val Phe Ala Thr Ile Val Ala Lys Val Lys
1145 1150 1155

Glu Gly Ala Pro Asn Gly Leu Ser Val Ile Lys Phe Val Glu Val
1160 1165 1170

Gly Gly Phe Ala Asn Asn Asp Leu Val Glu Gln Lys Thr Gln Phe
1175 1180 1185

Phe Asp Gly Gly Val Asn Val Gly Asp Thr Thr Glu Pro Ala Thr
1190 1195 1200

Pro Thr Thr Pro Val Thr Thr Pro Thr Thr Thr Asp Asp Leu Asp
1205 1210 1215

Ala Val Arg Ile Lys Val Asp Thr Val Asn Ala Lys Pro Gly Asp
1220 1225 1230

Thr Val Arg Ile Pro Val Arg Phe Ser Gly Ile Pro Ser Lys Gly
1235 1240 1245

Ile Ala Asn Cys Asp Phe Val Tyr Ser Tyr Asp Pro Asn Val Leu
1250 1255 1260

Glu Ile Ile Glu Ile Glu Pro Gly Glu Leu Ile Val Asp Pro Asn
1265 1270 1275

Pro Thr Lys Ser Phe Asp Thr Ala Val Tyr Pro Asp Arg Lys Met
1280 1285 1290

Ile Val Phe Leu Phe Ala Glu Asp Ser Gly Thr Gly Ala Tyr Ala
1295 1300 1305

Ile Thr Glu Asp Gly Val Phe Ala Thr Ile Val Ala Lys Val Lys
1310 1315 1320

Ser Gly Ala Pro Asn Gly Leu Ser Val Ile Lys Phe Val Glu Val
1325 1330 1335

Gly Gly Phe Ala Asn Asn Asp Leu Val Glu Gln Lys Thr Gln Phe
1340 1345 1350

Phe Asp Gly Gly Val Asn Val Gly Asp Thr Thr Glu Pro Ala Thr
1355 1360 1365

Pro Thr Thr Pro Val Thr Thr Pro Thr Thr Thr Asp Asp Leu Asp
1370 1375 1380

Ala Val Arg Ile Lys Val Asp Thr Val Asn Ala Lys Pro Gly Asp
1385 1390 1395

Thr Val Arg Ile Pro Val Arg Phe Ser Gly Ile Pro Ser Lys Gly
1400 1405 1410

Ile Ala Asn Cys Asp Phe Val Tyr Ser Tyr Asp Pro Asn Val Leu
1415 1420 1425

Glu Ile Ile Glu Ile Glu Pro Gly Asp Ile Ile Val Asp Pro Asn
1430 1435 1440

Pro Asp Lys Ser Phe Asp Thr Ala Val Tyr Pro Asp Arg Lys Ile

1445 1450 1455

Ile Val Phe Leu Phe Ala Glu Asp Ser Gly Thr Gly Ala Tyr Ala
1460 1465 1470

Ile Thr Lys Asp Gly Val Phe Ala Thr Ile Val Ala Lys Val Lys
1475 1480 1485

Glu Gly Ala Pro Asn Gly Leu Ser Val Ile Lys Phe Val Glu Val
1490 1495 1500

Gly Gly Phe Ala Asn Asn Asp Leu Val Glu Gln Lys Thr Gln Phe
1505 1510 1515

Phe Asp Gly Gly Val Asn Val Gly Asp Thr Thr Val Pro Thr Thr
1520 1525 1530

Ser Pro Thr Thr Thr Pro Pro Glu Pro Thr Ile Thr Pro Asn Lys
1535 1540 1545

Leu Thr Leu Lys Ile Gly Arg Ala Glu Gly Arg Pro Gly Asp Thr
1550 1555 1560

Val Glu Ile Pro Val Asn Leu Tyr Gly Val Pro Gln Lys Gly Ile
1565 1570 1575

Ala Ser Gly Asp Phe Val Val Ser Tyr Asp Pro Asn Val Leu Glu
1580 1585 1590

Ile Ile Glu Ile Glu Pro Gly Glu Leu Ile Val Asp Pro Asn Pro
1595 1600 1605

Thr Lys Ser Phe Asp Thr Ala Val Tyr Pro Asp Arg Lys Met Ile
1610 1615 1620

Val Phe Leu Phe Ala Glu Asp Ser Gly Thr Gly Ala Tyr Ala Ile
1625 1630 1635

Thr Glu Asp Gly Val Phe Ala Thr Ile Val Ala Lys Val Lys Glu
1640 1645 1650

Gly Ala Pro Glu Gly Phe Ser Ala Ile Glu Ile Ser Glu Phe Gly
1655 1660 1665

Ala Phe Ala Asp Asn Asp Leu Val Glu Val Glu Thr Asp Leu Ile
1670 1675 1680

```
Asn Gly  Gly Val Leu Val Thr  Asn Lys Pro Val Ile  Glu Gly Tyr
    1685                 1690                 1695

Lys Val  Ser Gly Tyr Ile Leu  Pro Asp Phe Ser Phe  Asp Ala Thr
    1700                 1705                 1710

Val Ala  Pro Leu Val Lys Ala  Gly Phe Lys Val Glu  Ile Val Gly
    1715                 1720                 1725

Thr Glu  Leu Tyr Ala Val Thr  Asp Ala Asn Gly Tyr  Phe Glu Ile
    1730                 1735                 1740

Thr Gly  Val Pro Ala Asn Ala  Ser Gly Tyr Thr Leu  Lys Ile Ser
    1745                 1750                 1755

Arg Ala  Thr Tyr Leu Asp Arg  Val Ile Ala Asn Val  Val Val Thr
    1760                 1765                 1770

Gly Asp  Thr Ser Val Ser Thr  Ser Gln Ala Pro Ile  Met Met Trp
    1775                 1780                 1785

Val Gly  Asp Ile Val Lys Asp  Asn Ser Ile Asn Leu  Leu Asp Val
    1790                 1795                 1800

Ala Glu  Val Ile Arg Cys Phe  Asn Ala Thr Lys Gly  Ser Ala Asn
    1805                 1810                 1815

Tyr Val  Glu Glu Leu Asp Ile  Asn Arg Asn Gly Ala  Ile Asn Met
    1820                 1825                 1830

Gln Asp  Ile Met Ile Val His  Lys His Phe Gly Ala  Thr Ser Ser
    1835                 1840                 1845

Asp Tyr  Asp Ala Gln
    1850
```

<210> 6
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 6

```
Gln Thr Pro Thr Asn Thr Ile Ser Val Thr Pro Thr Asn Asn Ser Thr
1               5                  10                  15

Pro Thr Asn Thr Ser Thr Pro Lys Pro Asn Pro
```

