SEQUENCE LISTING

<110> Talecris Biotherapeutics, Inc.
Barnett, Thomas

<120> COMPOSITIONS, METHODS, AND KITS

<130> T126 2110PCT

<150> 61/261,145
<151> 2009-11-13

<160> 43

<170> PatentIn version 3.5

<210> 1
<211> 484
<212> PRT
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Ser Leu Ser Cys Arg Pro Pro Met Val Lys Leu Val Cys Pro Ala Asp
1 5 10 15

Asn Leu Arg Ala Glu Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn Tyr
20 25 30

Asp Leu Glu Cys Met Ser Met Gly Cys Val Ser Gly Cys Leu Cys Pro
35 40 45

Pro Gly Met Val Arg His Glu Asn Arg Cys Val Ala Leu Glu Arg Cys
50 55 60

Pro Cys Phe His Gln Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val Lys
65 70 75 80

Ile Gly Cys Asn Thr Cys Val Cys Arg Asp Arg Lys Trp Asn Cys Thr
85 90 95

Asp His Val Cys Asp Ala Thr Cys Ser Thr Ile Gly Met Ala His Tyr
100 105 110

Leu Thr Phe Asp Gly Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln Tyr
115 120 125

Val Leu Val Gln Asp Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg Ile
130 135 140

Leu Val Gly Asn Lys Gly Cys Ser His Pro Ser Val Lys Cys Lys Lys

```
145                 150                 155                 160

Arg Val Thr Ile Leu Val Glu Gly Gly Glu Ile Glu Leu Phe Asp Gly
                165                 170                 175

Glu Val Asn Val Lys Arg Pro Met Lys Asp Glu Thr His Phe Glu Val
            180                 185                 190

Val Glu Ser Gly Arg Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu Ser
        195                 200                 205

Val Val Trp Asp Arg His Leu Ser Ile Ser Val Val Leu Lys Gln Thr
    210                 215                 220

Tyr Gln Glu Lys Val Cys Gly Leu Cys Gly Asn Phe Asp Gly Ile Gln
225                 230                 235                 240

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

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

Lys Val Pro Leu Asp Ser Ser Pro Ala Thr Cys His Asn Asn Ile Met
        275                 280                 285

Lys Gln Thr Met Val Asp Ser Ser Cys Arg Ile Leu Thr Ser Asp Val
    290                 295                 300

Phe Gln Asp Cys Asn Lys Leu Val Asp Pro Glu Pro Tyr Leu Asp Val
305                 310                 315                 320

Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser Ile Gly Asp Cys Ala Cys
                325                 330                 335

Phe Cys Asp Thr Ile Ala Ala Tyr Ala His Val Cys Ala Gln His Gly
            340                 345                 350

Lys Val Val Thr Trp Arg Thr Ala Thr Leu Cys Pro Gln Ser Cys Glu
        355                 360                 365

Glu Arg Asn Leu Arg Glu Asn Gly Tyr Glu Cys Glu Trp Arg Tyr Asn
    370                 375                 380

Ser Cys Ala Pro Ala Cys Gln Val Thr Cys Gln His Pro Glu Pro Leu
385                 390                 395                 400
```

```
Ala Cys Pro Val Gln Cys Val Glu Gly Cys His Ala His Cys Pro Pro
                405                 410                 415

Gly Lys Ile Leu Asp Glu Leu Leu Gln Thr Cys Val Asp Pro Glu Asp
            420                 425                 430

Cys Pro Val Cys Glu Val Ala Gly Arg Arg Phe Ala Ser Gly Lys Lys
        435                 440                 445

Val Thr Leu Asn Pro Ser Asp Pro Glu His Cys Gln Ile Cys His Cys
    450                 455                 460

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

Val Val Pro Pro
```

<210> 2
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<212> PRT
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<400> 2

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

Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn
            20                  25                  30

Tyr Asp Leu Glu Cys Met Ser Met Gly Cys Val Ser Gly Cys Leu Cys
        35                  40                  45

Pro Pro Gly Met Val Arg His Glu Asn Arg Cys Val Ala Leu Glu Arg
    50                  55                  60

Cys Pro Cys Phe His Gln Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val
65                  70                  75                  80

Lys Ile Gly Cys Asn Thr Cys Val Cys Arg Asp Arg Lys Trp Asn Cys
                85                  90                  95

Thr Asp His Val Cys Asp Ala Thr Cys Ser Thr Ile Gly Met Ala His
            100                 105                 110

Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln
```

```
        115                 120                 125

Tyr Val Leu Val Gln Asp Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg
    130                 135                 140

Ile Leu Val Gly Asn Lys Gly Cys Ser His Pro Ser Val Lys Cys Lys
145                 150                 155                 160

Lys Arg Val Thr Ile Leu Val Glu Gly Gly Glu Ile Glu Leu Phe Asp
                165                 170                 175

Gly Glu Val Asn Val Lys Arg Pro Met Lys Asp Glu Thr His Phe Glu
            180                 185                 190

Val Val Glu Ser Gly Arg Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu
        195                 200                 205

Ser Val Val Trp Asp Arg His Leu Ser Ile Ser Val Val Leu Lys Gln
    210                 215                 220

Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys Gly Asn Phe Asp Gly Ile
225                 230                 235                 240

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

Val Asp Phe Gly Asn Ser Trp Lys Val Ser Ser Gln Cys Ala Asp Thr
            260                 265                 270

Arg Lys Val Pro Leu Asp Ser Ser Pro Ala Thr Cys His Asn Asn Ile
        275                 280                 285

Met Lys Gln Thr Met Val Asp Ser Ser Cys Arg Ile Leu Thr Ser Asp
    290                 295                 300

Val Phe Gln Asp Cys Asn Lys Leu Val Asp Pro Glu Pro Tyr Leu Asp
305                 310                 315                 320

Val Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser Ile Gly Asp Cys Ala
                325                 330                 335

Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala His Val Cys Ala Gln His
            340                 345                 350

Gly Lys Val Val Thr Trp Arg Thr Ala Thr Leu Cys Pro Gln Ser Cys
        355                 360                 365
```

```
Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr Glu Cys Glu Trp Arg Tyr
    370                 375                 380

Asn Ser Cys Ala Pro Ala Cys Gln Val Thr Cys Gln His Pro Glu Pro
385                 390                 395                 400

Leu Ala Cys Pro Val Gln Cys Val Glu Gly Cys His Ala His Cys Pro
                405                 410                 415

Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln Thr Cys Val Asp Pro Glu
            420                 425                 430

Asp Cys Pro Val Cys Glu Val Ala Gly Arg Arg Phe Ala Ser Gly Lys
        435                 440                 445

Lys Val Thr Leu Asn Pro Ser Asp Pro Glu His Cys Gln Ile Cys His
    450                 455                 460

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

Leu Val Val Pro Pro
                485
```

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

<220>
<223> sequence

<400> 3

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Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1               5                   10                  15

Leu Pro Gly Thr Leu Cys Ala Ser Leu Ser Cys Arg Pro Pro Met Val
            20                  25                  30

Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys
        35                  40                  45

Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met Ser Met Gly Cys
    50                  55                  60

Val Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg His Glu Asn Arg
65                  70                  75                  80

Cys Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln Gly Lys Glu Tyr
```

85 90 95

Ala Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr Cys Val Cys Arg
100 105 110

Asp Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp Ala Thr Cys Ser
115 120 125

Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu
130 135 140

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

Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys Gly Cys Ser His
165 170 175

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

Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys Arg Pro Met Lys
195 200 205

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

Leu Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg His Leu Ser Ile
225 230 235 240

Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys
245 250 255

Gly Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr Ser Ser Asn Leu
260 265 270