20 25

<210> 7
<211> 2299
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 7

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

Val Cys Tyr Ile Ile Ser Ser Phe Ser Ile Gln Phe Ala Ala Thr Pro
20 25 30

Gln Val Asn Ile Ile Ile Gly Ser Ala Gln Gly Ile Pro Gly Ser Thr
35 40 45

Val Lys Val Pro Ile Asn Leu Gln Asn Val Pro Glu Ile Gly Ile Asn
50 55 60

Asn Cys Asp Phe Thr Ile Lys Phe Asp Ser Asp Ile Leu Asp Phe Asn
65 70 75 80

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

Ser Asn Asn Ser Lys Asp Ile Ile Lys Phe Leu Phe Ser Asp Ala Thr
100 105 110

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

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

Ser Ser Tyr Gly Ser Phe Ser Gly Met Ser Gly Lys Glu Met Gln Ser
145 150 155 160

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

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

Thr Glu Val Asn Val Pro Ile Thr Phe Glu Asn Val Pro Asp Asn Gly
195 200 205

Ile Asn Asn Cys Asn Phe Thr Leu Ser Tyr Asp Ser Asn Ala Leu Glu
210 215 220

Phe Leu Thr Thr Glu Ala Gly Asn Ile Ile Pro Leu Ala Ile Ala Asp
225 230 235 240

Tyr Ser Ser Tyr Arg Ser Met Glu Gly Lys Ile Lys Phe Leu Phe Ser
245 250 255

Asp Ser Ser Gln Gly Thr Arg Ser Ile Lys Asn Asp Gly Val Phe Ala
260 265 270

Asn Ile Lys Phe Lys Ile Lys Gly Asn Ala Ile Arg Asp Thr Tyr Arg
275 280 285

Ile Asp Leu Ser Glu Leu Gly Ser Phe Ser Ser Lys Gln Asn Asn Asn
290 295 300

Leu Lys Ser Ile Ala Thr Gln Phe Leu Ser Gly Ser Val Asn Val Lys
305 310 315 320

Asp Ile Glu Ser Ser Val Ser Pro Thr Thr Ser Val His Pro Thr Pro
325 330 335

Thr Ser Val Pro Pro Thr Pro Thr Lys Ser Ser Pro Gly Asn Lys Met
340 345 350

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

Val Pro Ile Thr Phe Asn Glu Val Pro Val Met Gly Val Asn Asn Cys
370 375 380

Asn Phe Thr Leu Ala Tyr Asp Lys Asn Ile Met Glu Phe Ile Ser Ala
385 390 395 400

Asp Ala Gly Asp Ile Val Thr Leu Pro Met Ala Asn Tyr Ser Tyr Asn
405 410 415

Met Pro Ser Asp Gly Leu Val Lys Phe Leu Tyr Asn Asp Gln Ala Gln
420 425 430

Gly Ala Met Ser Ile Lys Glu Asp Gly Thr Phe Ala Asn Val Lys Phe
435 440 445

Lys Ile Lys Gln Ser Ala Ala Phe Gly Lys Tyr Ser Val Gly Ile Lys

450 455 460

Ala Ile Gly Ser Ile Ser Ala Leu Ser Asn Ser Lys Leu Ile Pro Ile
465 470 475 480

Glu Ser Ile Phe Lys Asp Gly Ser Ile Thr Val Thr Asn Lys Pro Ile
485 490 495

Val Asn Ile Glu Ile Gly Lys Val Lys Val Lys Ala Gly Asp Lys Ile
500 505 510

Lys Val Pro Val Glu Ile Lys Asp Ile Pro Ser Ile Gly Ile Asn Asn
515 520 525

Cys Asn Phe Thr Leu Lys Tyr Asn Ser Asn Val Leu Lys Tyr Val Ser
530 535 540

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

Asn Lys Pro Asp Glu Gly Ile Ile Lys Leu Leu Phe Ser Asp Ala Ser
565 570 575

Gln Gly Gly Met Pro Ile Lys Asp Asn Gly Ile Phe Val Asn Leu Glu
580 585 590

Phe Gln Ala Val Asn Asp Ala Asn Ile Gly Val Tyr Gly Leu Glu Leu
595 600 605

Asp Thr Ile Gly Ala Phe Ser Gly Ile Ser Ser Ala Lys Met Thr Ser
610 615 620

Ile Glu Pro Gln Phe Asn Asn Gly Ser Ile Glu Ile Phe Asn Ser Ala
625 630 635 640

Gln Thr Pro Val Pro Ser Asn Thr Glu Val Gln Thr Pro Thr Asn Thr
645 650 655

Ile Ser Val Thr Pro Thr Asn Asn Ser Thr Pro Thr Asn Asn Ser Thr
660 665 670

Pro Lys Pro Asn Pro Leu Tyr Asn Leu Asn Val Asn Ile Gly Glu Ile
675 680 685

Ser Gly Glu Ala Gly Gly Val Ile Glu Val Pro Ile Glu Phe Lys Asn
690 695 700

Val Pro Asp Phe Gly Ile Asn Asn Cys Asp Phe Ser Val Lys Tyr Asp
705 710 715 720

Lys Ser Ile Phe Glu Tyr Val Thr Tyr Glu Ala Gly Ser Ile Val Lys
725 730 735

Asp Ser Ile Val Asn Leu Ala Cys Met Glu Asn Ser Gly Ile Ile Asn
740 745 750

Leu Leu Phe Asn Asp Ala Thr Gln Ser Ser Ser Pro Ile Lys Asn Asn
755 760 765

Gly Val Phe Ala Lys Leu Lys Phe Lys Ile Asn Ser Asn Ala Ala Ser
770 775 780

Gly Thr Tyr Gln Ile Asn Ala Glu Gly Tyr Gly Lys Phe Ser Gly Asn
785 790 795 800

Leu Asn Gly Lys Leu Thr Ser Ile Asn Pro Ile Phe Glu Asn Gly Ile
805 810 815

Ile Asn Ile Gly Asn Val Thr Val Lys Pro Thr Ser Thr Pro Ala Asp
820 825 830

Ser Ser Thr Ile Thr Pro Thr Ala Thr Pro Thr Ala Thr Pro Thr Ile
835 840 845

Lys Gly Thr Pro Thr Val Thr Pro Ile Tyr Trp Met Asn Val Leu Ile
850 855 860

Gly Asn Met Asn Ala Ala Ile Gly Glu Glu Val Val Pro Ile Glu
865 870 875 880

Phe Lys Asn Val Pro Pro Phe Gly Ile Asn Asn Cys Asp Phe Lys Leu
885 890 895

Val Tyr Asp Ser Asn Ala Leu Glu Leu Lys Lys Val Glu Ala Gly Asp
900 905 910

Ile Val Pro Glu Pro Leu Ala Asn Leu Ser Ser Asn Lys Ser Glu Gly
915 920 925

Lys Ile Gln Phe Leu Phe Asn Asp Ala Ser Gln Gly Ser Met Gln Ile
930 935 940

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

```
Ala Ala Ser Gly Ile Tyr Asn Ile Arg Lys Asp Ser Val Gly Ser Phe
               965                 970                 975

Ser Gly Leu Ile Asp Asn Lys Met Thr Ser Ile Gly Pro Lys Phe Thr
           980                 985                 990

Asp Gly Ser Ile Val Val Gly Thr  Val Thr Pro Thr Ala  Thr Ala Thr
       995                 1000                1005

Pro Ser  Ala Ile Val Thr Thr  Ile Thr Pro Thr Ala  Thr Thr Lys
    1010                1015                1020

Pro Ile  Ala Thr Pro Thr Ile  Lys Gly Thr Pro Thr  Ala Thr Pro
    1025                1030                1035

Met Tyr  Trp Met Asn Val Val  Ile Gly Lys Met Asn  Ala Glu Val
    1040                1045                1050

Gly Gly  Glu Val Val Val Pro  Ile Glu Phe Asn Asn  Val Pro Ser
    1055                1060                1065

Phe Gly  Ile Asn Asn Cys Asp  Phe Lys Leu Val Tyr  Asp Ala Thr
    1070                1075                1080

Ala Leu  Glu Leu Lys Asn Val  Glu Ala Gly Asp Ile  Ile Lys Thr
    1085                1090                1095

Pro Leu  Ala Asn Phe Ser Asn  Asn Lys Ser Glu Glu  Gly Lys Ile
    1100                1105                1110

Ser Phe  Leu Phe Asn Asp Ala  Ser Gln Gly Ser Met  Gln Ile Glu
    1115                1120                1125

Asn Gly  Gly Val Phe Ala Lys  Ile Thr Phe Lys Val  Lys Ser Thr
    1130                1135                1140

Thr Ala  Thr Gly Val Tyr Asp  Leu Arg Lys Asp Leu  Val Gly Ser
    1145                1150                1155

Phe Ser  Gly Leu Lys Asp Asn  Lys Met Thr Ser Ile  Gly Ala Glu
    1160                1165                1170

Phe Thr  Asn Gly Ser Ile Thr  Val Ala Ala Thr Ala  Pro Thr Val
    1175                1180                1185

Thr Pro  Thr Val Asn Ala Thr  Pro Ser Ala Ala Thr  Pro Thr Val
    1190                1195                1200
```

```
Thr Pro  Thr Ala Thr Ala Thr  Pro Ser Val Thr Ile  Pro Thr Val
    1205                 1210                 1215

Thr Pro  Thr Ala Thr Ala Thr  Pro Ser Val Thr Ile  Pro Thr Val
    1220                 1225                 1230

Thr Pro  Thr Ala Thr Ala Thr  Pro Ser Ala Ala Thr  Pro Thr Val
    1235                 1240                 1245

Thr Pro  Thr Ala Thr Ala Thr  Pro Ser Val Thr Ile  Pro Thr Val
    1250                 1255                 1260

Thr Pro  Thr Val Thr Ala Thr  Pro Ser Asp Thr Ile  Pro Thr Val
    1265                 1270                 1275

Thr Pro  Thr Ala Thr Ala Thr  Pro Ser Ala Ile Val  Thr Thr Ile
    1280                 1285                 1290

Thr Pro  Thr Ala Thr Ala Lys  Pro Ile Ala Thr Pro  Thr Ile Lys
    1295                 1300                 1305

Gly Thr  Pro Thr Ala Thr Pro  Met Tyr Trp Met Asn  Val Val Ile
    1310                 1315                 1320

Gly Lys  Met Asn Ala Glu Val  Gly Gly Glu Val Val  Val Pro Ile
    1325                 1330                 1335

Glu Phe  Lys Asn Val Pro Ser  Phe Gly Ile Asn Asn  Cys Asp Phe
    1340                 1345                 1350

Lys Leu  Val Tyr Asp Ala Thr  Ala Leu Glu Leu Lys  Asn Val Glu
    1355                 1360                 1365

Ala Gly  Asp Ile Ile Lys Thr  Pro Leu Ala Asn Phe  Ser Asn Asn
    1370                 1375                 1380

Lys Ser  Glu Glu Gly Lys Ile  Ser Phe Leu Phe Asn  Asp Ala Ser
    1385                 1390                 1395

Gln Gly  Ser Met Gln Ile Glu  Asn Gly Gly Val Ser  Ala Lys Ile
    1400                 1405                 1410

Thr Phe  Lys Val Lys Ser Thr  Thr Ala Ile Gly Val  Tyr Asp Ile
    1415                 1420                 1425

Arg Lys  Asp Leu Ile Gly Ser  Phe Ser Gly Leu Lys  Asp Ser Lys
```

1430 1435 1440

Met Thr Ser Ile Gly Ala Glu Phe Thr Asn Gly Ser Ile Thr Val
1445 1450 1455

Ala Thr Thr Ala Pro Thr Val Thr Pro Thr Ala Thr Ala Thr Pro
1460 1465 1470

Ser Val Thr Ile Pro Thr Val Thr Pro Thr Ala Thr Ala Thr Pro
1475 1480 1485

Gly Thr Ala Thr Pro Gly Thr Ala Thr Pro Thr Ala Thr Ala Thr
1490 1495 1500

Pro Gly Ala Ala Thr Pro Thr Glu Thr Ala Thr Pro Ser Val Met
1505 1510 1515

Ile Pro Thr Val Thr Pro Thr Ala Thr Ala Thr Pro Thr Ala Thr
1520 1525 1530

Ala Thr Pro Thr Val Lys Gly Thr Pro Thr Ile Lys Pro Val Tyr
1535 1540 1545

Lys Met Asn Val Val Ile Gly Arg Val Asn Val Val Ala Gly Glu
1550 1555 1560

Glu Val Val Val Pro Val Glu Phe Lys Asn Ile Pro Ala Ile Gly
1565 1570 1575

Val Asn Asn Cys Asn Phe Val Leu Glu Tyr Asp Ala Asn Val Leu
1580 1585 1590

Glu Val Lys Lys Val Asp Ala Gly Glu Ile Val Pro Asp Ala Leu
1595 1600 1605

Ile Asn Phe Gly Ser Asn Asn Ser Asp Glu Gly Lys Val Tyr Phe
1610 1615 1620

Leu Phe Asn Asp Ala Leu Gln Gly Arg Met Gln Ile Ala Asn Asp
1625 1630 1635

Gly Ile Phe Ala Asn Ile Thr Phe Lys Val Lys Ser Ser Ala Ala
1640 1645 1650

Ala Gly Ile Tyr Asn Ile Arg Lys Asp Ser Val Gly Ala Phe Ser
1655 1660 1665

Gly Leu Val Asp Lys Leu Val Pro Ile Ser Ala Glu Phe Thr Asp
1670 1675 1680

Gly Ser Ile Ser Val Glu Ser Ala Lys Ser Thr Pro Thr Ala Thr
1685 1690 1695

Ala Thr Gly Thr Asn Val Thr Pro Thr Val Ala Ala Thr Val Thr
1700 1705 1710

Pro Thr Ala Thr Pro Ala Ser Thr Thr Pro Thr Ala Thr Pro Thr
1715 1720 1725

Ala Thr Ser Thr Val Lys Gly Thr Pro Thr Ala Thr Pro Leu Tyr
1730 1735 1740

Ser Met Asn Val Ile Ile Gly Lys Val Asn Ala Glu Ala Ser Gly
1745 1750 1755

Glu Val Val Val Pro Val Glu Phe Lys Asp Val Pro Ser Ile Gly
1760 1765 1770

Ile Asn Asn Cys Asn Phe Ile Leu Glu Tyr Asp Ala Ser Ala Leu
1775 1780 1785

Glu Leu Asp Ser Ala Glu Ala Gly Glu Ile Val Pro Val Pro Leu
1790 1795 1800

Gly Asn Phe Ser Ser Asn Asn Lys Asp Glu Gly Lys Ile Tyr Phe
1805 1810 1815

Leu Phe Ser Asp Gly Thr Gln Gly Arg Met Gln Ile Val Asn Asp
1820 1825 1830

Gly Ile Phe Ala Lys Ile Lys Phe Lys Val Lys Ser Thr Ala Ser
1835 1840 1845

Asp Gly Thr Tyr Tyr Ile Arg Lys Asp Ser Val Gly Ala Phe Ser
1850 1855 1860

Gly Leu Ile Glu Lys Lys Ile Ile Lys Ile Gly Ala Glu Phe Thr
1865 1870 1875

Asp Gly Ser Ile Thr Val Arg Ser Leu Thr Pro Thr Pro Thr Val
1880 1885 1890

Thr Pro Asn Val Ala Ser Pro Thr Pro Thr Lys Val Val Ala Glu
1895 1900 1905

Pro Thr Ser Asn Gln Pro Ala Gly Pro Gly Pro Ile Thr Gly Thr
1910 1915 1920

Ile Pro Thr Ala Thr Thr Thr Ala Thr Ala Thr Pro Thr Lys Ala
1925 1930 1935

Ser Val Ala Thr Ala Thr Pro Thr Ala Thr Pro Ile Val Val Val
1940 1945 1950

Glu Pro Thr Ile Val Arg Pro Gly Tyr Asn Lys Asp Ala Asp Leu
1955 1960 1965

Ala Val Phe Ile Ser Ser Asp Lys Ser Arg Tyr Glu Glu Ser Ser
1970 1975 1980

Ile Ile Thr Tyr Ser Ile Glu Tyr Lys Asn Ile Gly Lys Val Asn
1985 1990 1995

Ala Thr Asn Val Lys Ile Ala Ala Gln Ile Pro Lys Phe Thr Lys
2000 2005 2010

Val Tyr Asp Ala Ala Lys Gly Ala Val Lys Gly Ser Glu Ile Val
2015 2020 2025

Trp Met Ile Gly Asn Leu Ala Val Gly Glu Ser Tyr Thr Lys Glu
2030 2035 2040

Tyr Lys Val Lys Val Asp Ser Leu Thr Lys Ser Glu Glu Tyr Thr
2045 2050 2055

Asp Asn Thr Val Thr Ile Ser Ser Asp Gln Thr Val Asp Ile Pro
2060 2065 2070

Glu Asn Ile Thr Thr Gly Asn Asp Asp Lys Ser Thr Ile Arg Val
2075 2080 2085

Met Leu Tyr Ser Asn Arg Phe Thr Pro Gly Ser His Ser Ser Tyr
2090 2095 2100

Ile Leu Gly Tyr Lys Asp Lys Thr Phe Lys Pro Lys Gln Asn Val
2105 2110 2115

Thr Arg Ala Glu Val Ala Ala Met Phe Ala Arg Ile Met Gly Leu
2120 2125 2130

Thr Val Lys Asp Gly Ala Lys Ser Ser Tyr Lys Asp Val Ser Asn
2135 2140 2145

```
Lys His  Trp Ala Leu Lys Tyr  Ile Glu Ala Val Thr  Lys Ser Gly
    2150                 2155                 2160

Ile Phe  Lys Gly Tyr Lys Asp  Ser Thr Phe His Pro  Asn Ala Pro
    2165                 2170                 2175

Ile Thr  Arg Ala Glu Leu Ser  Thr Val Ile Phe Asn  Tyr Leu His
    2180                 2185                 2190

Leu Asn  Asn Ile Ala Pro Ser  Lys Val His Phe Thr  Asp Ile Asn
    2195                 2200                 2205

Lys His  Trp Ala Lys Asn Tyr  Ile Glu Glu Ile Tyr  Arg Phe Lys
    2210                 2215                 2220

Leu Ile  Gln Gly Tyr Ser Asp  Gly Ser Phe Lys Pro  Asn Asn Asn
    2225                 2230                 2235

Ile Thr  Arg Ala Glu Val Val  Thr Met Ile Asn Arg  Met Leu Tyr
    2240                 2245                 2250

Arg Gly  Pro Leu Lys Val Lys  Val Gly Ser Phe Pro  Asp Val Ser
    2255                 2260                 2265

Pro Lys  Tyr Trp Ala Tyr Gly  Asp Ile Glu Glu Ala  Ser Arg Asn
    2270                 2275                 2280

His Lys  Tyr Thr Arg Asp Glu  Lys Asp Gly Ser Glu  Ile Leu Ile
    2285                 2290                 2295

Glu
```

<210> 8
<211> 810
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 8

```
Gln Val Thr Leu Lys Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser Gln
1               5                  10                  15

Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Ser
            20                  25                  30
```

```
Gly Met Gly Leu Ser Trp Ile Arg Gln Pro Ser Gly Lys Gly Leu Glu
        35                  40                  45

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

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

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

Cys Ala Arg Ser Ser His Tyr Tyr Gly Tyr Gly Tyr Gly Gly Tyr Phe
            100                 105                 110

Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr
        115                 120                 125

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

Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu
145                 150                 155                 160

Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His
                165                 170                 175

Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser
            180                 185                 190

Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys
        195                 200                 205

Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu
    210                 215                 220

Ser Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu
225                 230                 235                 240

Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
                245                 250                 255

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
            260                 265                 270

Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu
        275                 280                 285
```

```
Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr
    290                 295                 300

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
305                 310                 315                 320

Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser
                325                 330                 335

Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
            340                 345                 350

Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val
        355                 360                 365

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

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
385                 390                 395                 400

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr
                405                 410                 415

Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val
            420                 425                 430

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
        435                 440                 445

Ser Leu Gly Lys Ala Ser Leu Glu Met Gly Ala Arg Ala Ser Ile Leu
    450                 455                 460

Ser Gly Gly Glu Leu Asp Arg Trp Glu Lys Ile Arg Leu Arg Pro Gly
465                 470                 475                 480

Gly Lys Lys Lys Tyr Lys Leu Lys His Ile Val Trp Ala Ser Arg Glu
                485                 490                 495

Leu Glu Arg Phe Ala Val Asn Pro Gly Leu Leu Glu Thr Ser Glu Gly
            500                 505                 510

Cys Arg Gln Ile Leu Gly Gln Leu Gln Pro Ser Leu Gln Thr Gly Ser
        515                 520                 525

Glu Glu Leu Arg Ser Leu Tyr Asn Thr Val Ala Thr Leu Tyr Cys Val
```

530 535 540

His Gln Arg Ile Glu Ile Lys Asp Thr Lys Glu Ala Leu Asp Lys Ile
545 550 555 560

Glu Glu Glu Gln Asn Lys Ser Lys Lys Lys Ala Gln Gln Ala Ala Ala
565 570 575

Asp Thr Gly His Ser Asn Gln Val Ser Gln Asn Tyr Pro Ile Val Gln
580 585 590

Asn Ile Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu
595 600 605

Asn Ala Trp Val Lys Val Val Glu Glu Lys Ala Phe Ser Pro Glu Val
610 615 620

Ile Pro Met Phe Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln Asp Leu
625 630 635 640

Asn Thr Met Leu Asn Thr Val Gly Gly His Gln Ala Ala Met Gln Met
645 650 655

Leu Lys Glu Thr Ile Asn Glu Glu Ala Ala Glu Trp Asp Arg Val His
660 665 670

Pro Val His Ala Gly Pro Ile Ala Pro Gly Gln Met Arg Glu Pro Arg
675 680 685

Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln Glu Gln Ile Gly
690 695 700

Trp Met Thr His Asn Pro Pro Ile Pro Val Gly Glu Ile Tyr Lys Arg
705 710 715 720

Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr Ser Pro Thr
725 730 735

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

Val Asp Arg Phe Tyr Lys Thr Leu Arg Ala Glu Gln Ala Ser Gln Glu
755 760 765

Val Lys Asn Trp Met Thr Glu Thr Leu Leu Val Gln Asn Ala Asn Pro
770 775 780

Asp Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro Gly Ala Thr Leu Glu
785 790 795 800

Glu Met Met Thr Ala Cys Gln Gly Val Gly
805 810

<210> 9
<211> 847
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 9

Gln Val Thr Leu Lys Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser Gln
1 5 10 15

Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Ser
20 25 30

Gly Met Gly Leu Ser Trp Ile Arg Gln Pro Ser Gly Lys Gly Leu Glu
35 40 45

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

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

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

Cys Ala Arg Ser Ser His Tyr Tyr Gly Tyr Gly Tyr Gly Gly Tyr Phe
100 105 110

Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr
115 120 125

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

Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu
145 150 155 160

Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His
165 170 175

Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser

```
            180                 185                 190

Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys
        195                 200                 205

Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu
    210                 215                 220

Ser Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu
225                 230                 235                 240

Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
                245                 250                 255

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
            260                 265                 270

Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu
        275                 280                 285

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr
    290                 295                 300

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
305                 310                 315                 320

Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser
                325                 330                 335

Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
            340                 345                 350

Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val
        355                 360                 365

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

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
385                 390                 395                 400

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr
                405                 410                 415

Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val
            420                 425                 430
```

```
Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
        435                 440                 445

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

Pro Thr Asn Asn Ser Thr Pro Thr Asn Asn Ser Asn Pro Lys Pro Asn
465                 470                 475                 480

Pro Ala Ser Leu Glu Met Gly Ala Arg Ala Ser Ile Leu Ser Gly Gly
                485                 490                 495

Glu Leu Asp Arg Trp Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys
            500                 505                 510

Lys Tyr Lys Leu Lys His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg
        515                 520                 525

Phe Ala Val Asn Pro Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln
    530                 535                 540

Ile Leu Gly Gln Leu Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu
545                 550                 555                 560

Arg Ser Leu Tyr Asn Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg
                565                 570                 575

Ile Glu Ile Lys Asp Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu
            580                 585                 590

Gln Asn Lys Ser Val Asp Ser Glu Phe Ala Gln Gln Ala Ala Ala Asp
        595                 600                 605

Thr Gly His Ser Asn Gln Val Ser Gln Asn Tyr Pro Ile Val Gln Asn
    610                 615                 620

Ile Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn
625                 630                 635                 640

Ala Trp Val Lys Val Val Glu Glu Lys Ala Phe Ser Pro Glu Val Ile
                645                 650                 655

Pro Met Phe Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln Asp Leu Asn
            660                 665                 670

Thr Met Leu Asn Thr Val Gly Gly His Gln Ala Ala Met Gln Met Leu
        675                 680                 685
```

```
Lys Glu Thr Ile Asn Glu Glu Ala Ala Glu Trp Asp Arg Val His Pro
    690                 695                 700

Val His Ala Gly Pro Ile Ala Pro Gly Gln Met Arg Glu Pro Arg Gly
705                 710                 715                 720

Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln Glu Gln Ile Gly Trp
                725                 730                 735

Met Thr His Asn Pro Pro Ile Pro Val Gly Glu Ile Tyr Lys Arg Trp
            740                 745                 750

Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr Ser Pro Thr Ser
        755                 760                 765

Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu Pro Phe Arg Asp Tyr Val
    770                 775                 780

Asp Arg Phe Tyr Lys Thr Leu Arg Ala Glu Gln Ala Ser Gln Glu Val
785                 790                 795                 800

Lys Asn Trp Met Thr Glu Thr Leu Leu Val Gln Asn Ala Asn Pro Asp
                805                 810                 815

Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro Gly Ala Thr Leu Glu Glu
            820                 825                 830

Met Met Thr Ala Cys Gln Gly Val Gly His His His His His His
        835                 840                 845
```

<210> 10
<211> 689
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 10

```
Gln Val Thr Leu Lys Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser Gln
1               5                   10                  15

Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Ser
            20                  25                  30

Gly Met Gly Leu Ser Trp Ile Arg Gln Pro Ser Gly Lys Gly Leu Glu
        35                  40                  45
```

```
Trp Leu Ala His Ile Tyr Trp Asp Asp Asp Lys Arg Tyr Asn Pro Ser
    50                  55                  60

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

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

Cys Ala Arg Ser Ser His Tyr Tyr Gly Tyr Gly Tyr Gly Gly Tyr Phe
            100                 105                 110

Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr
        115                 120                 125

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

Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu
145                 150                 155                 160

Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His
                165                 170                 175

Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser
            180                 185                 190

Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys
        195                 200                 205

Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu
    210                 215                 220

Ser Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu
225                 230                 235                 240

Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
                245                 250                 255

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
            260                 265                 270

Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu
        275                 280                 285

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr
    290                 295                 300
```

```
Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
305                 310                 315                 320

Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser
                325                 330                 335

Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
            340                 345                 350

Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val
        355                 360                 365

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

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
385                 390                 395                 400

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr
                405                 410                 415

Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val
            420                 425                 430

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
        435                 440                 445

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

Pro Thr Asn Asn Ser Thr Pro Thr Asn Asn Ser Asn Pro Lys Pro Asn
465                 470                 475                 480

Pro Ala Ser Met Gly Gly Lys Trp Ser Lys Arg Ser Val Val Gly Trp
                485                 490                 495

Pro Thr Val Arg Glu Arg Met Arg Arg Ala Glu Pro Ala Ala Asp Gly
            500                 505                 510

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

Ser Asn Thr Ala Ala Asn Asn Ala Asp Cys Ala Trp Leu Glu Ala Gln
    530                 535                 540

Glu Glu Glu Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg
545                 550                 555                 560
```

```
Pro Met Thr Tyr Lys Gly Ala Leu Asp Leu Ser His Phe Leu Lys Glu
                565                 570                 575

Lys Gly Gly Leu Glu Gly Leu Ile Tyr Ser Gln Lys Arg Gln Asp Ile
            580                 585                 590

Leu Asp Leu Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln
        595                 600                 605

Asn Tyr Thr Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp
    610                 615                 620

Cys Phe Lys Leu Val Pro Val Glu Pro Glu Lys Val Glu Glu Ala Asn
625                 630                 635                 640

Glu Gly Glu Asn Asn Ser Leu Leu His Pro Met Ser Leu His Gly Met
                645                 650                 655

Asp Asp Pro Glu Arg Glu Val Leu Val Trp Lys Phe Asp Ser Arg Leu
            660                 665                 670

Ala Phe His His Met Ala Arg Glu Leu His Pro Glu Tyr Tyr Lys Asp
        675                 680                 685

Cys
```

<210> 11
<211> 1051
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 11

```
Gln Val Thr Leu Lys Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser Gln
1               5                   10                  15

Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Ser
            20                  25                  30

Gly Met Gly Leu Ser Trp Ile Arg Gln Pro Ser Gly Lys Gly Leu Glu
        35                  40                  45

Trp Leu Ala His Ile Tyr Trp Asp Asp Asp Lys Arg Tyr Asn Pro Ser
    50                  55                  60
```

```
Leu Lys Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Ser Asn Gln Val
65                  70                  75                  80

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

Cys Ala Arg Ser Ser His Tyr Tyr Gly Tyr Gly Tyr Gly Gly Tyr Phe
            100                 105                 110

Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr
        115                 120                 125

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

Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu
145                 150                 155                 160

Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His
                165                 170                 175

Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser
            180                 185                 190

Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys
        195                 200                 205

Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu
    210                 215                 220

Ser Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu
225                 230                 235                 240

Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
                245                 250                 255

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
            260                 265                 270

Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu
        275                 280                 285

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr
    290                 295                 300

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
305                 310                 315                 320
```

```
Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser
                325                 330                 335

Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
            340                 345                 350

Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val
        355                 360                 365

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

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
385                 390                 395                 400

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr
                405                 410                 415

Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val
            420                 425                 430

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
        435                 440                 445

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

Pro Thr Asn Asn Ser Thr Pro Thr Asn Asn Ser Asn Pro Lys Pro Asn
465                 470                 475                 480

Pro Ala Ser Leu Glu Met Gly Ala Arg Ala Ser Ile Leu Ser Gly Gly
                485                 490                 495

Glu Leu Asp Arg Trp Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys
            500                 505                 510

Lys Tyr Lys Leu Lys His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg
        515                 520                 525

Phe Ala Val Asn Pro Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln
    530                 535                 540

Ile Leu Gly Gln Leu Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu
545                 550                 555                 560

Arg Ser Leu Tyr Asn Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg
```

565 570 575

Ile Glu Ile Lys Asp Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu
580 585 590

Gln Asn Lys Ser Val Asp Ser Glu Phe Ala Gln Gln Ala Ala Ala Asp
595 600 605

Thr Gly His Ser Asn Gln Val Ser Gln Asn Tyr Pro Ile Val Gln Asn
610 615 620

Ile Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn
625 630 635 640

Ala Trp Val Lys Val Val Glu Glu Lys Ala Phe Ser Pro Glu Val Ile
645 650 655

Pro Met Phe Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln Asp Leu Asn
660 665 670

Thr Met Leu Asn Thr Val Gly Gly His Gln Ala Ala Met Gln Met Leu
675 680 685

Lys Glu Thr Ile Asn Glu Glu Ala Ala Glu Trp Asp Arg Val His Pro
690 695 700

Val His Ala Gly Pro Ile Ala Pro Gly Gln Met Arg Glu Pro Arg Gly
705 710 715 720

Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln Glu Gln Ile Gly Trp
725 730 735

Met Thr His Asn Pro Pro Ile Pro Val Gly Glu Ile Tyr Lys Arg Trp
740 745 750

Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr Ser Pro Thr Ser
755 760 765

Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu Pro Phe Arg Asp Tyr Val
770 775 780

Asp Arg Phe Tyr Lys Thr Leu Arg Ala Glu Gln Ala Ser Gln Glu Val
785 790 795 800

Lys Asn Trp Met Thr Glu Thr Leu Leu Val Gln Asn Ala Asn Pro Asp
805 810 815

```
Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro Gly Ala Thr Leu Glu Glu
            820                 825                 830

Met Met Thr Ala Cys Gln Gly Val Gly Gly Pro Ala Ser Met Gly Gly
        835                 840                 845

Lys Trp Ser Lys Arg Ser Val Val Gly Trp Pro Thr Val Arg Glu Arg
    850                 855                 860

Met Arg Arg Ala Glu Pro Ala Ala Asp Gly Val Gly Ala Val Ser Arg
865                 870                 875                 880

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

Asn Ala Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu Glu Val Gly
            900                 905                 910

Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met Thr Tyr Lys Gly
        915                 920                 925

Ala Leu Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly Leu Glu Gly
    930                 935                 940

Leu Ile Tyr Ser Gln Lys Arg Gln Asp Ile Leu Asp Leu Trp Val Tyr
945                 950                 955                 960

His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr Pro Gly Pro
                965                 970                 975

Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe Lys Leu Val Pro
            980                 985                 990

Val Glu Pro Glu Lys Val Glu Glu  Ala Asn Glu Gly Glu  Asn Asn Ser
        995                 1000                1005

Leu Leu  His Pro Met Ser Leu  His Gly Met Asp Asp  Pro Glu Arg
    1010                1015                1020

Glu Val  Leu Val Trp Lys Phe  Asp Ser Arg Leu Ala  Phe His His
    1025                1030                1035

Met Ala  Arg Glu Leu His Pro  Glu Tyr Tyr Lys Asp  Cys
    1040                1045                1050
```

<210> 12
<211> 1078
<212> PRT

<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 12

```
Gln Val Thr Leu Lys Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser Gln
1               5                  10                  15

Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Ser
            20                  25                  30

Gly Met Gly Leu Ser Trp Ile Arg Gln Pro Ser Gly Lys Gly Leu Glu
        35                  40                  45

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

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

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

Cys Ala Arg Ser Ser His Tyr Tyr Gly Tyr Gly Tyr Gly Gly Tyr Phe
            100                 105                 110

Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr
        115                 120                 125

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

Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu
145                 150                 155                 160

Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His
                165                 170                 175

Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser
            180                 185                 190

Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys
        195                 200                 205

Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu
    210                 215                 220
```

```
Ser Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu
225                 230                 235                 240

Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
                245                 250                 255

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
            260                 265                 270

Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu
        275                 280                 285

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr
    290                 295                 300

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
305                 310                 315                 320

Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser
                325                 330                 335

Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
            340                 345                 350

Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val
        355                 360                 365

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

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
385                 390                 395                 400

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr
                405                 410                 415

Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val
            420                 425                 430

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
        435                 440                 445

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

Pro Thr Asn Asn Ser Thr Pro Thr Asn Asn Ser Asn Pro Lys Pro Asn
465                 470                 475                 480
```

```
Pro Ala Ser Leu Glu Met Gly Ala Arg Ala Ser Ile Leu Ser Gly Gly
                485                 490                 495

Glu Leu Asp Arg Trp Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys
            500                 505                 510

Lys Tyr Lys Leu Lys His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg
        515                 520                 525

Phe Ala Val Asn Pro Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln
    530                 535                 540

Ile Leu Gly Gln Leu Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu
545                 550                 555                 560

Arg Ser Leu Tyr Asn Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg
                565                 570                 575

Ile Glu Ile Lys Asp Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu
            580                 585                 590

Gln Asn Lys Ser Val Asp Ser Glu Phe Ala Gln Gln Ala Ala Ala Asp
        595                 600                 605

Thr Gly His Ser Asn Gln Val Ser Gln Asn Tyr Pro Ile Val Gln Asn
    610                 615                 620

Ile Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn
625                 630                 635                 640

Ala Trp Val Lys Val Val Glu Glu Lys Ala Phe Ser Pro Glu Val Ile
                645                 650                 655

Pro Met Phe Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln Asp Leu Asn
            660                 665                 670

Thr Met Leu Asn Thr Val Gly Gly His Gln Ala Ala Met Gln Met Leu
        675                 680                 685

Lys Glu Thr Ile Asn Glu Glu Ala Ala Glu Trp Asp Arg Val His Pro
    690                 695                 700

Val His Ala Gly Pro Ile Ala Pro Gly Gln Met Arg Glu Pro Arg Gly
705                 710                 715                 720

Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln Glu Gln Ile Gly Trp
                725                 730                 735
```

Met Thr His Asn Pro Pro Ile Pro Val Gly Glu Ile Tyr Lys Arg Trp
740 745 750

Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr Ser Pro Thr Ser
755 760 765

Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu Pro Phe Arg Asp Tyr Val
770 775 780

Asp Arg Phe Tyr Lys Thr Leu Arg Ala Glu Gln Ala Ser Gln Glu Val
785 790 795 800

Lys Asn Trp Met Thr Glu Thr Leu Leu Val Gln Asn Ala Asn Pro Asp
805 810 815

Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro Gly Ala Thr Leu Glu Glu
820 825 830