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

Ser Gln Cys Ala Asp Thr Arg Lys Val Pro Leu Asp Ser Ser Pro Ala
290 295 300

Thr Cys His Asn Asn Ile Met Lys Gln Thr Met Val Asp Ser Ser Cys
305 310 315 320

Arg Ile Leu Thr Ser Asp Val Phe Gln Asp Cys Asn Lys Leu Val Asp
325 330 335

```
Pro Glu Pro Tyr Leu Asp Val Cys Ile Tyr Asp Thr Cys Ser Cys Glu
            340                 345                 350

Ser Ile Gly Asp Cys Ala Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala
        355                 360                 365

His Val Cys Ala Gln His Gly Lys Val Val Thr Trp Arg Thr Ala Thr
    370                 375                 380

Leu Cys Pro Gln Ser Cys Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr
385                 390                 395                 400

Glu Cys Glu Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr
                405                 410                 415

Cys Gln His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly
            420                 425                 430

Cys His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln
        435                 440                 445

Thr Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly Arg
    450                 455                 460

Arg Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp Pro Glu
465                 470                 475                 480

His Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr Cys Glu Ala
                485                 490                 495

Cys Gln Glu Pro Gly Gly Leu Val Val Pro Pro
            500                 505


<210>  4
<211>  718
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  sequence

<400>  4

Ser Leu Ser Cys Arg Pro Pro Met Val Lys Leu Val Cys Pro Ala Asp
1               5                   10                  15

Asn Leu Arg Ala Glu Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn Tyr
            20                  25                  30

Asp Leu Glu Cys Met Ser Met Gly Cys Val Ser Gly Cys Leu Cys Pro
```

```
        35                  40                  45

Pro Gly Met Val Arg His Glu Asn Arg Cys Val Ala Leu Glu Arg Cys
    50                  55                  60

Pro Cys Phe His Gln Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val Lys
65                  70                  75                  80

Ile Gly Cys Asn Thr Cys Val Cys Arg Asp Arg Lys Trp Asn Cys Thr
                85                  90                  95

Asp His Val Cys Asp Ala Thr Cys Ser Thr Ile Gly Met Ala His Tyr
            100                 105                 110

Leu Thr Phe Asp Gly Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln Tyr
        115                 120                 125

Val Leu Val Gln Asp Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg Ile
    130                 135                 140

Leu Val Gly Asn Lys Gly Cys Ser His Pro Ser Val Lys Cys Lys Lys
145                 150                 155                 160

Arg Val Thr Ile Leu Val Glu Gly Gly Glu Ile Glu Leu Phe Asp Gly
                165                 170                 175

Glu Val Asn Val Lys Arg Pro Met Lys Asp Glu Thr His Phe Glu Val
            180                 185                 190

Val Glu Ser Gly Arg Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu Ser
        195                 200                 205

Val Val Trp Asp Arg His Leu Ser Ile Ser Val Val Leu Lys Gln Thr
    210                 215                 220

Tyr Gln Glu Lys Val Cys Gly Leu Cys Gly Asn Phe Asp Gly Ile Gln
225                 230                 235                 240

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

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

Lys Val Pro Leu Asp Ser Ser Pro Ala Thr Cys His Asn Asn Ile Met
        275                 280                 285
```

```
Lys Gln Thr Met Val Asp Ser Ser Cys Arg Ile Leu Thr Ser Asp Val
    290                 295                 300

Phe Gln Asp Cys Asn Lys Leu Val Asp Pro Glu Pro Tyr Leu Asp Val
305                 310                 315                 320

Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser Ile Gly Asp Cys Ala Cys
                325                 330                 335

Phe Cys Asp Thr Ile Ala Ala Tyr Ala His Val Cys Ala Gln His Gly
            340                 345                 350

Lys Val Val Thr Trp Arg Thr Ala Thr Leu Cys Pro Gln Ser Cys Glu
        355                 360                 365

Glu Arg Asn Leu Arg Glu Asn Gly Tyr Glu Cys Glu Trp Arg Tyr Asn
    370                 375                 380

Ser Cys Ala Pro Ala Cys Gln Val Thr Cys Gln His Pro Glu Pro Leu
385                 390                 395                 400

Ala Cys Pro Val Gln Cys Val Glu Gly Cys His Ala His Cys Pro Pro
                405                 410                 415

Gly Lys Ile Leu Asp Glu Leu Leu Gln Thr Cys Val Asp Pro Glu Asp
            420                 425                 430

Cys Pro Val Cys Glu Val Ala Gly Arg Arg Phe Ala Ser Gly Lys Lys
        435                 440                 445

Val Thr Leu Asn Pro Ser Asp Pro Glu His Cys Gln Ile Cys His Cys
    450                 455                 460

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

Val Val Pro Pro Thr Asp Ala Pro Val Ser Pro Thr Thr Leu Tyr Val
                485                 490                 495

Glu Asp Ile Ser Glu Pro Pro Leu His Asp Phe Tyr Cys Ser Arg Leu
            500                 505                 510

Leu Asp Leu Val Phe Leu Leu Asp Gly Ser Ser Arg Leu Ser Glu Ala
        515                 520                 525

Glu Phe Glu Val Leu Lys Ala Phe Val Val Asp Met Met Glu Arg Leu
    530                 535                 540
```

```
Arg Ile Ser Gln Lys Trp Val Arg Val Ala Val Val Glu Tyr His Asp
545                 550                 555                 560

Gly Ser His Ala Tyr Ile Gly Leu Lys Asp Arg Lys Arg Pro Ser Glu
                565                 570                 575

Leu Arg Arg Ile Ala Ser Gln Val Lys Tyr Ala Gly Ser Gln Val Ala
            580                 585                 590

Ser Thr Ser Glu Val Leu Lys Tyr Thr Leu Phe Gln Ile Phe Ser Lys
        595                 600                 605

Ile Asp Arg Pro Glu Ala Ser Arg Ile Ala Leu Leu Leu Met Ala Ser
    610                 615                 620

Gln Glu Pro Gln Arg Met Ser Arg Asn Phe Val Arg Tyr Val Gln Gly
625                 630                 635                 640

Leu Lys Lys Lys Lys Val Ile Val Ile Pro Val Gly Ile Gly Pro His
                645                 650                 655

Ala Asn Leu Lys Gln Ile Arg Leu Ile Glu Lys Gln Ala Pro Glu Asn
            660                 665                 670

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

Glu Ile Val Ser Tyr Leu Cys Asp Leu Ala Pro Glu Ala Pro Pro Pro
    690                 695                 700

Thr Leu Pro Pro His Met Ala Gln Val Thr Val Gly Pro Gly
705                 710                 715
```

<210> 5
<211> 719
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 5

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

Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn
            20                  25                  30
```

```
Tyr Asp Leu Glu Cys Met Ser Met Gly Cys Val Ser Gly Cys Leu Cys
        35                  40                  45

Pro Pro Gly Met Val Arg His Glu Asn Arg Cys Val Ala Leu Glu Arg
    50                  55                  60

Cys Pro Cys Phe His Gln Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val
65                  70                  75                  80

Lys Ile Gly Cys Asn Thr Cys Val Cys Arg Asp Arg Lys Trp Asn Cys
                85                  90                  95

Thr Asp His Val Cys Asp Ala Thr Cys Ser Thr Ile Gly Met Ala His
            100                 105                 110

Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln
        115                 120                 125

Tyr Val Leu Val Gln Asp Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg
    130                 135                 140

Ile Leu Val Gly Asn Lys Gly Cys Ser His Pro Ser Val Lys Cys Lys
145                 150                 155                 160

Lys Arg Val Thr Ile Leu Val Glu Gly Gly Glu Ile Glu Leu Phe Asp
                165                 170                 175

Gly Glu Val Asn Val Lys Arg Pro Met Lys Asp Glu Thr His Phe Glu
            180                 185                 190

Val Val Glu Ser Gly Arg Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu
        195                 200                 205

Ser Val Val Trp Asp Arg His Leu Ser Ile Ser Val Val Leu Lys Gln
    210                 215                 220

Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys Gly Asn Phe Asp Gly Ile
225                 230                 235                 240

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

Val Asp Phe Gly Asn Ser Trp Lys Val Ser Ser Gln Cys Ala Asp Thr
            260                 265                 270

Arg Lys Val Pro Leu Asp Ser Ser Pro Ala Thr Cys His Asn Asn Ile
        275                 280                 285
```

```
Met Lys Gln Thr Met Val Asp Ser Ser Cys Arg Ile Leu Thr Ser Asp
    290                 295                 300

Val Phe Gln Asp Cys Asn Lys Leu Val Asp Pro Glu Pro Tyr Leu Asp
305                 310                 315                 320

Val Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser Ile Gly Asp Cys Ala
                325                 330                 335

Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala His Val Cys Ala Gln His
            340                 345                 350

Gly Lys Val Val Thr Trp Arg Thr Ala Thr Leu Cys Pro Gln Ser Cys
        355                 360                 365

Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr Glu Cys Glu Trp Arg Tyr
    370                 375                 380

Asn Ser Cys Ala Pro Ala Cys Gln Val Thr Cys Gln His Pro Glu Pro
385                 390                 395                 400

Leu Ala Cys Pro Val Gln Cys Val Glu Gly Cys His Ala His Cys Pro
                405                 410                 415

Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln Thr Cys Val Asp Pro Glu
            420                 425                 430

Asp Cys Pro Val Cys Glu Val Ala Gly Arg Arg Phe Ala Ser Gly Lys
        435                 440                 445

Lys Val Thr Leu Asn Pro Ser Asp Pro Glu His Cys Gln Ile Cys His
    450                 455                 460

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

Leu Val Val Pro Pro Thr Asp Ala Pro Val Ser Pro Thr Thr Leu Tyr
                485                 490                 495

Val Glu Asp Ile Ser Glu Pro Pro Leu His Asp Phe Tyr Cys Ser Arg
            500                 505                 510