Met Met Thr Ala Cys Gln Gly Val Gly Gly Pro Thr Asn Gly Ser Ile
835 840 845

Thr Val Ala Ala Thr Ala Pro Thr Val Thr Pro Thr Val Asn Ala Thr
850 855 860

Pro Ser Ala Ala Gly Pro Ala Ser Met Gly Gly Lys Trp Ser Lys Arg
865 870 875 880

Ser Val Val Gly Trp Pro Thr Val Arg Glu Arg Met Arg Arg Ala Glu
885 890 895

Pro Ala Ala Asp Gly Val Gly Ala Val Ser Arg Asp Leu Glu Lys His
900 905 910

Gly Ala Ile Thr Ser Ser Asn Thr Ala Ala Asn Asn Ala Asp Cys Ala
915 920 925

Trp Leu Glu Ala Gln Glu Glu Glu Glu Val Gly Phe Pro Val Arg Pro
930 935 940

Gln Val Pro Leu Arg Pro Met Thr Tyr Lys Gly Ala Leu Asp Leu Ser
945 950 955 960

His Phe Leu Lys Glu Lys Gly Gly Leu Glu Gly Leu Ile Tyr Ser Gln
965 970 975

Lys Arg Gln Asp Ile Leu Asp Leu Trp Val Tyr His Thr Gln Gly Tyr

980 985 990

Phe Pro Asp Trp Gln Asn Tyr Thr Pro Gly Pro Gly Ile Arg Tyr Pro
995 1000 1005

Leu Thr Phe Gly Trp Cys Phe Lys Leu Val Pro Val Glu Pro Glu
1010 1015 1020

Lys Val Glu Glu Ala Asn Glu Gly Glu Asn Asn Ser Leu Leu His
1025 1030 1035

Pro Met Ser Leu His Gly Met Asp Asp Pro Glu Arg Glu Val Leu
1040 1045 1050

Val Trp Lys Phe Asp Ser Arg Leu Ala Phe His His Met Ala Arg
1055 1060 1065

Glu Leu His Pro Glu Tyr Tyr Lys Asp Cys
1070 1075

<210> 13
<211> 1079
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 13

Gln Val Thr Leu Lys Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser Gln
1 5 10 15

Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Ser
20 25 30

Gly Met Gly Leu Ser Trp Ile Arg Gln Pro Ser Gly Lys Gly Leu Glu
35 40 45

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

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

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

Cys Ala Arg Ser Ser His Tyr Tyr Gly Tyr Gly Tyr Gly Gly Tyr Phe
100 105 110

```
Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr
        115                 120                 125

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

Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu
145                 150                 155                 160

Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His
                165                 170                 175

Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser
            180                 185                 190

Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys
        195                 200                 205

Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu
    210                 215                 220

Ser Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu
225                 230                 235                 240

Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
                245                 250                 255

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
            260                 265                 270

Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu
        275                 280                 285

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr
    290                 295                 300

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
305                 310                 315                 320

Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser
                325                 330                 335

Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
            340                 345                 350

Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val
```

```
        355                 360                 365

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

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
385                 390                 395                 400

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr
                405                 410                 415

Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val
            420                 425                 430

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
        435                 440                 445

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

Pro Thr Asn Asn Ser Thr Pro Thr Asn Asn Ser Asn Pro Lys Pro Asn
465                 470                 475                 480

Pro Ala Ser Leu Glu Met Gly Ala Arg Ala Ser Ile Leu Ser Gly Gly
                485                 490                 495

Glu Leu Asp Arg Trp Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys
            500                 505                 510

Lys Tyr Lys Leu Lys His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg
        515                 520                 525

Phe Ala Val Asn Pro Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln
    530                 535                 540

Ile Leu Gly Gln Leu Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu
545                 550                 555                 560

Arg Ser Leu Tyr Asn Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg
                565                 570                 575

Ile Glu Ile Lys Asp Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu
            580                 585                 590

Gln Asn Lys Ser Val Asp Met Gly Gly Lys Trp Ser Lys Arg Ser Val
        595                 600                 605
```

```
Val Gly Trp Pro Thr Val Arg Glu Arg Met Arg Arg Ala Glu Pro Ala
    610                 615                 620

Ala Asp Gly Val Gly Ala Val Ser Arg Asp Leu Glu Lys His Gly Ala
625                 630                 635                 640

Ile Thr Ser Ser Asn Thr Ala Ala Asn Asn Ala Asp Cys Ala Trp Leu
                645                 650                 655

Glu Ala Gln Glu Glu Glu Glu Val Gly Phe Pro Val Arg Pro Gln Val
            660                 665                 670

Pro Leu Arg Pro Met Thr Tyr Lys Gly Ala Leu Asp Leu Ser His Phe
        675                 680                 685

Leu Lys Glu Lys Gly Gly Leu Glu Gly Leu Ile Tyr Ser Gln Lys Arg
    690                 695                 700

Gln Asp Ile Leu Asp Leu Trp Val Tyr His Thr Gln Gly Tyr Phe Pro
705                 710                 715                 720

Asp Trp Gln Asn Tyr Thr Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr
                725                 730                 735

Phe Gly Trp Cys Phe Lys Leu Val Pro Val Glu Pro Glu Lys Val Glu
            740                 745                 750

Glu Ala Asn Glu Gly Glu Asn Asn Ser Leu Leu His Pro Met Ser Leu
        755                 760                 765

His Gly Met Asp Asp Pro Glu Arg Glu Val Leu Val Trp Lys Phe Asp
    770                 775                 780

Ser Arg Leu Ala Phe His His Met Ala Arg Glu Leu His Pro Glu Tyr
785                 790                 795                 800

Tyr Lys Asp Cys Glu Phe Thr Asn Gly Ser Ile Thr Val Ala Ala Thr
                805                 810                 815

Ala Pro Thr Val Thr Pro Thr Val Asn Ala Thr Pro Ser Ala Ala Gln
            820                 825                 830

Phe Ala Gln Gln Ala Ala Ala Asp Thr Gly His Ser Asn Gln Val Ser
        835                 840                 845

Gln Asn Tyr Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His Gln
    850                 855                 860
```

```
Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu Glu
865                 870                 875                 880

Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu
                885                 890                 895

Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly
            900                 905                 910

His Gln Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu Ala
        915                 920                 925

Ala Glu Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala Pro
    930                 935                 940

Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser
945                 950                 955                 960

Thr Leu Gln Glu Gln Ile Gly Trp Met Thr His Asn Pro Pro Ile Pro
                965                 970                 975

Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile
            980                 985                 990

Val Arg Met Tyr Ser Pro Thr Ser  Ile Leu Asp Ile Arg  Gln Gly Pro
        995                 1000                1005

Lys Glu  Pro Phe Arg Asp Tyr  Val Asp Arg Phe Tyr  Lys Thr Leu
    1010                1015                1020

Arg Ala  Glu Gln Ala Ser Gln  Glu Val Lys Asn Trp  Met Thr Glu
    1025                1030                1035

Thr Leu  Leu Val Gln Asn Ala  Asn Pro Asp Cys Lys  Thr Ile Leu
    1040                1045                1050

Lys Ala  Leu Gly Pro Gly Ala  Thr Leu Glu Glu Met  Met Thr Ala
    1055                1060                1065

Cys Gln  Gly Val Gly His His  His His His His
    1070                1075
```

<210> 14
<211> 1079
<212> PRT
<213> Artificial Sequence

<220>

<223> Artificial Sequence

<400> 14

```
Gln Val Thr Leu Lys Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser Gln
1               5                  10                  15

Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Ser
            20                  25                  30

Gly Met Gly Leu Ser Trp Ile Arg Gln Pro Ser Gly Lys Gly Leu Glu
        35                  40                  45

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

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

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

Cys Ala Arg Ser Ser His Tyr Tyr Gly Tyr Gly Tyr Gly Gly Tyr Phe
            100                 105                 110

Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr
        115                 120                 125

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

Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu
145                 150                 155                 160

Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His
                165                 170                 175

Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser
            180                 185                 190

Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys
        195                 200                 205

Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu
    210                 215                 220

Ser Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu
225                 230                 235                 240
```

```
Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
                245                 250                 255

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
            260                 265                 270

Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu
        275                 280                 285

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr
    290                 295                 300

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
305                 310                 315                 320

Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser
                325                 330                 335

Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
            340                 345                 350

Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val
        355                 360                 365

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

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
385                 390                 395                 400

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr
                405                 410                 415

Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val
            420                 425                 430

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
        435                 440                 445

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

Pro Thr Asn Asn Ser Thr Pro Thr Asn Asn Ser Asn Pro Lys Pro Asn
465                 470                 475                 480

Pro Ala Ser Leu Glu Met Gly Ala Arg Ala Ser Ile Leu Ser Gly Gly
                485                 490                 495
```

```
Glu Leu Asp Arg Trp Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys
            500                 505                 510

Lys Tyr Lys Leu Lys His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg
        515                 520                 525

Phe Ala Val Asn Pro Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln
    530                 535                 540

Ile Leu Gly Gln Leu Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu
545                 550                 555                 560

Arg Ser Leu Tyr Asn Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg
                565                 570                 575

Ile Glu Ile Lys Asp Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu
            580                 585                 590

Gln Asn Lys Ser Val Asp Thr Val Thr Pro Thr Ala Thr Ala Thr Pro
        595                 600                 605

Ser Ala Ile Val Thr Thr Ile Thr Pro Thr Ala Thr Thr Lys Pro Val
    610                 615                 620

Asp Met Gly Gly Lys Trp Ser Lys Arg Ser Val Val Gly Trp Pro Thr
625                 630                 635                 640

Val Arg Glu Arg Met Arg Arg Ala Glu Pro Ala Ala Asp Gly Val Gly
                645                 650                 655

Ala Val Ser Arg Asp Leu Glu Lys His Gly Ala Ile Thr Ser Ser Asn
            660                 665                 670

Thr Ala Ala Asn Asn Ala Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu
        675                 680                 685

Glu Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met
    690                 695                 700

Thr Tyr Lys Gly Ala Leu Asp Leu Ser His Phe Leu Lys Glu Lys Gly
705                 710                 715                 720

Gly Leu Glu Gly Leu Ile Tyr Ser Gln Lys Arg Gln Asp Ile Leu Asp
                725                 730                 735

Leu Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr
```

740 745 750

Thr Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe
755 760 765

Lys Leu Val Pro Val Glu Pro Glu Lys Val Glu Glu Ala Asn Glu Gly
770 775 780

Glu Asn Asn Ser Leu Leu His Pro Met Ser Leu His Gly Met Asp Asp
785 790 795 800

Pro Glu Arg Glu Val Leu Val Trp Lys Phe Asp Ser Arg Leu Ala Phe
805 810 815

His His Met Ala Arg Glu Leu His Pro Glu Tyr Tyr Lys Asp Cys Glu
820 825 830

Phe Ala Gln Gln Ala Ala Ala Asp Thr Gly His Ser Asn Gln Val Ser
835 840 845

Gln Asn Tyr Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His Gln
850 855 860

Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu Glu
865 870 875 880

Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu
885 890 895

Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly
900 905 910

His Gln Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu Ala
915 920 925

Ala Glu Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala Pro
930 935 940

Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser
945 950 955 960

Thr Leu Gln Glu Gln Ile Gly Trp Met Thr His Asn Pro Pro Ile Pro
965 970 975

Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile
980 985 990

```
Val Arg Met Tyr Ser Pro Thr Ser  Ile Leu Asp Ile Arg  Gln Gly Pro
        995                 1000                1005

Lys Glu  Pro Phe Arg Asp Tyr  Val Asp Arg Phe Tyr  Lys Thr Leu
    1010                1015                1020

Arg Ala  Glu Gln Ala Ser Gln  Glu Val Lys Asn Trp  Met Thr Glu
    1025                1030                1035

Thr Leu  Leu Val Gln Asn Ala  Asn Pro Asp Cys Lys  Thr Ile Leu
    1040                1045                1050

Lys Ala  Leu Gly Pro Gly Ala  Thr Leu Glu Glu Met  Met Thr Ala
    1055                1060                1065

Cys Gln  Gly Val Gly His His  His His His His
    1070                1075
```

<210> 15
<211> 1106
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 15

```
Gln Val Thr Leu Lys Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser Gln
1               5                  10                  15

Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Ser
            20                  25                  30

Gly Met Gly Leu Ser Trp Ile Arg Gln Pro Ser Gly Lys Gly Leu Glu
        35                  40                  45

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

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

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

Cys Ala Arg Ser Ser His Tyr Tyr Gly Tyr Gly Tyr Gly Gly Tyr Phe
            100                 105                 110

Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr
```

```
        115                 120                 125

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

Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu
145                 150                 155                 160

Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His
                165                 170                 175

Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser
            180                 185                 190

Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys
        195                 200                 205

Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu
    210                 215                 220

Ser Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu
225                 230                 235                 240

Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
                245                 250                 255

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
            260                 265                 270

Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu
        275                 280                 285

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr
    290                 295                 300

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
305                 310                 315                 320

Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser
                325                 330                 335

Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
            340                 345                 350

Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val
        355                 360                 365
```

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

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
385                 390                 395                 400

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr
                405                 410                 415

Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val
            420                 425                 430

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
        435                 440                 445

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

Pro Thr Asn Asn Ser Thr Pro Thr Asn Asn Ser Asn Pro Lys Pro Asn
465                 470                 475                 480

Pro Ala Ser Leu Glu Met Gly Ala Arg Ala Ser Ile Leu Ser Gly Gly
                485                 490                 495

Glu Leu Asp Arg Trp Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys
            500                 505                 510

Lys Tyr Lys Leu Lys His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg
        515                 520                 525

Phe Ala Val Asn Pro Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln
    530                 535                 540

Ile Leu Gly Gln Leu Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu
545                 550                 555                 560

Arg Ser Leu Tyr Asn Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg
                565                 570                 575

Ile Glu Ile Lys Asp Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu
            580                 585                 590

Gln Asn Lys Ser Val Asp Thr Val Thr Pro Thr Ala Thr Ala Thr Pro
        595                 600                 605

Ser Ala Ile Val Thr Thr Ile Thr Pro Thr Ala Thr Thr Lys Pro Val
    610                 615                 620
```

```
Asp Met Gly Gly Lys Trp Ser Lys Arg Ser Val Val Gly Trp Pro Thr
625                 630                 635                 640

Val Arg Glu Arg Met Arg Arg Ala Glu Pro Ala Ala Asp Gly Val Gly
                645                 650                 655

Ala Val Ser Arg Asp Leu Glu Lys His Gly Ala Ile Thr Ser Ser Asn
            660                 665                 670

Thr Ala Ala Asn Asn Ala Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu
        675                 680                 685

Glu Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met
    690                 695                 700

Thr Tyr Lys Gly Ala Leu Asp Leu Ser His Phe Leu Lys Glu Lys Gly
705                 710                 715                 720

Gly Leu Glu Gly Leu Ile Tyr Ser Gln Lys Arg Gln Asp Ile Leu Asp
                725                 730                 735

Leu Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr
            740                 745                 750

Thr Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe
        755                 760                 765

Lys Leu Val Pro Val Glu Pro Glu Lys Val Glu Glu Ala Asn Glu Gly
    770                 775                 780

Glu Asn Asn Ser Leu Leu His Pro Met Ser Leu His Gly Met Asp Asp
785                 790                 795                 800

Pro Glu Arg Glu Val Leu Val Trp Lys Phe Asp Ser Arg Leu Ala Phe
                805                 810                 815

His His Met Ala Arg Glu Leu His Pro Glu Tyr Tyr Lys Asp Cys Glu
            820                 825                 830

Phe Thr Asn Gly Ser Ile Thr Val Ala Ala Thr Ala Pro Thr Val Thr
        835                 840                 845

Pro Thr Val Asn Ala Thr Pro Ser Ala Ala Gln Phe Ala Gln Gln Ala
    850                 855                 860

Ala Ala Asp Thr Gly His Ser Asn Gln Val Ser Gln Asn Tyr Pro Ile
865                 870                 875                 880
```

```
Val Gln Asn Ile Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg
                885                 890                 895

Thr Leu Asn Ala Trp Val Lys Val Val Glu Glu Lys Ala Phe Ser Pro
            900                 905                 910

Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln
        915                 920                 925

Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln Ala Ala Met
    930                 935                 940

Gln Met Leu Lys Glu Thr Ile Asn Glu Glu Ala Ala Glu Trp Asp Arg
945                 950                 955                 960

Val His Pro Val His Ala Gly Pro Ile Ala Pro Gly Gln Met Arg Glu
                965                 970                 975

Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln Glu Gln
            980                 985                 990

Ile Gly Trp Met Thr His Asn Pro  Pro Ile Pro Val Gly  Glu Ile Tyr
        995                 1000                1005

Lys Arg  Trp Ile Ile Leu Gly  Leu Asn Lys Ile Val  Arg Met Tyr
    1010                1015                1020

Ser Pro  Thr Ser Ile Leu Asp  Ile Arg Gln Gly Pro  Lys Glu Pro
    1025                1030                1035

Phe Arg  Asp Tyr Val Asp Arg  Phe Tyr Lys Thr Leu  Arg Ala Glu
    1040                1045                1050

Gln Ala  Ser Gln Glu Val Lys  Asn Trp Met Thr Glu  Thr Leu Leu
    1055                1060                1065

Val Gln  Asn Ala Asn Pro Asp  Cys Lys Thr Ile Leu  Lys Ala Leu
    1070                1075                1080

Gly Pro  Gly Ala Thr Leu Glu  Glu Met Met Thr Ala  Cys Gln Gly
    1085                1090                1095

Val Gly  His His His His His  His
    1100                1105
```

<210> 16

<211> 1106
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 16

```
Gln Val Thr Leu Lys Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser Gln
1               5                  10                  15

Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Ser
            20                  25                  30

Gly Met Gly Leu Ser Trp Ile Arg Gln Pro Ser Gly Lys Gly Leu Glu
        35                  40                  45

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

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

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

Cys Ala Arg Ser Ser His Tyr Tyr Gly Tyr Gly Tyr Gly Gly Tyr Phe
            100                 105                 110

Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser Ala Lys Thr
        115                 120                 125

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

Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu
145                 150                 155                 160

Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His
                165                 170                 175

Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser
            180                 185                 190

Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys
        195                 200                 205

Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu
    210                 215                 220
```

```
Ser Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu
225                 230                 235                 240

Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
                245                 250                 255

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
            260                 265                 270

Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu
        275                 280                 285

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr
    290                 295                 300

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
305                 310                 315                 320

Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser
                325                 330                 335

Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
            340                 345                 350

Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val
        355                 360                 365

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

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
385                 390                 395                 400

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr
                405                 410                 415

Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val
            420                 425                 430

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
        435                 440                 445

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

Pro Thr Asn Asn Ser Thr Pro Thr Asn Asn Ser Asn Pro Lys Pro Asn
```

```
465                 470                 475                 480

Pro Ala Ser Leu Glu Met Gly Ala Arg Ala Ser Ile Leu Ser Gly Gly
                485                 490                 495

Glu Leu Asp Arg Trp Glu Lys Ile Arg Leu Arg Pro Gly Gly Asn Lys
            500                 505                 510

Gln Tyr Lys Leu Lys His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg
        515                 520                 525

Phe Ala Val Asn Pro Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln
    530                 535                 540

Ile Leu Gly Gln Leu Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu
545                 550                 555                 560

Arg Ser Leu Tyr Asn Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg
                565                 570                 575

Ile Glu Ile Lys Asp Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu
            580                 585                 590

Gln Asn Lys Ser Val Asp Thr Val Thr Pro Thr Ala Thr Ala Thr Pro
        595                 600                 605

Ser Ala Ile Val Thr Thr Ile Thr Pro Thr Ala Thr Thr Lys Pro Val
    610                 615                 620

Asp Met Gly Gly Lys Trp Ser Lys Arg Ser Val Val Gly Trp Pro Thr
625                 630                 635                 640

Val Arg Glu Arg Met Arg Arg Ala Glu Pro Ala Ala Asp Gly Val Gly
                645                 650                 655

Ala Val Ser Arg Asp Leu Glu Lys His Gly Ala Ile Thr Ser Ser Asn
            660                 665                 670

Thr Ala Ala Asn Asn Ala Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu
        675                 680                 685

Glu Glu Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met
    690                 695                 700

Thr Tyr Lys Gly Ala Leu Asp Leu Ser His Phe Leu Lys Glu Lys Gly
705                 710                 715                 720
```

```
Gly Leu Glu Gly Leu Ile Tyr Ser Gln Lys Arg Gln Asp Ile Leu Asp
                725                 730                 735

Leu Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr
            740                 745                 750

Thr Pro Gly Pro Gly Ile Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe
        755                 760                 765

Lys Leu Val Pro Val Glu Pro Glu Lys Val Glu Glu Ala Asn Glu Gly
    770                 775                 780

Glu Asn Asn Ser Leu Leu His Pro Met Ser Leu His Gly Met Asp Asp
785                 790                 795                 800

Pro Glu Arg Glu Val Leu Val Trp Lys Phe Asp Ser Arg Leu Ala Phe
                805                 810                 815

His His Met Ala Arg Glu Leu His Pro Glu Tyr Tyr Lys Asp Cys Glu
            820                 825                 830

Phe Thr Asn Gly Ser Ile Thr Val Ala Ala Thr Ala Pro Thr Val Thr
        835                 840                 845

Pro Thr Val Asn Ala Thr Pro Ser Ala Ala Gln Phe Ala Gln Gln Ala
    850                 855                 860

Ala Ala Asp Thr Gly His Ser Asn Gln Val Ser Gln Asn Tyr Pro Ile
865                 870                 875                 880

Val Gln Asn Ile Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg
                885                 890                 895

Thr Leu Asn Ala Trp Val Lys Val Val Glu Glu Lys Ala Phe Ser Pro
            900                 905                 910

Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln
        915                 920                 925

Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln Ala Ala Met
    930                 935                 940

Gln Met Leu Lys Glu Thr Ile Asn Glu Glu Ala Ala Glu Trp Asp Arg
945                 950                 955                 960

Val His Pro Val His Ala Gly Pro Ile Ala Pro Gly Gln Met Arg Glu
                965                 970                 975
```

Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln Glu Gln
980 985 990

Ile Gly Trp Met Thr His Asn Pro Pro Ile Pro Val Gly Glu Ile Tyr
995 1000 1005

Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr
1010 1015 1020

Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu Pro
1025 1030 1035

Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu Arg Ala Glu
1040 1045 1050

Gln Ala Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr Leu Leu
1055 1060 1065

Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala Leu
1070 1075 1080

Gly Pro Gly Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
1085 1090 1095

Val Gly His His His His His His
1100 1105

<210> 17
<211> 627
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 17
gctagcatgg gaggcaaatg gagtaaaaga agtgttgtgg gttggccaac tgtgagagaa 60

agaatgagaa gggctgaacc agccgctgat ggtgtaggtg ctgtgtcacg agatctggaa 120

aaacacggag caataacatc ctctaatacc gccgcaaata acgcagactg tgcctggctc 180

gaagctcaag aagaagaaga agtcggattc cccgtgcgac cccaagttcc cctcagacca 240

atgacttata aaggcgctct ggatcttagc cactttctta aagaaaaagg aggactggaa 300

ggacttattt attcacaaaa aagacaagac atcctcgatt tgtgggtata tcatactcaa 360

ggttatttcc cagactggca aaattatact cctggacccg gcattcgata tccccttacc 420

tttggatggt gctttaaact tgtccccgtc gaacctgaaa aagtagaaga agcaaatgaa 480

ggcgaaaata attcactgct ccaccctatg tcactgcacg gaatggatga ccccgaacgc 540

gaagttctgg tatggaaatt tgattcaaga cttgcttttc accacatggc tagagaactt 600

caccccgaat attataaaga ctgttga 627

<210> 18
<211> 1965
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 18
gctagtcaga cccccaccaa caccatcagc gtgaccccca ccaacaacag caccccccacc 60

aacaacagca accccaagcc caaccccgct agcctcgaga tgggtgcgag agcgtcaata 120

ttaagcggtg gcgaattaga tagatgggaa aaaattcggt taaggccagg gggaaagaaa 180

aaatataaat taaaacatat agtatgggca agcagggagc tagaacgatt cgcagttaat 240

cctggcctgt tagaaacatc agaaggctgt agacaaatac tgggacagct acaaccatcc 300

cttcagacag gatcagaaga acttagatca ttatataata cagtagcaac cctctattgt 360

gtgcatcaaa ggatagagat aaaagacacc aaggaagctt tagacaagat agaggaagag 420

caaaacaaaa gtgtcgatac cgtgaccccc accgccaccg ccacccccag cgccatcgtg 480

accaccatca cccccaccgc caccaccaag cccgtcgaca tgggaggcaa atggagtaaa 540

agaagtgttg tgggttggcc aactgtgaga gaaagaatga gaagggctga accagccgct 600

gatggtgtag gtgctgtgtc acgagatctg gaaaaacacg gagcaataac atcctctaat 660

accgccgcaa ataacgcaga ctgtgcctgg ctcgaagctc aagaagaaga agaagtcgga 720

ttccccgtgc gaccccaagt tcccctcaga ccaatgactt ataaaggcgc tctggatctt 780

agccactttc ttaaagaaaa aggaggactg gaaggactta tttattcaca aaaaagacaa 840

gacatcctcg atttgtgggt atatcatact caaggttatt tcccagactg gcaaaattat 900

actcctggac ccggcattcg atatcccctt acctttggat ggtgctttaa acttgtcccc 960

gtcgaacctg aaaaagtaga agaagcaaat gaaggcgaaa ataattcact gctccaccct 1020

atgtcactgc acggaatgga tgaccccgaa cgcgaagttc tggtatggaa atttgattca 1080

agacttgctt ttcaccacat ggctagagaa cttcaccccg aatattataa agactgtgaa 1140

ttcaccaacg gcagcatcac cgtggccgcc accgccccca ccgtgacccc caccgtgaac 1200

gccacccccа gcgccgccca attcgcacag caagcagcag ctgacacagg acacagcaat 1260

caggtcagcc aaaattaccc tatagtgcag aacatccagg ggcaaatggt acatcaggcc 1320

atatcaccta gaactttaaa tgcatgggta aaagtagtag aagagaaggc tttcagccca 1380

gaagtgatac ccatgttttc agcattatca gaaggagcca ccccacaaga tttaaacacc 1440

atgctaaaca cagtgggggg acatcaagca gccatgcaaa tgttaaaaga gaccatcaat 1500

gaggaagctg cagaatggga tagagtgcat ccagtgcatg cagggcctat tgcaccaggc 1560

cagatgagag aaccaagggg aagtgacata gcaggaacta ctagtaccct tcaggaacaa 1620

ataggatgga tgacacataa tccacctatc ccagtaggag aaatctataa aaggtggata 1680

atcctgggat taaataaaat agtaagaatg tatagcccta ccagcattct ggacataaga 1740

caaggaccaa aggaaccctt tagagactat gtagaccgat tctataaaac tctaagagcc 1800

gagcaagctt cacaagaggt aaaaaattgg atgacagaaa ccttgttggt ccaaaatgcg 1860

aacccagatt gtaagactat tttaaaagca ttgggaccag gagcgacact agaagaaatg 1920

atgacagcat gtcagggagt ggggcatcac catcaccatc actga 1965

<210> 19
<211> 919
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 19

Ala Thr Gly Ala Thr Gly Thr Cys Cys Thr Cys Thr Gly Cys Thr Cys
1 5 10 15

Ala Gly Thr Thr Cys Cys Thr Thr Gly Gly Thr Cys Thr Cys Cys Thr
20 25 30

Gly Thr Thr Gly Cys Thr Cys Thr Gly Thr Thr Thr Thr Cys Ala Ala
35 40 45

Gly Gly Thr Ala Cys Cys Ala Gly Ala Thr Gly Thr Gly Ala Thr Ala
50 55 60

Thr Cys Cys Ala Gly Ala Thr Gly Ala Cys Ala Cys Ala Gly Ala Cys
65 70 75 80

Thr Ala Cys Ala Thr Cys Cys Thr Cys Cys Cys Thr Gly Thr Cys Thr
85 90 95

Gly Cys Cys Thr Cys Thr Cys Thr Ala Gly Gly Ala Gly Ala Cys Ala
100 105 110

Gly Ala Gly Thr Cys Ala Cys Cys Ala Thr Cys Ala Gly Thr Thr Gly
115 120 125

Cys Ala Gly Thr Gly Cys Ala Ala Gly Thr Cys Ala Gly Gly Gly Cys
130 135 140

```
Ala Thr Thr Ala Gly Cys Ala Ala Thr Thr Ala Thr Thr Thr Ala Ala
145                 150                 155                 160

Ala Cys Thr Gly Gly Thr Ala Thr Cys Ala Gly Cys Ala Gly Ala Ala
                165                 170                 175

Ala Cys Cys Ala Gly Ala Thr Gly Gly Ala Ala Cys Thr Gly Thr Thr
            180                 185                 190

Ala Ala Ala Cys Thr Cys Cys Thr Gly Ala Thr Cys Thr Ala Thr Thr
        195                 200                 205

Ala Cys Ala Cys Ala Thr Cys Ala Ala Thr Thr Thr Thr Ala Cys Ala
    210                 215                 220