Leu Leu Asp Leu Val Phe Leu Leu Asp Gly Ser Ser Arg Leu Ser Glu
        515                 520                 525

Ala Glu Phe Glu Val Leu Lys Ala Phe Val Val Asp Met Met Glu Arg
    530                 535                 540
```

```
Leu Arg Ile Ser Gln Lys Trp Val Arg Val Ala Val Val Glu Tyr His
545                 550                 555                 560

Asp Gly Ser His Ala Tyr Ile Gly Leu Lys Asp Arg Lys Arg Pro Ser
                565                 570                 575

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

Ala Ser Thr Ser Glu Val Leu Lys Tyr Thr Leu Phe Gln Ile Phe Ser
        595                 600                 605

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

Ser Gln Glu Pro Gln Arg Met Ser Arg Asn Phe Val Arg Tyr Val Gln
625                 630                 635                 640

Gly Leu Lys Lys Lys Lys Val Ile Val Ile Pro Val Gly Ile Gly Pro
                645                 650                 655

His Ala Asn Leu Lys Gln Ile Arg Leu Ile Glu Lys Gln Ala Pro Glu
            660                 665                 670

Asn Lys Ala Phe Val Leu Ser Ser Val Asp Glu Leu Glu Gln Gln Arg
        675                 680                 685

Asp Glu Ile Val Ser Tyr Leu Cys Asp Leu Ala Pro Glu Ala Pro Pro
    690                 695                 700

Pro Thr Leu Pro Pro His Met Ala Gln Val Thr Val Gly Pro Gly
705                 710                 715


<210>  6
<211>  741
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  sequence

<400>  6

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1               5                   10                  15

Leu Pro Gly Thr Leu Cys Ala Ser Leu Ser Cys Arg Pro Pro Met Val
            20                  25                  30
```

```
Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys
        35                  40                  45

Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met Ser Met Gly Cys
    50                  55                  60

Val Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg His Glu Asn Arg
65                  70                  75                  80

Cys Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln Gly Lys Glu Tyr
                85                  90                  95

Ala Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr Cys Val Cys Arg
            100                 105                 110

Asp Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp Ala Thr Cys Ser
        115                 120                 125

Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu
    130                 135                 140

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

Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys Gly Cys Ser His
                165                 170                 175

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

Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys Arg Pro Met Lys
        195                 200                 205

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

Leu Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg His Leu Ser Ile
225                 230                 235                 240

Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys
                245                 250                 255

Gly Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr Ser Ser Asn Leu
            260                 265                 270

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

```
Ser Gln Cys Ala Asp Thr Arg Lys Val Pro Leu Asp Ser Ser Pro Ala
    290                 295                 300

Thr Cys His Asn Asn Ile Met Lys Gln Thr Met Val Asp Ser Ser Cys
305                 310                 315                 320

Arg Ile Leu Thr Ser Asp Val Phe Gln Asp Cys Asn Lys Leu Val Asp
                325                 330                 335

Pro Glu Pro Tyr Leu Asp Val Cys Ile Tyr Asp Thr Cys Ser Cys Glu
            340                 345                 350

Ser Ile Gly Asp Cys Ala Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala
        355                 360                 365

His Val Cys Ala Gln His Gly Lys Val Val Thr Trp Arg Thr Ala Thr
    370                 375                 380

Leu Cys Pro Gln Ser Cys Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr
385                 390                 395                 400

Glu Cys Glu Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr
                405                 410                 415

Cys Gln His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly
            420                 425                 430

Cys His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln
        435                 440                 445

Thr Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly Arg
    450                 455                 460

Arg Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp Pro Glu
465                 470                 475                 480

His Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr Cys Glu Ala
                485                 490                 495

Cys Gln Glu Pro Gly Gly Leu Val Val Pro Pro Thr Asp Ala Pro Val
            500                 505                 510

Ser Pro Thr Thr Leu Tyr Val Glu Asp Ile Ser Glu Pro Pro Leu His
        515                 520                 525

Asp Phe Tyr Cys Ser Arg Leu Leu Asp Leu Val Phe Leu Leu Asp Gly
```

530 535 540

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

Val Asp Met Met Glu Arg Leu Arg Ile Ser Gln Lys Trp Val Arg Val
565 570 575

Ala Val Val Glu Tyr His Asp Gly Ser His Ala Tyr Ile Gly Leu Lys
580 585 590

Asp Arg Lys Arg Pro Ser Glu Leu Arg Arg Ile Ala Ser Gln Val Lys
595 600 605

Tyr Ala Gly Ser Gln Val Ala Ser Thr Ser Glu Val Leu Lys Tyr Thr
610 615 620

Leu Phe Gln Ile Phe Ser Lys Ile Asp Arg Pro Glu Ala Ser Arg Ile
625 630 635 640

Ala Leu Leu Leu Met Ala Ser Gln Glu Pro Gln Arg Met Ser Arg Asn
645 650 655

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

Pro Val Gly Ile Gly Pro His Ala Asn Leu Lys Gln Ile Arg Leu Ile
675 680 685

Glu Lys Gln Ala Pro Glu Asn Lys Ala Phe Val Leu Ser Ser Val Asp
690 695 700

Glu Leu Glu Gln Gln Arg Asp Glu Ile Val Ser Tyr Leu Cys Asp Leu
705 710 715 720

Ala Pro Glu Ala Pro Pro Pro Thr Leu Pro Pro His Met Ala Gln Val
725 730 735

Thr Val Gly Pro Gly
740

<210> 7
<211> 1116
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 7

Ser Leu Ser Cys Arg Pro Pro Met Val Lys Leu Val Cys Pro Ala Asp
1 5 10 15

Asn Leu Arg Ala Glu Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn Tyr
20 25 30

Asp Leu Glu Cys Met Ser Met Gly Cys Val Ser Gly Cys Leu Cys Pro
35 40 45

Pro Gly Met Val Arg His Glu Asn Arg Cys Val Ala Leu Glu Arg Cys
50 55 60

Pro Cys Phe His Gln Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val Lys
65 70 75 80

Ile Gly Cys Asn Thr Cys Val Cys Arg Asp Arg Lys Trp Asn Cys Thr
85 90 95

Asp His Val Cys Asp Ala Thr Cys Ser Thr Ile Gly Met Ala His Tyr
100 105 110

Leu Thr Phe Asp Gly Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln Tyr
115 120 125

Val Leu Val Gln Asp Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg Ile
130 135 140

Leu Val Gly Asn Lys Gly Cys Ser His Pro Ser Val Lys Cys Lys Lys
145 150 155 160

Arg Val Thr Ile Leu Val Glu Gly Gly Glu Ile Glu Leu Phe Asp Gly
165 170 175

Glu Val Asn Val Lys Arg Pro Met Lys Asp Glu Thr His Phe Glu Val
180 185 190

Val Glu Ser Gly Arg Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu Ser
195 200 205

Val Val Trp Asp Arg His Leu Ser Ile Ser Val Val Leu Lys Gln Thr
210 215 220

Tyr Gln Glu Lys Val Cys Gly Leu Cys Gly Asn Phe Asp Gly Ile Gln
225 230 235 240

Asn Asn Asp Leu Thr Ser Ser Asn Leu Gln Val Glu Glu Asp Pro Val

245 250 255

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

Lys Val Pro Leu Asp Ser Ser Pro Ala Thr Cys His Asn Asn Ile Met
275 280 285

Lys Gln Thr Met Val Asp Ser Ser Cys Arg Ile Leu Thr Ser Asp Val
290 295 300

Phe Gln Asp Cys Asn Lys Leu Val Asp Pro Glu Pro Tyr Leu Asp Val
305 310 315 320

Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser Ile Gly Asp Cys Ala Cys
325 330 335