Cys Thr Cys Ala Gly Gly Ala Gly Thr Cys Cys Cys Ala Thr Cys Ala
225                 230                 235                 240

Ala Gly Gly Thr Thr Cys Ala Gly Thr Gly Gly Cys Ala Gly Thr Gly
                245                 250                 255

Gly Gly Thr Cys Thr Gly Gly Gly Ala Cys Ala Gly Ala Thr Thr Ala
            260                 265                 270

Thr Thr Cys Thr Cys Thr Cys Ala Cys Cys Ala Thr Cys Gly Gly Cys
        275                 280                 285

Ala Ala Cys Cys Thr Gly Gly Ala Ala Cys Cys Thr Gly Ala Ala Gly
    290                 295                 300

Ala Thr Ala Thr Thr Gly Cys Cys Ala Cys Thr Thr Ala Cys Thr Ala
305                 310                 315                 320

Thr Thr Gly Thr Cys Ala Gly Cys Ala Gly Thr Thr Thr Ala Ala Thr
                325                 330                 335

Ala Ala Gly Cys Thr Thr Cys Cys Thr Cys Cys Gly Ala Cys Gly Thr
            340                 345                 350

Thr Cys Gly Gly Thr Gly Gly Ala Gly Gly Cys Ala Cys Cys Ala Ala
        355                 360                 365

Ala Cys Thr Cys Gly Ala Gly Ala Thr Cys Ala Ala Ala Cys Gly Ala
    370                 375                 380

Ala Cys Thr Gly Thr Gly Gly Cys Thr Gly Cys Ala Cys Cys Ala Thr
```

385 390 395 400

Cys Thr Gly Thr Cys Thr Thr Cys Ala Thr Cys Thr Thr Cys Cys Cys
405 410 415

Gly Cys Cys Ala Thr Cys Thr Gly Ala Thr Gly Ala Gly Cys Ala Gly
420 425 430

Thr Thr Gly Ala Ala Ala Thr Cys Thr Gly Gly Ala Ala Cys Thr Gly
435 440 445

Cys Cys Thr Cys Thr Gly Thr Thr Gly Thr Gly Thr Gly Cys Cys Thr
450 455 460

Gly Cys Thr Gly Ala Ala Thr Ala Ala Cys Thr Thr Cys Thr Ala Thr
465 470 475 480

Cys Cys Cys Ala Gly Ala Gly Ala Gly Gly Cys Cys Ala Ala Ala Gly
485 490 495

Thr Ala Cys Ala Gly Thr Gly Gly Ala Ala Gly Gly Thr Gly Gly Ala
500 505 510

Thr Ala Ala Cys Gly Cys Cys Cys Thr Cys Cys Ala Ala Thr Cys Gly
515 520 525

Gly Gly Thr Ala Ala Cys Thr Cys Cys Cys Ala Gly Gly Ala Gly Ala
530 535 540

Gly Thr Gly Thr Cys Ala Cys Ala Gly Ala Gly Cys Ala Gly Gly Ala
545 550 555 560

Cys Ala Gly Cys Ala Ala Gly Gly Ala Cys Ala Gly Cys Ala Cys Cys
565 570 575

Thr Ala Cys Ala Gly Cys Cys Thr Cys Ala Gly Cys Ala Gly Cys Ala
580 585 590

Cys Cys Cys Thr Gly Ala Cys Gly Cys Thr Gly Ala Gly Cys Ala Ala
595 600 605

Ala Gly Cys Ala Gly Ala Cys Thr Ala Cys Gly Ala Gly Ala Ala Ala
610 615 620

Cys Ala Cys Ala Ala Ala Gly Thr Cys Thr Ala Thr Gly Cys Cys Thr
625 630 635 640

```
Gly Cys Gly Ala Ala Gly Thr Cys Ala Cys Cys Cys Ala Thr Cys Ala
                645                 650                 655

Gly Gly Gly Cys Cys Thr Gly Ala Gly Cys Thr Cys Gly Cys Cys Cys
            660                 665                 670

Gly Thr Cys Ala Cys Ala Ala Ala Gly Ala Gly Cys Thr Thr Cys Ala
        675                 680                 685

Ala Cys Ala Gly Gly Gly Gly Ala Gly Ala Gly Thr Gly Thr Thr Ala
    690                 695                 700

Gly Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu
705                 710                 715                 720

Gly Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn
                725                 730                 735

Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu
            740                 745                 750

Ile Tyr Tyr Thr Ser Ile Leu His Ser Gly Val Pro Ser Arg Phe Ser
        755                 760                 765

Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Gly Asn Leu Glu
    770                 775                 780

Pro Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Phe Asn Lys Leu Pro
785                 790                 795                 800

Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg Thr Val Ala
                805                 810                 815

Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser
            820                 825                 830

Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu
        835                 840                 845

Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser
    850                 855                 860

Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu
865                 870                 875                 880

Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val
                885                 890                 895
```

```
Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys
            900                 905                 910

Ser Phe Asn Arg Gly Glu Cys
        915
```

<210> 20
<211> 1852
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 20

```
Ala Thr Gly Ala Ala Cys Thr Thr Gly Gly Gly Gly Cys Thr Cys Ala
1               5                  10                  15

Gly Cys Thr Thr Gly Ala Thr Thr Thr Thr Cys Cys Thr Thr Gly Thr
            20                  25                  30

Cys Cys Thr Thr Gly Thr Thr Thr Thr Ala Ala Ala Ala Gly Gly Thr
        35                  40                  45

Gly Thr Cys Cys Ala Gly Thr Gly Thr Gly Ala Ala Gly Thr Gly Ala
    50                  55                  60

Ala Gly Cys Thr Gly Gly Thr Gly Gly Ala Gly Thr Cys Thr Gly Gly
65                  70                  75                  80

Gly Gly Gly Ala Gly Gly Cys Thr Thr Ala Gly Thr Gly Cys Ala Gly
                85                  90                  95

Cys Cys Thr Gly Gly Ala Gly Gly Gly Thr Cys Cys Cys Thr Gly Ala
            100                 105                 110

Ala Ala Cys Thr Cys Thr Cys Cys Thr Gly Thr Gly Cys Ala Ala Cys
        115                 120                 125

Cys Thr Cys Thr Gly Gly Ala Thr Thr Cys Ala Cys Thr Thr Thr Cys
    130                 135                 140

Ala Gly Thr Gly Ala Cys Thr Ala Thr Thr Ala Cys Ala Thr Gly Thr
145                 150                 155                 160

Ala Thr Thr Gly Gly Gly Thr Thr Cys Gly Cys Cys Ala Gly Ala Cys
                165                 170                 175
```

```
Thr Cys Cys Ala Gly Ala Gly Ala Ala Gly Ala Gly Gly Cys Thr Gly
            180                 185                 190

Gly Ala Gly Thr Gly Gly Gly Thr Cys Gly Cys Ala Thr Ala Cys Ala
        195                 200                 205

Thr Thr Ala Ala Thr Thr Cys Thr Gly Gly Thr Gly Gly Thr Gly Gly
    210                 215                 220

Thr Ala Gly Cys Ala Cys Cys Thr Ala Thr Thr Ala Thr Cys Cys Ala
225                 230                 235                 240

Gly Ala Cys Ala Cys Thr Gly Thr Ala Ala Ala Gly Gly Gly Cys Cys
                245                 250                 255

Gly Ala Thr Thr Cys Ala Cys Cys Ala Thr Cys Thr Cys Cys Ala Gly
            260                 265                 270

Ala Gly Ala Cys Ala Ala Thr Gly Cys Cys Ala Ala Gly Ala Ala Cys
        275                 280                 285

Ala Cys Cys Cys Thr Gly Thr Ala Cys Cys Thr Gly Cys Ala Ala Ala
    290                 295                 300

Thr Gly Ala Gly Cys Cys Gly Gly Cys Thr Gly Ala Ala Gly Thr Cys
305                 310                 315                 320

Thr Gly Ala Gly Gly Ala Cys Ala Cys Ala Gly Cys Cys Ala Thr Gly
                325                 330                 335

Thr Ala Thr Thr Ala Cys Thr Gly Thr Gly Cys Ala Ala Gly Ala Cys
            340                 345                 350

Gly Gly Gly Gly Gly Thr Thr Ala Cys Cys Gly Thr Thr Cys Cys Ala
        355                 360                 365

Thr Gly Cys Thr Ala Thr Gly Gly Ala Cys Thr Ala Thr Thr Gly Gly
    370                 375                 380

Gly Gly Thr Cys Ala Ala Gly Gly Ala Ala Cys Cys Thr Cys Ala Gly
385                 390                 395                 400

Thr Cys Ala Cys Cys Gly Thr Cys Thr Cys Cys Thr Cys Ala Gly Cys
                405                 410                 415

Cys Ala Ala Ala Ala Cys Gly Ala Ala Gly Gly Gly Cys Cys Cys Ala
            420                 425                 430
```

```
Thr Cys Cys Gly Thr Cys Thr Thr Cys Cys Cys Cys Cys Thr Gly Gly
        435                 440                 445

Cys Gly Cys Cys Cys Thr Gly Cys Thr Cys Cys Ala Gly Gly Ala Gly
    450                 455                 460

Cys Ala Cys Cys Thr Cys Cys Gly Ala Gly Ala Gly Cys Ala Cys Ala
465                 470                 475                 480

Gly Cys Cys Gly Cys Cys Cys Thr Gly Gly Gly Cys Thr Gly Cys Cys
                485                 490                 495

Thr Gly Gly Thr Cys Ala Ala Gly Gly Ala Cys Thr Ala Cys Thr Thr
            500                 505                 510

Cys Cys Cys Cys Gly Ala Ala Cys Cys Gly Gly Thr Gly Ala Cys Gly
        515                 520                 525

Gly Thr Gly Thr Cys Gly Thr Gly Gly Ala Ala Cys Thr Cys Ala Gly
    530                 535                 540

Gly Cys Gly Cys Cys Cys Thr Gly Ala Cys Cys Ala Gly Cys Gly Gly
545                 550                 555                 560

Cys Gly Thr Gly Cys Ala Cys Ala Cys Cys Thr Thr Cys Cys Cys Gly
                565                 570                 575

Gly Cys Thr Gly Thr Cys Cys Thr Ala Cys Ala Gly Thr Cys Cys Thr
            580                 585                 590

Cys Ala Gly Gly Ala Cys Thr Cys Thr Ala Cys Thr Cys Cys Cys Thr
        595                 600                 605

Cys Ala Gly Cys Ala Gly Cys Gly Thr Gly Gly Thr Gly Ala Cys Cys
    610                 615                 620

Gly Thr Gly Cys Cys Cys Thr Cys Cys Ala Gly Cys Ala Gly Cys Thr
625                 630                 635                 640

Thr Gly Gly Gly Cys Ala Cys Gly Ala Ala Gly Ala Cys Cys Thr Ala
                645                 650                 655

Cys Ala Cys Cys Thr Gly Cys Ala Ala Cys Gly Thr Ala Gly Ala Thr
            660                 665                 670

Cys Ala Cys Ala Ala Gly Cys Cys Cys Ala Gly Cys Ala Ala Cys Ala
        675                 680                 685
```

```
Cys Cys Ala Ala Gly Gly Thr Gly Gly Ala Cys Ala Ala Gly Ala Gly
    690                 695                 700

Ala Gly Thr Thr Gly Ala Gly Thr Cys Cys Ala Ala Ala Thr Ala Thr
705                 710                 715                 720

Gly Gly Thr Cys Cys Cys Cys Cys Ala Thr Gly Cys Cys Cys Ala Cys
                725                 730                 735

Cys Cys Thr Gly Cys Cys Cys Ala Gly Cys Ala Cys Cys Thr Gly Ala
            740                 745                 750

Gly Thr Thr Cys Gly Ala Ala Gly Gly Gly Gly Gly Ala Cys Cys Ala
        755                 760                 765

Thr Cys Ala Gly Thr Cys Thr Thr Cys Cys Thr Gly Thr Thr Cys Cys
    770                 775                 780

Cys Cys Cys Cys Ala Ala Ala Ala Cys Cys Cys Ala Ala Gly Gly Ala
785                 790                 795                 800

Cys Ala Cys Thr Cys Thr Cys Ala Thr Gly Ala Thr Cys Thr Cys Cys
                805                 810                 815

Cys Gly Gly Ala Cys Cys Cys Cys Thr Gly Ala Gly Gly Thr Cys Ala
            820                 825                 830

Cys Gly Thr Gly Cys Gly Thr Gly Gly Thr Gly Gly Thr Gly Gly Ala
        835                 840                 845

Cys Gly Thr Gly Ala Gly Cys Cys Ala Gly Gly Ala Ala Gly Ala Cys
    850                 855                 860

Cys Cys Cys Gly Ala Gly Gly Thr Cys Cys Ala Gly Thr Thr Cys Ala
865                 870                 875                 880

Ala Cys Thr Gly Gly Thr Ala Cys Gly Thr Gly Gly Ala Thr Gly Gly
                885                 890                 895

Cys Gly Thr Gly Gly Ala Gly Gly Thr Gly Cys Ala Thr Ala Ala Thr
            900                 905                 910

Gly Cys Cys Ala Ala Gly Ala Cys Ala Ala Ala Gly Cys Cys Gly Cys
        915                 920                 925