Phe Cys Asp Thr Ile Ala Ala Tyr Ala His Val Cys Ala Gln His Gly
340 345 350

Lys Val Val Thr Trp Arg Thr Ala Thr Leu Cys Pro Gln Ser Cys Glu
355 360 365

Glu Arg Asn Leu Arg Glu Asn Gly Tyr Glu Cys Glu Trp Arg Tyr Asn
370 375 380

Ser Cys Ala Pro Ala Cys Gln Val Thr Cys Gln His Pro Glu Pro Leu
385 390 395 400

Ala Cys Pro Val Gln Cys Val Glu Gly Cys His Ala His Cys Pro Pro
405 410 415

Gly Lys Ile Leu Asp Glu Leu Leu Gln Thr Cys Val Asp Pro Glu Asp
420 425 430

Cys Pro Val Cys Glu Val Ala Gly Arg Arg Phe Ala Ser Gly Lys Lys
435 440 445

Val Thr Leu Asn Pro Ser Asp Pro Glu His Cys Gln Ile Cys His Cys
450 455 460

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

Val Val Pro Pro Thr Asp Ala Pro Val Ser Pro Thr Thr Leu Tyr Val
485 490 495

```
Glu Asp Ile Ser Glu Pro Pro Leu His Asp Phe Tyr Cys Ser Arg Leu
            500                 505                 510

Leu Asp Leu Val Phe Leu Leu Asp Gly Ser Ser Arg Leu Ser Glu Ala
        515                 520                 525

Glu Phe Glu Val Leu Lys Ala Phe Val Val Asp Met Met Glu Arg Leu
    530                 535                 540

Arg Ile Ser Gln Lys Trp Val Arg Val Ala Val Val Glu Tyr His Asp
545                 550                 555                 560

Gly Ser His Ala Tyr Ile Gly Leu Lys Asp Arg Lys Arg Pro Ser Glu
                565                 570                 575

Leu Arg Arg Ile Ala Ser Gln Val Lys Tyr Ala Gly Ser Gln Val Ala
            580                 585                 590

Ser Thr Ser Glu Val Leu Lys Tyr Thr Leu Phe Gln Ile Phe Ser Lys
        595                 600                 605

Ile Asp Arg Pro Glu Ala Ser Arg Ile Ala Leu Leu Leu Met Ala Ser
    610                 615                 620

Gln Glu Pro Gln Arg Met Ser Arg Asn Phe Val Arg Tyr Val Gln Gly
625                 630                 635                 640

Leu Lys Lys Lys Lys Val Ile Val Ile Pro Val Gly Ile Gly Pro His
                645                 650                 655

Ala Asn Leu Lys Gln Ile Arg Leu Ile Glu Lys Gln Ala Pro Glu Asn
            660                 665                 670

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

Glu Ile Val Ser Tyr Leu Cys Asp Leu Ala Pro Glu Ala Pro Pro Pro
    690                 695                 700

Thr Leu Pro Pro His Met Ala Gln Val Thr Val Gly Pro Gly Leu Leu
705                 710                 715                 720

Gly Val Ser Thr Leu Gly Pro Lys Arg Asn Ser Met Val Leu Asp Val
                725                 730                 735

Ala Phe Val Leu Glu Gly Ser Asp Lys Ile Gly Glu Ala Asp Phe Asn
            740                 745                 750
```

```
Arg Ser Lys Glu Phe Met Glu Glu Val Ile Gln Arg Met Asp Val Gly
        755                 760                 765

Gln Asp Ser Ile His Val Thr Val Leu Gln Tyr Ser Tyr Met Val Thr
    770                 775                 780

Val Glu Tyr Pro Phe Ser Glu Ala Gln Ser Lys Gly Asp Ile Leu Gln
785                 790                 795                 800

Arg Val Arg Glu Ile Arg Tyr Gln Gly Gly Asn Arg Thr Asn Thr Gly
                805                 810                 815

Leu Ala Leu Arg Tyr Leu Ser Asp His Ser Phe Leu Val Ser Gln Gly
            820                 825                 830

Asp Arg Glu Gln Ala Pro Asn Leu Val Tyr Met Val Thr Gly Asn Pro
        835                 840                 845

Ala Ser Asp Glu Ile Lys Arg Leu Pro Gly Asp Ile Gln Val Val Pro
    850                 855                 860

Ile Gly Val Gly Pro Asn Ala Asn Val Gln Glu Leu Glu Arg Ile Gly
865                 870                 875                 880

Trp Pro Asn Ala Pro Ile Leu Ile Gln Asp Phe Glu Thr Leu Pro Arg
                885                 890                 895

Glu Ala Pro Asp Leu Val Leu Gln Arg Cys Cys Ser Gly Glu Gly Leu
            900                 905                 910

Gln Ile Pro Thr Leu Ser Pro Ala Pro Asp Cys Ser Gln Pro Leu Asp
        915                 920                 925

Val Ile Leu Leu Leu Asp Gly Ser Ser Ser Phe Pro Ala Ser Tyr Phe
    930                 935                 940

Asp Glu Met Lys Ser Phe Ala Lys Ala Phe Ile Ser Lys Ala Asn Ile
945                 950                 955                 960

Gly Pro Arg Leu Thr Gln Val Ser Val Leu Gln Tyr Gly Ser Ile Thr
                965                 970                 975

Thr Ile Asp Val Pro Trp Asn Val Val Pro Glu Lys Ala His Leu Leu
            980                 985                 990

Ser Leu Val Asp Val Met Gln Arg  Glu Gly Gly Pro Ser  Gln Ile Gly
        995                 1000                1005
```

Asp Ala Leu Gly Phe Ala Val Arg Tyr Leu Thr Ser Glu Met His
1010 1015 1020

Gly Ala Arg Pro Gly Ala Ser Lys Ala Val Val Ile Leu Val Thr
1025 1030 1035

Asp Val Ser Val Asp Ser Val Asp Ala Ala Ala Asp Ala Ala Arg
1040 1045 1050

Ser Asn Arg Val Thr Val Phe Pro Ile Gly Ile Gly Asp Arg Tyr
1055 1060 1065

Asp Ala Ala Gln Leu Arg Ile Leu Ala Gly Pro Ala Gly Asp Ser
1070 1075 1080

Asn Val Val Lys Leu Gln Arg Ile Glu Asp Leu Pro Thr Met Val
1085 1090 1095

Thr Leu Gly Asn Ser Phe Leu His Lys Leu Cys Ser Gly Phe Val
1100 1105 1110

Arg Ile Cys
1115

<210> 8
<211> 1117
<212> PRT
<213> Artificial Sequence

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<223> sequence

<400> 8

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

Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn
20 25 30

Tyr Asp Leu Glu Cys Met Ser Met Gly Cys Val Ser Gly Cys Leu Cys
35 40 45

Pro Pro Gly Met Val Arg His Glu Asn Arg Cys Val Ala Leu Glu Arg
50 55 60

Cys Pro Cys Phe His Gln Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val
65 70 75 80

```
Lys Ile Gly Cys Asn Thr Cys Val Cys Arg Asp Arg Lys Trp Asn Cys
                85                  90                  95

Thr Asp His Val Cys Asp Ala Thr Cys Ser Thr Ile Gly Met Ala His
            100                 105                 110

Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln
        115                 120                 125

Tyr Val Leu Val Gln Asp Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg
    130                 135                 140

Ile Leu Val Gly Asn Lys Gly Cys Ser His Pro Ser Val Lys Cys Lys
145                 150                 155                 160

Lys Arg Val Thr Ile Leu Val Glu Gly Gly Glu Ile Glu Leu Phe Asp
                165                 170                 175

Gly Glu Val Asn Val Lys Arg Pro Met Lys Asp Glu Thr His Phe Glu
            180                 185                 190

Val Val Glu Ser Gly Arg Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu
        195                 200                 205

Ser Val Val Trp Asp Arg His Leu Ser Ile Ser Val Val Leu Lys Gln
    210                 215                 220

Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys Gly Asn Phe Asp Gly Ile
225                 230                 235                 240

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

Val Asp Phe Gly Asn Ser Trp Lys Val Ser Ser Gln Cys Ala Asp Thr
            260                 265                 270

Arg Lys Val Pro Leu Asp Ser Ser Pro Ala Thr Cys His Asn Asn Ile
        275                 280                 285

Met Lys Gln Thr Met Val Asp Ser Ser Cys Arg Ile Leu Thr Ser Asp
    290                 295                 300

Val Phe Gln Asp Cys Asn Lys Leu Val Asp Pro Glu Pro Tyr Leu Asp
305                 310                 315                 320

Val Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser Ile Gly Asp Cys Ala
                325                 330                 335
```

```
Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala His Val Cys Ala Gln His
            340                 345                 350

Gly Lys Val Val Thr Trp Arg Thr Ala Thr Leu Cys Pro Gln Ser Cys
        355                 360                 365

Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr Glu Cys Glu Trp Arg Tyr
    370                 375                 380

Asn Ser Cys Ala Pro Ala Cys Gln Val Thr Cys Gln His Pro Glu Pro
385                 390                 395                 400

Leu Ala Cys Pro Val Gln Cys Val Glu Gly Cys His Ala His Cys Pro
                405                 410                 415

Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln Thr Cys Val Asp Pro Glu
            420                 425                 430

Asp Cys Pro Val Cys Glu Val Ala Gly Arg Arg Phe Ala Ser Gly Lys
        435                 440                 445

Lys Val Thr Leu Asn Pro Ser Asp Pro Glu His Cys Gln Ile Cys His
    450                 455                 460

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

Leu Val Val Pro Pro Thr Asp Ala Pro Val Ser Pro Thr Thr Leu Tyr
                485                 490                 495

Val Glu Asp Ile Ser Glu Pro Pro Leu His Asp Phe Tyr Cys Ser Arg
            500                 505                 510

Leu Leu Asp Leu Val Phe Leu Leu Asp Gly Ser Ser Arg Leu Ser Glu
        515                 520                 525

Ala Glu Phe Glu Val Leu Lys Ala Phe Val Val Asp Met Met Glu Arg
    530                 535                 540

Leu Arg Ile Ser Gln Lys Trp Val Arg Val Ala Val Val Glu Tyr His
545                 550                 555                 560

Asp Gly Ser His Ala Tyr Ile Gly Leu Lys Asp Arg Lys Arg Pro Ser
                565                 570                 575

Glu Leu Arg Arg Ile Ala Ser Gln Val Lys Tyr Ala Gly Ser Gln Val
```

580 585 590

Ala Ser Thr Ser Glu Val Leu Lys Tyr Thr Leu Phe Gln Ile Phe Ser
595 600 605

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

Ser Gln Glu Pro Gln Arg Met Ser Arg Asn Phe Val Arg Tyr Val Gln
625 630 635 640

Gly Leu Lys Lys Lys Lys Val Ile Val Ile Pro Val Gly Ile Gly Pro
645 650 655

His Ala Asn Leu Lys Gln Ile Arg Leu Ile Glu Lys Gln Ala Pro Glu
660 665 670

Asn Lys Ala Phe Val Leu Ser Ser Val Asp Glu Leu Glu Gln Gln Arg
675 680 685

Asp Glu Ile Val Ser Tyr Leu Cys Asp Leu Ala Pro Glu Ala Pro Pro
690 695 700

Pro Thr Leu Pro Pro His Met Ala Gln Val Thr Val Gly Pro Gly Leu
705 710 715 720

Leu Gly Val Ser Thr Leu Gly Pro Lys Arg Asn Ser Met Val Leu Asp
725 730 735

Val Ala Phe Val Leu Glu Gly Ser Asp Lys Ile Gly Glu Ala Asp Phe
740 745 750

Asn Arg Ser Lys Glu Phe Met Glu Glu Val Ile Gln Arg Met Asp Val
755 760 765

Gly Gln Asp Ser Ile His Val Thr Val Leu Gln Tyr Ser Tyr Met Val
770 775 780

Thr Val Glu Tyr Pro Phe Ser Glu Ala Gln Ser Lys Gly Asp Ile Leu
785 790 795 800

Gln Arg Val Arg Glu Ile Arg Tyr Gln Gly Gly Asn Arg Thr Asn Thr
805 810 815

Gly Leu Ala Leu Arg Tyr Leu Ser Asp His Ser Phe Leu Val Ser Gln
820 825 830

```
Gly Asp Arg Glu Gln Ala Pro Asn Leu Val Tyr Met Val Thr Gly Asn
       835                 840                 845

Pro Ala Ser Asp Glu Ile Lys Arg Leu Pro Gly Asp Ile Gln Val Val
    850                 855                 860

Pro Ile Gly Val Gly Pro Asn Ala Asn Val Gln Glu Leu Glu Arg Ile
865                 870                 875                 880

Gly Trp Pro Asn Ala Pro Ile Leu Ile Gln Asp Phe Glu Thr Leu Pro
                885                 890                 895

Arg Glu Ala Pro Asp Leu Val Leu Gln Arg Cys Cys Ser Gly Glu Gly
            900                 905                 910

Leu Gln Ile Pro Thr Leu Ser Pro Ala Pro Asp Cys Ser Gln Pro Leu
        915                 920                 925

Asp Val Ile Leu Leu Leu Asp Gly Ser Ser Ser Phe Pro Ala Ser Tyr
    930                 935                 940

Phe Asp Glu Met Lys Ser Phe Ala Lys Ala Phe Ile Ser Lys Ala Asn
945                 950                 955                 960

Ile Gly Pro Arg Leu Thr Gln Val Ser Val Leu Gln Tyr Gly Ser Ile
                965                 970                 975

Thr Thr Ile Asp Val Pro Trp Asn Val Val Pro Glu Lys Ala His Leu
            980                 985                 990

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

Gly Asp  Ala Leu Gly Phe Ala  Val Arg Tyr Leu Thr  Ser Glu Met
    1010                1015                1020

His Gly  Ala Arg Pro Gly Ala  Ser Lys Ala Val Val  Ile Leu Val
    1025                1030                1035

Thr Asp  Val Ser Val Asp Ser  Val Asp Ala Ala Ala  Asp Ala Ala
    1040                1045                1050

Arg Ser  Asn Arg Val Thr Val  Phe Pro Ile Gly Ile  Gly Asp Arg
    1055                1060                1065

Tyr Asp  Ala Ala Gln Leu Arg  Ile Leu Ala Gly Pro  Ala Gly Asp
    1070                1075                1080
```

Ser Asn Val Val Lys Leu Gln Arg Ile Glu Asp Leu Pro Thr Met
1085 1090 1095

Val Thr Leu Gly Asn Ser Phe Leu His Lys Leu Cys Ser Gly Phe
1100 1105 1110

Val Arg Ile Cys
1115

<210> 9
<211> 1139
<212> PRT
<213> Artificial Sequence

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<400> 9

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1 5 10 15

Leu Pro Gly Thr Leu Cys Ala Ser Leu Ser Cys Arg Pro Pro Met Val
20 25 30

Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys
35 40 45

Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met Ser Met Gly Cys
50 55 60

Val Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg His Glu Asn Arg
65 70 75 80

Cys Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln Gly Lys Glu Tyr
85 90 95

Ala Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr Cys Val Cys Arg
100 105 110

Asp Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp Ala Thr Cys Ser
115 120 125

Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu
130 135 140

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

```
Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys Gly Cys Ser His
                165                 170                 175

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

Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys Arg Pro Met Lys
        195                 200                 205

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

Leu Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg His Leu Ser Ile
225                 230                 235                 240

Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys
                245                 250                 255

Gly Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr Ser Ser Asn Leu
            260                 265                 270

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

Ser Gln Cys Ala Asp Thr Arg Lys Val Pro Leu Asp Ser Ser Pro Ala
    290                 295                 300

Thr Cys His Asn Asn Ile Met Lys Gln Thr Met Val Asp Ser Ser Cys
305                 310                 315                 320

Arg Ile Leu Thr Ser Asp Val Phe Gln Asp Cys Asn Lys Leu Val Asp
                325                 330                 335

Pro Glu Pro Tyr Leu Asp Val Cys Ile Tyr Asp Thr Cys Ser Cys Glu
            340                 345                 350

Ser Ile Gly Asp Cys Ala Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala
        355                 360                 365

His Val Cys Ala Gln His Gly Lys Val Val Thr Trp Arg Thr Ala Thr
    370                 375                 380

Leu Cys Pro Gln Ser Cys Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr
385                 390                 395                 400

Glu Cys Glu Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr
                405                 410                 415
```

```
Cys Gln His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly
            420                 425                 430

Cys His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln
        435                 440                 445

Thr Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly Arg
    450                 455                 460

Arg Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp Pro Glu
465                 470                 475                 480

His Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr Cys Glu Ala
                485                 490                 495

Cys Gln Glu Pro Gly Gly Leu Val Val Pro Pro Thr Asp Ala Pro Val
            500                 505                 510

Ser Pro Thr Thr Leu Tyr Val Glu Asp Ile Ser Glu Pro Pro Leu His
        515                 520                 525

Asp Phe Tyr Cys Ser Arg Leu Leu Asp Leu Val Phe Leu Leu Asp Gly
    530                 535                 540

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

Val Asp Met Met Glu Arg Leu Arg Ile Ser Gln Lys Trp Val Arg Val
                565                 570                 575

Ala Val Val Glu Tyr His Asp Gly Ser His Ala Tyr Ile Gly Leu Lys
            580                 585                 590

Asp Arg Lys Arg Pro Ser Glu Leu Arg Arg Ile Ala Ser Gln Val Lys
        595                 600                 605

Tyr Ala Gly Ser Gln Val Ala Ser Thr Ser Glu Val Leu Lys Tyr Thr
    610                 615                 620

Leu Phe Gln Ile Phe Ser Lys Ile Asp Arg Pro Glu Ala Ser Arg Ile
625                 630                 635                 640

Ala Leu Leu Leu Met Ala Ser Gln Glu Pro Gln Arg Met Ser Arg Asn
                645                 650                 655

Phe Val Arg Tyr Val Gln Gly Leu Lys Lys Lys Lys Val Ile Val Ile
            660                 665                 670
```

```
Pro Val Gly Ile Gly Pro His Ala Asn Leu Lys Gln Ile Arg Leu Ile
        675                 680                 685

Glu Lys Gln Ala Pro Glu Asn Lys Ala Phe Val Leu Ser Ser Val Asp
    690                 695                 700

Glu Leu Glu Gln Gln Arg Asp Glu Ile Val Ser Tyr Leu Cys Asp Leu
705                 710                 715                 720

Ala Pro Glu Ala Pro Pro Pro Thr Leu Pro Pro His Met Ala Gln Val
                725                 730                 735

Thr Val Gly Pro Gly Leu Leu Gly Val Ser Thr Leu Gly Pro Lys Arg
            740                 745                 750

Asn Ser Met Val Leu Asp Val Ala Phe Val Leu Glu Gly Ser Asp Lys
        755                 760                 765

Ile Gly Glu Ala Asp Phe Asn Arg Ser Lys Glu Phe Met Glu Glu Val
    770                 775                 780

Ile Gln Arg Met Asp Val Gly Gln Asp Ser Ile His Val Thr Val Leu
785                 790                 795                 800

Gln Tyr Ser Tyr Met Val Thr Val Glu Tyr Pro Phe Ser Glu Ala Gln
                805                 810                 815

Ser Lys Gly Asp Ile Leu Gln Arg Val Arg Glu Ile Arg Tyr Gln Gly
            820                 825                 830

Gly Asn Arg Thr Asn Thr Gly Leu Ala Leu Arg Tyr Leu Ser Asp His
        835                 840                 845

Ser Phe Leu Val Ser Gln Gly Asp Arg Glu Gln Ala Pro Asn Leu Val
    850                 855                 860

Tyr Met Val Thr Gly Asn Pro Ala Ser Asp Glu Ile Lys Arg Leu Pro
865                 870                 875                 880

Gly Asp Ile Gln Val Val Pro Ile Gly Val Gly Pro Asn Ala Asn Val
                885                 890                 895

Gln Glu Leu Glu Arg Ile Gly Trp Pro Asn Ala Pro Ile Leu Ile Gln
            900                 905                 910

Asp Phe Glu Thr Leu Pro Arg Glu Ala Pro Asp Leu Val Leu Gln Arg
```