Gly Gly Gly Ala Gly Gly Ala Gly Cys Ala Gly Thr Thr Cys Ala Ala
```

930 935 940

Cys Ala Gly Cys Ala Cys Gly Thr Ala Cys Cys Gly Thr Gly Thr Gly
945 950 955 960

Gly Thr Cys Ala Gly Cys Gly Thr Cys Cys Thr Cys Ala Cys Cys Gly
965 970 975

Thr Cys Cys Thr Gly Cys Ala Cys Cys Ala Gly Gly Ala Cys Thr Gly
980 985 990

Gly Cys Thr Gly Ala Ala Cys Gly Gly Cys Ala Ala Gly Gly Ala Gly
995 1000 1005

Thr Ala Cys Ala Ala Gly Thr Gly Cys Ala Ala Gly Gly Thr Cys
1010 1015 1020

Thr Cys Cys Ala Ala Cys Ala Ala Ala Gly Gly Cys Cys Thr Cys
1025 1030 1035

Cys Cys Gly Thr Cys Cys Thr Cys Cys Ala Thr Cys Gly Ala Gly
1040 1045 1050

Ala Ala Ala Ala Cys Cys Ala Thr Cys Thr Cys Cys Ala Ala Ala
1055 1060 1065

Gly Cys Cys Ala Ala Ala Gly Gly Gly Cys Ala Gly Cys Cys Cys
1070 1075 1080

Cys Gly Ala Gly Ala Gly Cys Cys Ala Cys Ala Gly Gly Thr Gly
1085 1090 1095

Thr Ala Cys Ala Cys Cys Cys Thr Gly Cys Cys Cys Cys Cys Ala
1100 1105 1110

Thr Cys Cys Cys Ala Gly Gly Ala Gly Gly Ala Gly Ala Thr Gly
1115 1120 1125

Ala Cys Cys Ala Ala Gly Ala Ala Cys Cys Ala Gly Gly Thr Cys
1130 1135 1140

Ala Gly Cys Cys Thr Gly Ala Cys Cys Thr Gly Cys Cys Thr Gly
1145 1150 1155

Gly Thr Cys Ala Ala Ala Gly Gly Cys Thr Thr Cys Thr Ala Cys
1160 1165 1170

Cys Cys Cys Ala Gly Cys Gly Ala Cys Ala Thr Cys Gly Cys Cys
1175 1180 1185

Gly Thr Gly Gly Ala Gly Thr Gly Gly Gly Ala Gly Ala Gly Cys
1190 1195 1200

Ala Ala Thr Gly Gly Gly Cys Ala Gly Cys Cys Gly Gly Ala Gly
1205 1210 1215

Ala Ala Cys Ala Ala Cys Thr Ala Cys Ala Ala Gly Ala Cys Cys
1220 1225 1230

Ala Cys Gly Cys Cys Thr Cys Cys Cys Gly Thr Gly Cys Thr Gly
1235 1240 1245

Gly Ala Cys Thr Cys Cys Gly Ala Cys Gly Gly Cys Thr Cys Cys
1250 1255 1260

Thr Thr Cys Thr Thr Cys Cys Thr Cys Thr Ala Cys Ala Gly Cys
1265 1270 1275

Ala Gly Gly Cys Thr Ala Ala Cys Cys Gly Thr Gly Gly Ala Cys
1280 1285 1290

Ala Ala Gly Ala Gly Cys Ala Gly Gly Thr Gly Gly Cys Ala Gly
1295 1300 1305

Gly Ala Gly Gly Gly Gly Ala Ala Thr Gly Thr Cys Thr Thr Cys
1310 1315 1320

Thr Cys Ala Thr Gly Cys Thr Cys Cys Gly Thr Gly Ala Thr Gly
1325 1330 1335

Cys Ala Thr Gly Ala Gly Gly Cys Thr Cys Thr Gly Cys Ala Cys
1340 1345 1350

Ala Ala Cys Cys Ala Cys Thr Ala Cys Ala Cys Ala Cys Ala Gly
1355 1360 1365

Ala Ala Gly Ala Gly Cys Cys Thr Cys Thr Cys Cys Cys Thr Gly
1370 1375 1380

Thr Cys Thr Cys Thr Gly Gly Gly Thr Ala Ala Ala Gly Cys Thr
1385 1390 1395

Ala Gly Cys Thr Gly Ala Glu Val Lys Leu Val Glu Ser Gly Gly
1400 1405 1410

Gly Leu Val Gln Pro Gly Gly Ser Leu Lys Leu Ser Cys Ala Thr
1415 1420 1425

Ser Gly Phe Thr Phe Ser Asp Tyr Tyr Met Tyr Trp Val Arg Gln
1430 1435 1440

Thr Pro Glu Lys Arg Leu Glu Trp Val Ala Tyr Ile Asn Ser Gly
1445 1450 1455

Gly Gly Ser Thr Tyr Tyr Pro Asp Thr Val Lys Gly Arg Phe Thr
1460 1465 1470

Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr Leu Gln Met Ser
1475 1480 1485

Arg Leu Lys Ser Glu Asp Thr Ala Met Tyr Tyr Cys Ala Arg Arg
1490 1495 1500

Gly Leu Pro Phe His Ala Met Asp Tyr Trp Gly Gln Gly Thr Ser
1505 1510 1515

Val Thr Val Ser Ser Ala Lys Thr Lys Gly Pro Ser Val Phe Pro
1520 1525 1530

Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu
1535 1540 1545

Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser
1550 1555 1560

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala
1565 1570 1575

Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr
1580 1585 1590

Val Pro Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn Val
1595 1600 1605

Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Ser
1610 1615 1620

Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu
1625 1630 1635

Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
1640 1645 1650

```
Leu Met  Ile Ser Arg Thr Pro  Glu Val Thr Cys Val  Val Val Asp
    1655                 1660                 1665

Val Ser  Gln Glu Asp Pro Glu  Val Gln Phe Asn Trp  Tyr Val Asp
    1670                 1675                 1680

Gly Val  Glu Val His Asn Ala  Lys Thr Lys Pro Arg  Glu Glu Gln
    1685                 1690                 1695

Phe Asn  Ser Thr Tyr Arg Val  Val Ser Val Leu Thr  Val Leu His
    1700                 1705                 1710

Gln Asp  Trp Leu Asn Gly Lys  Glu Tyr Lys Cys Lys  Val Ser Asn
    1715                 1720                 1725

Lys Gly  Leu Pro Ser Ser Ile  Glu Lys Thr Ile Ser  Lys Ala Lys
    1730                 1735                 1740

Gly Gln  Pro Arg Glu Pro Gln  Val Tyr Thr Leu Pro  Pro Ser Gln
    1745                 1750                 1755

Glu Glu  Met Thr Lys Asn Gln  Val Ser Leu Thr Cys  Leu Val Lys
    1760                 1765                 1770

Gly Phe  Tyr Pro Ser Asp Ile  Ala Val Glu Trp Glu  Ser Asn Gly
    1775                 1780                 1785

Gln Pro  Glu Asn Asn Tyr Lys  Thr Thr Pro Pro Val  Leu Asp Ser
    1790                 1795                 1800

Asp Gly  Ser Phe Phe Leu Tyr  Ser Arg Leu Thr Val  Asp Lys Ser
    1805                 1810                 1815

Arg Trp  Gln Glu Gly Asn Val  Phe Ser Cys Ser Val  Met His Glu
    1820                 1825                 1830

Ala Leu  His Asn His Tyr Thr  Gln Lys Ser Leu Ser  Leu Ser Leu
    1835                 1840                 1845

Gly Lys  Ala Ser
    1850
```

<210> 21
<211> 782
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 21

Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Lys Leu Ser Cys Ala Thr Ser Gly Phe Thr Phe Ser Asp Tyr
20 25 30

Tyr Met Tyr Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
35 40 45

Ala Tyr Ile Asn Ser Gly Gly Gly Ser Thr Tyr Tyr Pro Asp Thr Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
65 70 75 80

Leu Gln Met Ser Arg Leu Lys Ser Glu Asp Thr Ala Met Tyr Tyr Cys
85 90 95

Ala Arg Arg Gly Leu Pro Phe His Ala Met Asp Tyr Trp Gly Gln Gly
100 105 110

Thr Ser Val Thr Val Ser Ser Ala Lys Thr Lys Gly Pro Ser Val Phe
115 120 125

Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu
130 135 140

Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp
145 150 155 160

Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu
165 170 175

Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser
180 185 190

Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn Val Asp His Lys Pro
195 200 205

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

Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu Gly Gly Pro Ser Val Phe
225 230 235 240

```
Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
                245                 250                 255

Glu Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp Pro Glu Val
            260                 265                 270

Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
        275                 280                 285

Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val
    290                 295                 300

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
305                 310                 315                 320

Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser
                325                 330                 335

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

Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
        355                 360                 365

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
    370                 375                 380

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
385                 390                 395                 400

Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp
                405                 410                 415

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

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys Ala Ser
        435                 440                 445

Asp Thr Thr Glu Pro Ala Thr Pro Thr Thr Pro Val Thr Thr Asp Thr
    450                 455                 460

Ile Cys Ile Gly Tyr His Ala Asn Asn Ser Thr Asp Thr Val Asp Thr
465                 470                 475                 480

Val Leu Glu Lys Asn Val Thr Val Thr His Ser Val Asn Leu Leu Glu
```

485 490 495

Asp Ser His Asn Gly Lys Leu Cys Arg Leu Lys Gly Ile Ala Pro Leu
500 505 510

Gln Leu Gly Lys Cys Asn Ile Ala Gly Trp Leu Leu Gly Asn Pro Glu
515 520 525

Cys Asp Pro Leu Leu Pro Val Arg Ser Trp Ser Tyr Ile Val Glu Thr
530 535 540

Pro Asn Ser Glu Asn Gly Ile Cys Tyr Pro Gly Asp Phe Ile Asp Tyr
545 550 555 560

Glu Glu Leu Arg Glu Gln Leu Ser Ser Val Ser Ser Phe Glu Arg Phe
565 570 575

Glu Ile Phe Pro Lys Glu Ser Ser Trp Pro Asn His Asn Thr Asn Gly
580 585 590

Val Thr Ala Ala Cys Ser His Glu Gly Lys Ser Ser Phe Tyr Arg Asn
595 600 605

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

Ser Tyr Val Asn Lys Lys Gly Lys Glu Val Leu Val Leu Trp Gly Ile
625 630 635 640

His His Pro Pro Asn Ser Lys Glu Gln Gln Asn Leu Tyr Gln Asn Glu
645 650 655

Asn Ala Tyr Val Ser Val Val Thr Ser Asn Tyr Asn Arg Arg Phe Thr
660 665 670

Pro Glu Ile Ala Glu Arg Pro Lys Val Arg Asp Gln Ala Gly Arg Met
675 680 685

Asn Tyr Tyr Trp Thr Leu Leu Lys Pro Gly Asp Thr Ile Ile Phe Glu
690 695 700

Ala Asn Gly Asn Leu Ile Ala Pro Met Tyr Ala Phe Ala Leu Ser Arg
705 710 715 720

Gly Phe Gly Ser Gly Ile Ile Thr Ser Asn Ala Ser Met His Glu Cys
725 730 735

```
Asn Thr Lys Cys Gln Thr Pro Leu Gly Ala Ile Asn Ser Ser Leu Pro
            740                 745                 750

Tyr Gln Asn Ile His Pro Val Thr Ile Gly Glu Cys Leu Lys Tyr Val
        755                 760                 765

Arg Ser Ala Lys Leu Arg Met Val His His His His His His
    770                 775                 780
```

<210> 22
<211> 523
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 22

```
Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1               5                   10                  15

Ser Leu Lys Leu Ser Cys Ala Thr Ser Gly Phe Thr Phe Ser Asp Tyr
            20                  25                  30

Tyr Met Tyr Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
        35                  40                  45

Ala Tyr Ile Asn Ser Gly Gly Gly Ser Thr Tyr Tyr Pro Asp Thr Val
    50                  55                  60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
65                  70                  75                  80

Leu Gln Met Ser Arg Leu Lys Ser Glu Asp Thr Ala Met Tyr Tyr Cys
                85                  90                  95

Ala Arg Arg Gly Leu Pro Phe His Ala Met Asp Tyr Trp Gly Gln Gly
            100                 105                 110

Thr Ser Val Thr Val Ser Ser Ala Lys Thr Lys Gly Pro Ser Val Phe
        115                 120                 125

Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu
    130                 135                 140

Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp
145                 150                 155                 160

Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu
```

```
                165                 170                 175

Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser
            180                 185                 190

Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn Val Asp His Lys Pro
        195                 200                 205

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

Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu Gly Gly Pro Ser Val Phe
225                 230                 235                 240

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
                245                 250                 255

Glu Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp Pro Glu Val
            260                 265                 270

Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
        275                 280                 285

Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val
    290                 295                 300

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
305                 310                 315                 320

Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser
                325                 330                 335

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

Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
        355                 360                 365

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
    370                 375                 380

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
385                 390                 395                 400

Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp
                405                 410                 415
```

```
Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
            420                 425                 430

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys Ala Ser
        435                 440                 445

Asn Ser Pro Gln Asn Glu Val Leu Tyr Gly Asp Val Asn Asp Asp Gly
    450                 455                 460

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

Ala Val Ser Thr Leu Pro Ser Ser Lys Ala Glu Lys Asn Ala Asp Val
                485                 490                 495

Asn Arg Asp Gly Arg Val Asp Ser Ser Asp Val Thr Ile Leu Ser Arg
            500                 505                 510

Tyr Leu Ile Arg Val Ile Glu Lys Leu Pro Ile
        515                 520
```

<210> 23
<211> 430
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 23

```
Met Asp Leu Asp Ala Val Arg Ile Lys Val Asp Thr Val Asn Ala Lys
1               5                   10                  15

Pro Gly Asp Thr Val Asn Ile Pro Val Arg Phe Ser Gly Ile Pro Ser
            20                  25                  30

Lys Gly Ile Ala Asn Cys Asp Phe Val Tyr Ser Tyr Asp Pro Asn Val
        35                  40                  45

Leu Glu Ile Ile Glu Ile Lys Pro Gly Glu Leu Ile Val Asp Pro Asn
    50                  55                  60

Pro Thr Lys Ser Phe Asp Thr Ala Val Tyr Pro Asp Arg Lys Met Ile
65                  70                  75                  80

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

Lys Asp Gly Val Phe Ala Thr Ile Val Ala Lys Val Lys Glu Gly Ala
```

```
            100                 105                 110

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

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

Asn Val Gly Asp Thr Thr Glu Pro Ala Thr Pro Thr Thr Pro Val Thr
145                 150                 155                 160

Thr Pro Thr Thr Thr Asp Asp Leu Asp Ala Ala Ser Leu Leu Thr Glu
                165                 170                 175

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

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

Leu Glu Val Leu Met Glu Trp Leu Lys Thr Arg Pro Ile Leu Ser Pro
    210                 215                 220

Leu Thr Lys Gly Ile Leu Gly Phe Val Phe Thr Leu Thr Val Pro Ser
225                 230                 235                 240

Glu Arg Gly Leu Gln Arg Arg Arg Phe Val Gln Asn Ala Leu Asn Gly
                245                 250                 255

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

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

Tyr Ser Ala Gly Ala Leu Ala Ser Cys Met Gly Leu Ile Tyr Asn Arg
    290                 295                 300

Met Gly Ala Val Thr Thr Glu Val Ala Phe Gly Leu Val Cys Ala Thr
305                 310                 315                 320

Cys Glu Gln Ile Ala Asp Ser Gln His Arg Ser His Arg Gln Met Val
                325                 330                 335

Thr Thr Thr Asn Pro Leu Ile Arg His Glu Asn Arg Met Val Leu Ala
            340                 345                 350
```

```
Ser Thr Thr Ala Lys Ala Met Glu Gln Met Ala Gly Ser Ser Glu Gln
        355                 360                 365

Ala Ala Glu Ala Met Asp Ile Ala Ser Gln Ala Arg Gln Met Val Gln
    370                 375                 380

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

Asp Asp Leu Leu Glu Asn Leu Gln Ala Tyr Gln Lys Arg Met Gly Val
                405                 410                 415

Gln Met Gln Arg Phe Lys Leu Glu His His His His His His
            420                 425                 430
```

<210> 24
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 24

```
Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly
1               5                   10                  15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
            20                  25                  30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
        35                  40                  45

Tyr Tyr Thr Ser Ile Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Gly Asn Leu Glu Pro
65                  70                  75                  80

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

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

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
        115                 120                 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
```

130 135 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145 150 155 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
165 170 175

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

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

Phe Asn Arg Gly Glu Cys
210

<210> 25
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 25

Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

His Tyr Thr Ser Ile Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

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

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

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

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
115 120 125

```
Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
    130                 135                 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145                 150                 155                 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
                165                 170                 175

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

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

Phe Asn Arg Gly Glu Cys
    210
```

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

<220>
<223> Artificial Sequence

<400> 26

```
Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly
1               5                   10                  15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
            20                  25                  30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
        35                  40                  45

His Tyr Thr Ser Ile Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

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

Asp Ile Ala Thr Tyr Phe Cys Gln Gln Phe Asn Lys Leu Pro Pro Thr
                85                  90                  95

Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg Thr Val Ala Ala Pro
            100                 105                 110
```

```
Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly Thr
        115                 120                 125

Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys
    130                 135                 140

Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu
145                 150                 155                 160

Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser Ser
                165                 170                 175

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

Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser Phe
        195                 200                 205

Asn Arg Gly Glu Cys
    210
```

<210> 27
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 27

```
Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly
1               5                   10                  15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
            20                  25                  30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
        35                  40                  45

His Tyr Thr Ser Ile Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

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

Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Phe Asn Lys Pro Pro Pro
                85                  90                  95
```

```
Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg Thr Val Ala Ala
            100                 105                 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
        115                 120                 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
    130                 135                 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145                 150                 155                 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
                165                 170                 175

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

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

Phe Asn Arg Gly Glu Cys
    210
```

<210> 28
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 28

```
Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Thr Ser Leu Gly
1               5                   10                  15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
            20                  25                  30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
        35                  40                  45

His Tyr Thr Ser Ile Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

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

Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Phe Asn Lys Leu Pro Pro
```

```
                85                  90                  95

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

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
        115                 120                 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
    130                 135                 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145                 150                 155                 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
                165                 170                 175

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

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

Phe Asn Arg Gly Glu Cys
    210
```

<210> 29
<211> 448
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 29

```
Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1               5                   10                  15

Ser Leu Lys Leu Ser Cys Ala Thr Ser Gly Phe Thr Phe Ser Asp Tyr
            20                  25                  30

Tyr Met Tyr Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
        35                  40                  45

Ala Tyr Ile Asn Ser Gly Gly Gly Ser Thr Tyr Tyr Pro Asp Thr Val
    50                  55                  60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
65                  70                  75                  80
```

```
Leu Gln Met Ser Arg Leu Lys Ser Glu Asp Thr Ala Met Tyr Tyr Cys
                85                  90                  95

Ala Arg Arg Gly Leu Pro Phe His Ala Met Asp Tyr Trp Gly Gln Gly
            100                 105                 110

Thr Ser Val Thr Val Ser Ser Ala Lys Thr Lys Gly Pro Ser Val Phe
        115                 120                 125

Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu
    130                 135                 140

Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp
145                 150                 155                 160

Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu
                165                 170                 175

Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser
            180                 185                 190

Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn Val Asp His Lys Pro
        195                 200                 205

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

Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu Gly Gly Pro Ser Val Phe
225                 230                 235                 240

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
                245                 250                 255

Glu Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp Pro Glu Val
            260                 265                 270

Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
        275                 280                 285

Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val
    290                 295                 300

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
305                 310                 315                 320

Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser
```

325 330 335

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

Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
355 360 365

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
370 375 380

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
385 390 395 400

Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp
405 410 415

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

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys Ala Ser
435 440 445

<210> 30
<211> 448
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 30

Glu Val Asn Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Lys Val Ser Cys Val Thr Ser Gly Phe Thr Phe Ser Asp Tyr
20 25 30

Tyr Met Tyr Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
35 40 45

Ala Tyr Ile Asn Ser Gly Gly Gly Ser Thr Tyr Tyr Pro Asp Thr Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65 70 75 80

Leu Gln Met Ser Arg Leu Lys Ser Glu Asp Thr Ala Met Tyr Tyr Cys
85 90 95

```
Ala Arg Arg Gly Leu Pro Phe His Ala Met Asp Tyr Trp Gly Gln Gly
            100                 105                 110

Thr Leu Val Thr Val Ser Val Ala Ser Thr Lys Gly Pro Ser Val Phe
        115                 120                 125

Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu
    130                 135                 140

Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp
145                 150                 155                 160

Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu
                165                 170                 175

Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser
            180                 185                 190

Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn Val Asp His Lys Pro
        195                 200                 205

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

Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu Gly Gly Pro Ser Val Phe
225                 230                 235                 240

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
                245                 250                 255

Glu Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp Pro Glu Val
            260                 265                 270

Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
        275                 280                 285

Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val
    290                 295                 300

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
305                 310                 315                 320

Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser
                325                 330                 335

Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
```

340 345 350

Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
355 360 365

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
370 375 380

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
385 390 395 400

Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp
405 410 415

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

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys Ala Ser
435 440 445

<210> 31
<211> 1100
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 31

Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Lys Leu Ser Cys Ala Thr Ser Gly Phe Thr Phe Ser Asp Tyr
20 25 30

Tyr Met Tyr Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
35 40 45

Ala Tyr Ile Asn Ser Gly Gly Gly Ser Thr Tyr Tyr Pro Asp Thr Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
65 70 75 80

Leu Gln Met Ser Arg Leu Lys Ser Glu Asp Thr Ala Met Tyr Tyr Cys
85 90 95

Ala Arg Arg Gly Leu Pro Phe His Ala Met Asp Tyr Trp Gly Gln Gly
100 105 110

```
Thr Ser Val Thr Val Ser Ser Ala Lys Thr Lys Gly Pro Ser Val Phe
        115                 120                 125

Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu
    130                 135                 140

Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp
145                 150                 155                 160

Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu
                165                 170                 175

Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser
            180                 185                 190

Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn Val Asp His Lys Pro
        195                 200                 205

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

Cys Pro Pro Cys Pro Ala Pro Glu Phe Glu Gly Gly Pro Ser Val Phe
225                 230                 235                 240

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
                245                 250                 255

Glu Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp Pro Glu Val
            260                 265                 270

Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
        275                 280                 285

Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val
    290                 295                 300

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
305                 310                 315                 320

Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser
                325                 330                 335

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

Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
```

```
        355                 360                 365

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
    370                 375                 380

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
385                 390                 395                 400

Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp
                405                 410                 415

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

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys Ala Ser
        435                 440                 445

Gln Thr Pro Thr Asn Thr Ile Ser Val Thr Pro Thr Asn Asn Ser Thr
    450                 455                 460

Pro Thr Asn Asn Ser Asn Pro Lys Pro Asn Pro Ala Ser Leu Glu Met
465                 470                 475                 480

Gly Ala Arg Ala Ser Ile Leu Ser Gly Gly Glu Leu Asp Arg Trp Glu
                485                 490                 495

Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys His
            500                 505                 510

Ile Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro Gly
        515                 520                 525

Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu Gln
    530                 535                 540

Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn Thr
545                 550                 555                 560

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

Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Val Asp
            580                 585                 590

Thr Val Thr Pro Thr Ala Thr Ala Thr Pro Ser Ala Ile Val Thr Thr
        595                 600                 605
```

```
Ile Thr Pro Thr Ala Thr Thr Lys Pro Val Asp Met Gly Gly Lys Trp
    610                 615                 620

Ser Lys Arg Ser Val Val Gly Trp Pro Thr Val Arg Glu Arg Met Arg
625                 630                 635                 640

Arg Ala Glu Pro Ala Ala Asp Gly Val Gly Ala Val Ser Arg Asp Leu
                645                 650                 655

Glu Lys His Gly Ala Ile Thr Ser Ser Asn Thr Ala Ala Asn Asn Ala
            660                 665                 670

Asp Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu Glu Val Gly Phe Pro
        675                 680                 685

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

Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly Leu Glu Gly Leu Ile
705                 710                 715                 720

Tyr Ser Gln Lys Arg Gln Asp Ile Leu Asp Leu Trp Val Tyr His Thr
                725                 730                 735

Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr Pro Gly Pro Gly Ile
            740                 745                 750

Arg Tyr Pro Leu Thr Phe Gly Trp Cys Phe Lys Leu Val Pro Val Glu
        755                 760                 765

Pro Glu Lys Val Glu Glu Ala Asn Glu Gly Glu Asn Asn Ser Leu Leu
    770                 775                 780

His Pro Met Ser Leu His Gly Met Asp Asp Pro Glu Arg Glu Val Leu
785                 790                 795                 800

Val Trp Lys Phe Asp Ser Arg Leu Ala Phe His His Met Ala Arg Glu
                805                 810                 815

Leu His Pro Glu Tyr Tyr Lys Asp Cys Glu Phe Thr Asn Gly Ser Ile
            820                 825                 830

Thr Val Ala Ala Thr Ala Pro Thr Val Thr Pro Thr Val Asn Ala Thr
        835                 840                 845

Pro Ser Ala Ala Gln Phe Ala Gln Gln Ala Ala Ala Asp Thr Gly His
    850                 855                 860
```

```
Ser Asn Gln Val Ser Gln Asn Tyr Pro Ile Val Gln Asn Ile Gln Gly
865                 870                 875                 880

Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val
                885                 890                 895

Lys Val Val Glu Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe
            900                 905                 910

Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu
        915                 920                 925

Asn Thr Val Gly Gly His Gln Ala Ala Met Gln Met Leu Lys Glu Thr
    930                 935                 940

Ile Asn Glu Glu Ala Ala Glu Trp Asp Arg Val His Pro Val His Ala
945                 950                 955                 960

Gly Pro Ile Ala Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile
                965                 970                 975

Ala Gly Thr Thr Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr His
            980                 985                 990

Asn Pro Pro Ile Pro Val Gly Glu  Ile Tyr Lys Arg Trp  Ile Ile Leu
        995                 1000                1005

Gly Leu  Asn Lys Ile Val Arg  Met Tyr Ser Pro Thr  Ser Ile Leu
    1010                1015                1020

Asp Ile  Arg Gln Gly Pro Lys  Glu Pro Phe Arg Asp  Tyr Val Asp
    1025                1030                1035

Arg Phe  Tyr Lys Thr Leu Arg  Ala Glu Gln Ala Ser  Gln Glu Val
    1040                1045                1050

Lys Asn  Trp Met Thr Glu Thr  Leu Leu Val Gln Asn  Ala Asn Pro
    1055                1060                1065

Asp Cys  Lys Thr Ile Leu Lys  Ala Leu Gly Pro Gly  Ala Thr Leu
    1070                1075                1080

Glu Glu  Met Met Thr Ala Cys  Gln Gly Val Gly His  His His His
    1085                1090                1095

His His
    1100
```

<210> 32
<211> 475
<212> PRT
<213> Artificial Sequence

<220>
<223> Artificial Sequence

<400> 32

```
Met Asp Leu Asp Ala Val Arg Ile Lys Val Asp Thr Val Asn Ala Lys
1               5                  10                  15

Pro Gly Asp Thr Val Asn Ile Pro Val Arg Phe Ser Gly Ile Pro Ser
            20                  25                  30

Lys Gly Ile Ala Asn Cys Asp Phe Val Tyr Ser Tyr Asp Pro Asn Val
        35                  40                  45

Leu Glu Ile Ile Glu Ile Lys Pro Gly Glu Leu Ile Val Asp Pro Asn
    50                  55                  60

Pro Thr Lys Ser Phe Asp Thr Ala Val Tyr Pro Asp Arg Lys Met Ile
65                  70                  75                  80

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

Lys Asp Gly Val Phe Ala Thr Ile Val Ala Lys Val Lys Glu Gly Ala
            100                 105                 110

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

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

Asn Val Gly Asp Thr Thr Glu Pro Ala Thr Pro Thr Thr Pro Val Thr
145                 150                 155                 160

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

His Gln Leu Leu Cys Cys Glu Val Glu Thr Ile Arg Arg Ala Tyr Pro
            180                 185                 190

Asp Ala Asn Leu Leu Asn Asp Arg Val Leu Arg Ala Met Leu Lys Ala
        195                 200                 205
```

```
Glu Glu Thr Cys Ala Pro Ser Val Ser Tyr Phe Lys Cys Val Gln Lys
    210                 215                 220

Glu Val Leu Pro Ser Met Arg Lys Ile Val Ala Thr Trp Met Leu Glu
225                 230                 235                 240

Val Cys Glu Glu Gln Lys Cys Glu Glu Glu Val Phe Pro Leu Ala Met
                245                 250                 255

Asn Tyr Leu Asp Arg Phe Leu Ser Leu Glu Pro Val Lys Lys Ser Arg
            260                 265                 270

Leu Gln Leu Leu Gly Ala Thr Cys Met Phe Val Ala Ser Lys Met Lys
        275                 280                 285

Glu Thr Ile Pro Leu Thr Ala Glu Lys Leu Cys Ile Tyr Thr Asp Asn
    290                 295                 300

Ser Ile Arg Pro Glu Glu Leu Leu Gln Met Glu Leu Leu Leu Val Asn
305                 310                 315                 320

Lys Leu Lys Trp Asn Leu Ala Ala Met Thr Pro His Asp Phe Ile Glu
                325                 330                 335

His Phe Leu Ser Lys Met Pro Glu Ala Glu Glu Asn Lys Gln Ile Ile
            340                 345                 350

Arg Lys His Ala Gln Thr Phe Val Ala Leu Cys Ala Thr Asp Val Lys
        355                 360                 365

Phe Ile Ser Asn Pro Pro Ser Met Val Ala Ala Gly Ser Val Val Ala
    370                 375                 380

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

Tyr Arg Leu Thr Arg Phe Leu Ser Arg Val Ile Lys Cys Asp Pro Asp
                405                 410                 415

Cys Leu Arg Ala Cys Gln Glu Gln Ile Glu Ala Leu Leu Glu Ser Ser
            420                 425                 430

Leu Arg Gln Ala Gln Gln Asn Met Asp Pro Lys Ala Ala Glu Glu Glu
        435                 440                 445

Glu Glu Glu Glu Glu Glu Val Asp Leu Ala Cys Thr Pro Thr Asp Val
    450                 455                 460
```

```
Arg Asp Val Asp Ile His His His His His His
465                 470                 475
```