915 920 925

Cys Cys Ser Gly Glu Gly Leu Gln Ile Pro Thr Leu Ser Pro Ala Pro
930 935 940

Asp Cys Ser Gln Pro Leu Asp Val Ile Leu Leu Leu Asp Gly Ser Ser
945 950 955 960

Ser Phe Pro Ala Ser Tyr Phe Asp Glu Met Lys Ser Phe Ala Lys Ala
965 970 975

Phe Ile Ser Lys Ala Asn Ile Gly Pro Arg Leu Thr Gln Val Ser Val
980 985 990

Leu Gln Tyr Gly Ser Ile Thr Thr Ile Asp Val Pro Trp Asn Val Val
995 1000 1005

Pro Glu Lys Ala His Leu Leu Ser Leu Val Asp Val Met Gln Arg
1010 1015 1020

Glu Gly Gly Pro Ser Gln Ile Gly Asp Ala Leu Gly Phe Ala Val
1025 1030 1035

Arg Tyr Leu Thr Ser Glu Met His Gly Ala Arg Pro Gly Ala Ser
1040 1045 1050

Lys Ala Val Val Ile Leu Val Thr Asp Val Ser Val Asp Ser Val
1055 1060 1065

Asp Ala Ala Ala Asp Ala Ala Arg Ser Asn Arg Val Thr Val Phe
1070 1075 1080

Pro Ile Gly Ile Gly Asp Arg Tyr Asp Ala Ala Gln Leu Arg Ile
1085 1090 1095

Leu Ala Gly Pro Ala Gly Asp Ser Asn Val Val Lys Leu Gln Arg
1100 1105 1110

Ile Glu Asp Leu Pro Thr Met Val Thr Leu Gly Asn Ser Phe Leu
1115 1120 1125

His Lys Leu Cys Ser Gly Phe Val Arg Ile Cys
1130 1135

<210> 10
<211> 1225
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 10

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Ala Glu Gly Thr Arg Gly Arg Ser Ser Thr Ala Arg Cys Ser Leu Phe
1               5                  10                  15

Gly Ser Asp Phe Val Asn Thr Phe Asp Gly Ser Met Tyr Ser Phe Ala
            20                  25                  30

Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly Cys Gln Lys Arg Ser Phe
        35                  40                  45

Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys Arg Val Ser Leu Ser Val
    50                  55                  60

Tyr Leu Gly Glu Phe Phe Asp Ile His Leu Phe Val Asn Gly Thr Val
65                  70                  75                  80

Thr Gln Gly Asp Gln Arg Val Ser Met Pro Tyr Ala Ser Lys Gly Leu
                85                  90                  95

Tyr Leu Glu Thr Glu Ala Gly Tyr Tyr Lys Leu Ser Gly Glu Ala Tyr
            100                 105                 110

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

Ser Asp Arg Tyr Phe Asn Lys Thr Cys Gly Leu Cys Gly Asn Phe Asn
    130                 135                 140

Ile Phe Ala Glu Asp Asp Phe Met Thr Gln Glu Gly Thr Leu Thr Ser
145                 150                 155                 160

Asp Pro Tyr Asp Phe Ala Asn Ser Trp Ala Leu Ser Ser Gly Glu Gln
                165                 170                 175

Trp Cys Glu Arg Ala Ser Pro Pro Ser Ser Ser Cys Asn Ile Ser Ser
            180                 185                 190

Gly Glu Met Gln Lys Gly Leu Trp Glu Gln Cys Gln Leu Leu Lys Ser
        195                 200                 205

Thr Ser Val Phe Ala Arg Cys His Pro Leu Val Asp Pro Glu Pro Phe
    210                 215                 220

Val Ala Leu Cys Glu Lys Thr Leu Cys Glu Cys Ala Gly Gly Leu Glu
```

225 230 235 240

Cys Ala Cys Pro Ala Leu Leu Glu Tyr Ala Arg Thr Cys Ala Gln Glu
245 250 255

Gly Met Val Leu Tyr Gly Trp Thr Asp His Ser Ala Cys Ser Pro Val
260 265 270

Cys Pro Ala Gly Met Glu Tyr Arg Gln Cys Val Ser Pro Cys Ala Arg
275 280 285

Thr Cys Gln Ser Leu His Ile Asn Glu Met Cys Gln Glu Arg Cys Val
290 295 300

Asp Gly Cys Ser Cys Pro Glu Gly Gln Leu Leu Asp Glu Gly Leu Cys
305 310 315 320

Val Glu Ser Thr Glu Cys Pro Cys Val His Ser Gly Lys Arg Tyr Pro
325 330 335

Pro Gly Thr Ser Leu Ser Arg Asp Cys Asn Thr Cys Ile Cys Arg Asn
340 345 350

Ser Gln Trp Ile Cys Ser Asn Glu Glu Cys Pro Gly Glu Cys Leu Val
355 360 365

Thr Gly Gln Ser His Phe Lys Ser Phe Asp Asn Arg Tyr Phe Thr Phe
370 375 380

Ser Gly Ile Cys Gln Tyr Leu Leu Ala Arg Asp Cys Gln Asp His Ser
385 390 395 400

Phe Ser Ile Val Ile Glu Thr Val Gln Cys Ala Asp Asp Arg Asp Ala
405 410 415

Val Cys Thr Arg Ser Val Thr Val Arg Leu Pro Gly Leu His Asn Ser
420 425 430

Leu Val Lys Leu Lys His Gly Ala Gly Val Ala Met Asp Gly Gln Asp
435 440 445

Ile Gln Leu Pro Leu Leu Lys Gly Asp Leu Arg Ile Gln His Thr Val
450 455 460

Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu Asp Leu Gln Met Asp Trp
465 470 475 480

```
Asp Gly Arg Gly Arg Leu Leu Val Lys Leu Ser Pro Val Tyr Ala Gly
                485                 490                 495

Lys Thr Cys Gly Leu Cys Gly Asn Tyr Asn Gly Asn Gln Gly Asp Asp
            500                 505                 510

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

Asn Ala Trp Lys Leu His Gly Asp Cys Gln Asp Leu Gln Lys Gln His
    530                 535                 540

Ser Asp Pro Cys Ala Leu Asn Pro Arg Met Thr Arg Phe Ser Glu Glu
545                 550                 555                 560

Ala Cys Ala Val Leu Thr Ser Pro Thr Phe Glu Ala Cys His Arg Ala
                565                 570                 575

Val Ser Pro Leu Pro Tyr Leu Arg Asn Cys Arg Tyr Asp Val Cys Ser
            580                 585                 590

Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly Ala Leu Ala Ser Tyr Ala
        595                 600                 605

Ala Ala Cys Ala Gly Arg Gly Val Arg Val Ala Trp Arg Glu Pro Gly
    610                 615                 620

Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln Val Tyr Leu Gln Cys Gly
625                 630                 635                 640

Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu Ser Tyr Pro Asp Glu Glu
                645                 650                 655

Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe Cys Pro Pro Gly Leu Tyr
            660                 665                 670

Met Asp Glu Arg Gly Asp Cys Val Pro Lys Ala Gln Cys Pro Cys Tyr
        675                 680                 685

Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp Ile Phe Ser Asp His His
    690                 695                 700

Thr Met Cys Tyr Cys Glu Asp Gly Phe Met His Cys Thr Met Ser Gly
705                 710                 715                 720

Val Pro Gly Ser Leu Leu Pro Asp Ala Val Leu Ser Ser Pro Leu Ser
                725                 730                 735
```

```
His Arg Ser Lys Arg Ser Leu Ser Cys Arg Pro Pro Met Val Lys Leu
            740                 745                 750

Val Cys Pro Ala Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys Thr Lys
        755                 760                 765

Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met Ser Met Gly Cys Val Ser
    770                 775                 780

Gly Cys Leu Cys Pro Pro Gly Met Val Arg His Glu Asn Arg Cys Val
785                 790                 795                 800

Ala Leu Glu Arg Cys Pro Cys Phe His Gln Gly Lys Glu Tyr Ala Pro
                805                 810                 815

Gly Glu Thr Val Lys Ile Gly Cys Asn Thr Cys Val Cys Arg Asp Arg
            820                 825                 830

Lys Trp Asn Cys Thr Asp His Val Cys Asp Ala Thr Cys Ser Thr Ile
        835                 840                 845

Gly Met Ala His Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu Phe Pro
    850                 855                 860

Gly Glu Cys Gln Tyr Val Leu Val Gln Asp Tyr Cys Gly Ser Asn Pro
865                 870                 875                 880

Gly Thr Phe Arg Ile Leu Val Gly Asn Lys Gly Cys Ser His Pro Ser
                885                 890                 895

Val Lys Cys Lys Lys Arg Val Thr Ile Leu Val Glu Gly Gly Glu Ile
            900                 905                 910

Glu Leu Phe Asp Gly Glu Val Asn Val Lys Arg Pro Met Lys Asp Glu
        915                 920                 925

Thr His Phe Glu Val Val Glu Ser Gly Arg Tyr Ile Ile Leu Leu Leu
    930                 935                 940

Gly Lys Ala Leu Ser Val Val Trp Asp Arg His Leu Ser Ile Ser Val
945                 950                 955                 960

Val Leu Lys Gln Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys Gly Asn
                965                 970                 975

Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr Ser Ser Asn Leu Gln Val
            980                 985                 990
```

Glu Glu Asp Pro Val Asp Phe Gly Asn Ser Trp Lys Val Ser Ser Gln
995 1000 1005

Cys Ala Asp Thr Arg Lys Val Pro Leu Asp Ser Ser Pro Ala Thr
1010 1015 1020

Cys His Asn Asn Ile Met Lys Gln Thr Met Val Asp Ser Ser Cys
1025 1030 1035

Arg Ile Leu Thr Ser Asp Val Phe Gln Asp Cys Asn Lys Leu Val
1040 1045 1050

Asp Pro Glu Pro Tyr Leu Asp Val Cys Ile Tyr Asp Thr Cys Ser
1055 1060 1065

Cys Glu Ser Ile Gly Asp Cys Ala Cys Phe Cys Asp Thr Ile Ala
1070 1075 1080

Ala Tyr Ala His Val Cys Ala Gln His Gly Lys Val Val Thr Trp
1085 1090 1095

Arg Thr Ala Thr Leu Cys Pro Gln Ser Cys Glu Glu Arg Asn Leu
1100 1105 1110

Arg Glu Asn Gly Tyr Glu Cys Glu Trp Arg Tyr Asn Ser Cys Ala
1115 1120 1125

Pro Ala Cys Gln Val Thr Cys Gln His Pro Glu Pro Leu Ala Cys
1130 1135 1140

Pro Val Gln Cys Val Glu Gly Cys His Ala His Cys Pro Pro Gly
1145 1150 1155

Lys Ile Leu Asp Glu Leu Leu Gln Thr Cys Val Asp Pro Glu Asp
1160 1165 1170

Cys Pro Val Cys Glu Val Ala Gly Arg Arg Phe Ala Ser Gly Lys
1175 1180 1185

Lys Val Thr Leu Asn Pro Ser Asp Pro Glu His Cys Gln Ile Cys
1190 1195 1200

His Cys Asp Val Val Asn Leu Thr Cys Glu Ala Cys Gln Glu Pro
1205 1210 1215

Gly Gly Leu Val Val Pro Pro

1220 1225

<210> 11
<211> 1247
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 11

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1 5 10 15

Leu Pro Gly Thr Leu Cys Ala Glu Gly Thr Arg Gly Arg Ser Ser Thr
20 25 30

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

Ser Met Tyr Ser Phe Ala Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly
50 55 60

Cys Gln Lys Arg Ser Phe Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys
65 70 75 80

Arg Val Ser Leu Ser Val Tyr Leu Gly Glu Phe Phe Asp Ile His Leu
85 90 95

Phe Val Asn Gly Thr Val Thr Gln Gly Asp Gln Arg Val Ser Met Pro
100 105 110

Tyr Ala Ser Lys Gly Leu Tyr Leu Glu Thr Glu Ala Gly Tyr Tyr Lys
115 120 125

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

Asn Phe Gln Val Leu Leu Ser Asp Arg Tyr Phe Asn Lys Thr Cys Gly
145 150 155 160

Leu Cys Gly Asn Phe Asn Ile Phe Ala Glu Asp Asp Phe Met Thr Gln
165 170 175

Glu Gly Thr Leu Thr Ser Asp Pro Tyr Asp Phe Ala Asn Ser Trp Ala
180 185 190

Leu Ser Ser Gly Glu Gln Trp Cys Glu Arg Ala Ser Pro Pro Ser Ser
195 200 205

```
Ser Cys Asn Ile Ser Ser Gly Glu Met Gln Lys Gly Leu Trp Glu Gln
    210                 215                 220

Cys Gln Leu Leu Lys Ser Thr Ser Val Phe Ala Arg Cys His Pro Leu
225                 230                 235                 240

Val Asp Pro Glu Pro Phe Val Ala Leu Cys Glu Lys Thr Leu Cys Glu
                245                 250                 255

Cys Ala Gly Gly Leu Glu Cys Ala Cys Pro Ala Leu Leu Glu Tyr Ala
            260                 265                 270

Arg Thr Cys Ala Gln Glu Gly Met Val Leu Tyr Gly Trp Thr Asp His
        275                 280                 285

Ser Ala Cys Ser Pro Val Cys Pro Ala Gly Met Glu Tyr Arg Gln Cys
    290                 295                 300

Val Ser Pro Cys Ala Arg Thr Cys Gln Ser Leu His Ile Asn Glu Met
305                 310                 315                 320

Cys Gln Glu Arg Cys Val Asp Gly Cys Ser Cys Pro Glu Gly Gln Leu
                325                 330                 335

Leu Asp Glu Gly Leu Cys Val Glu Ser Thr Glu Cys Pro Cys Val His
            340                 345                 350

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

Thr Cys Ile Cys Arg Asn Ser Gln Trp Ile Cys Ser Asn Glu Glu Cys
    370                 375                 380

Pro Gly Glu Cys Leu Val Thr Gly Gln Ser His Phe Lys Ser Phe Asp
385                 390                 395                 400

Asn Arg Tyr Phe Thr Phe Ser Gly Ile Cys Gln Tyr Leu Leu Ala Arg
                405                 410                 415

Asp Cys Gln Asp His Ser Phe Ser Ile Val Ile Glu Thr Val Gln Cys
            420                 425                 430

Ala Asp Asp Arg Asp Ala Val Cys Thr Arg Ser Val Thr Val Arg Leu
        435                 440                 445

Pro Gly Leu His Asn Ser Leu Val Lys Leu Lys His Gly Ala Gly Val
```

```
450                 455                 460

Ala Met Asp Gly Gln Asp Ile Gln Leu Pro Leu Leu Lys Gly Asp Leu
465                 470                 475                 480

Arg Ile Gln His Thr Val Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu
                485                 490                 495

Asp Leu Gln Met Asp Trp Asp Gly Arg Gly Arg Leu Leu Val Lys Leu
            500                 505                 510

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

Gly Asn Gln Gly Asp Asp Phe Leu Thr Pro Ser Gly Leu Ala Glu Pro
    530                 535                 540

Arg Val Glu Asp Phe Gly Asn Ala Trp Lys Leu His Gly Asp Cys Gln
545                 550                 555                 560

Asp Leu Gln Lys Gln His Ser Asp Pro Cys Ala Leu Asn Pro Arg Met
                565                 570                 575

Thr Arg Phe Ser Glu Glu Ala Cys Ala Val Leu Thr Ser Pro Thr Phe
            580                 585                 590

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

Arg Tyr Asp Val Cys Ser Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly
    610                 615                 620

Ala Leu Ala Ser Tyr Ala Ala Ala Cys Ala Gly Arg Gly Val Arg Val
625                 630                 635                 640

Ala Trp Arg Glu Pro Gly Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln
                645                 650                 655

Val Tyr Leu Gln Cys Gly Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu
            660                 665                 670

Ser Tyr Pro Asp Glu Glu Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe
        675                 680                 685

Cys Pro Pro Gly Leu Tyr Met Asp Glu Arg Gly Asp Cys Val Pro Lys
    690                 695                 700
```

```
Ala Gln Cys Pro Cys Tyr Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp
705                 710                 715                 720

Ile Phe Ser Asp His His Thr Met Cys Tyr Cys Glu Asp Gly Phe Met
                725                 730                 735

His Cys Thr Met Ser Gly Val Pro Gly Ser Leu Leu Pro Asp Ala Val
            740                 745                 750

Leu Ser Ser Pro Leu Ser His Arg Ser Lys Arg Ser Leu Ser Cys Arg
        755                 760                 765

Pro Pro Met Val Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu
    770                 775                 780

Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met
785                 790                 795                 800

Ser Met Gly Cys Val Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg
                805                 810                 815

His Glu Asn Arg Cys Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln
            820                 825                 830

Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr
        835                 840                 845

Cys Val Cys Arg Asp Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp
    850                 855                 860

Ala Thr Cys Ser Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly
865                 870                 875                 880

Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp
                885                 890                 895

Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys
            900                 905                 910

Gly Cys Ser His Pro Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu
        915                 920                 925

Val Glu Gly Gly Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys
    930                 935                 940

Arg Pro Met Lys Asp Glu Thr His Phe Glu Val Val Glu Ser Gly Arg
945                 950                 955                 960
```

```
Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg
                965                 970                 975

His Leu Ser Ile Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val
            980                 985                 990

Cys Gly Leu Cys Gly Asn Phe Asp  Gly Ile Gln Asn Asn  Asp Leu Thr
        995                 1000                1005

Ser Ser  Asn Leu Gln Val Glu  Glu Asp Pro Val Asp  Phe Gly Asn
    1010                1015                1020

Ser Trp  Lys Val Ser Ser Gln  Cys Ala Asp Thr Arg  Lys Val Pro
    1025                1030                1035

Leu Asp  Ser Ser Pro Ala Thr  Cys His Asn Asn Ile  Met Lys Gln
    1040                1045                1050

Thr Met  Val Asp Ser Ser Cys  Arg Ile Leu Thr Ser  Asp Val Phe
    1055                1060                1065

Gln Asp  Cys Asn Lys Leu Val  Asp Pro Glu Pro Tyr  Leu Asp Val
    1070                1075                1080

Cys Ile  Tyr Asp Thr Cys Ser  Cys Glu Ser Ile Gly  Asp Cys Ala
    1085                1090                1095

Cys Phe  Cys Asp Thr Ile Ala  Ala Tyr Ala His Val  Cys Ala Gln
    1100                1105                1110

His Gly  Lys Val Val Thr Trp  Arg Thr Ala Thr Leu  Cys Pro Gln
    1115                1120                1125

Ser Cys  Glu Glu Arg Asn Leu  Arg Glu Asn Gly Tyr  Glu Cys Glu
    1130                1135                1140

Trp Arg  Tyr Asn Ser Cys Ala  Pro Ala Cys Gln Val  Thr Cys Gln
    1145                1150                1155

His Pro  Glu Pro Leu Ala Cys  Pro Val Gln Cys Val  Glu Gly Cys
    1160                1165                1170

His Ala  His Cys Pro Pro Gly  Lys Ile Leu Asp Glu  Leu Leu Gln
    1175                1180                1185

Thr Cys  Val Asp Pro Glu Asp  Cys Pro Val Cys Glu  Val Ala Gly
    1190                1195                1200
```

Arg Arg Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp
1205 1210 1215

Pro Glu His Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr
1220 1225 1230

Cys Glu Ala Cys Gln Glu Pro Gly Gly Leu Val Val Pro Pro
1235 1240 1245

<210> 12
<211> 1459
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 12

Ala Glu Gly Thr Arg Gly Arg Ser Ser Thr Ala Arg Cys Ser Leu Phe
1 5 10 15

Gly Ser Asp Phe Val Asn Thr Phe Asp Gly Ser Met Tyr Ser Phe Ala
20 25 30

Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly Cys Gln Lys Arg Ser Phe
35 40 45

Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys Arg Val Ser Leu Ser Val
50 55 60

Tyr Leu Gly Glu Phe Phe Asp Ile His Leu Phe Val Asn Gly Thr Val
65 70 75 80

Thr Gln Gly Asp Gln Arg Val Ser Met Pro Tyr Ala Ser Lys Gly Leu
85 90 95

Tyr Leu Glu Thr Glu Ala Gly Tyr Tyr Lys Leu Ser Gly Glu Ala Tyr
100 105 110

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

Ser Asp Arg Tyr Phe Asn Lys Thr Cys Gly Leu Cys Gly Asn Phe Asn
130 135 140

Ile Phe Ala Glu Asp Asp Phe Met Thr Gln Glu Gly Thr Leu Thr Ser
145 150 155 160

```
Asp Pro Tyr Asp Phe Ala Asn Ser Trp Ala Leu Ser Ser Gly Glu Gln
                165                 170                 175

Trp Cys Glu Arg Ala Ser Pro Pro Ser Ser Ser Cys Asn Ile Ser Ser
            180                 185                 190

Gly Glu Met Gln Lys Gly Leu Trp Glu Gln Cys Gln Leu Leu Lys Ser
        195                 200                 205

Thr Ser Val Phe Ala Arg Cys His Pro Leu Val Asp Pro Glu Pro Phe
    210                 215                 220

Val Ala Leu Cys Glu Lys Thr Leu Cys Glu Cys Ala Gly Gly Leu Glu
225                 230                 235                 240

Cys Ala Cys Pro Ala Leu Leu Glu Tyr Ala Arg Thr Cys Ala Gln Glu
                245                 250                 255

Gly Met Val Leu Tyr Gly Trp Thr Asp His Ser Ala Cys Ser Pro Val
            260                 265                 270

Cys Pro Ala Gly Met Glu Tyr Arg Gln Cys Val Ser Pro Cys Ala Arg
        275                 280                 285

Thr Cys Gln Ser Leu His Ile Asn Glu Met Cys Gln Glu Arg Cys Val
    290                 295                 300

Asp Gly Cys Ser Cys Pro Glu Gly Gln Leu Leu Asp Glu Gly Leu Cys
305                 310                 315                 320

Val Glu Ser Thr Glu Cys Pro Cys Val His Ser Gly Lys Arg Tyr Pro
                325                 330                 335

Pro Gly Thr Ser Leu Ser Arg Asp Cys Asn Thr Cys Ile Cys Arg Asn
            340                 345                 350

Ser Gln Trp Ile Cys Ser Asn Glu Glu Cys Pro Gly Glu Cys Leu Val
        355                 360                 365

Thr Gly Gln Ser His Phe Lys Ser Phe Asp Asn Arg Tyr Phe Thr Phe
    370                 375                 380

Ser Gly Ile Cys Gln Tyr Leu Leu Ala Arg Asp Cys Gln Asp His Ser
385                 390                 395                 400

Phe Ser Ile Val Ile Glu Thr Val Gln Cys Ala Asp Asp Arg Asp Ala
                405                 410                 415
```

```
Val Cys Thr Arg Ser Val Thr Val Arg Leu Pro Gly Leu His Asn Ser
            420                 425                 430

Leu Val Lys Leu Lys His Gly Ala Gly Val Ala Met Asp Gly Gln Asp
        435                 440                 445

Ile Gln Leu Pro Leu Leu Lys Gly Asp Leu Arg Ile Gln His Thr Val
    450                 455                 460

Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu Asp Leu Gln Met Asp Trp
465                 470                 475                 480

Asp Gly Arg Gly Arg Leu Leu Val Lys Leu Ser Pro Val Tyr Ala Gly
                485                 490                 495

Lys Thr Cys Gly Leu Cys Gly Asn Tyr Asn Gly Asn Gln Gly Asp Asp
            500                 505                 510

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

Asn Ala Trp Lys Leu His Gly Asp Cys Gln Asp Leu Gln Lys Gln His
    530                 535                 540

Ser Asp Pro Cys Ala Leu Asn Pro Arg Met Thr Arg Phe Ser Glu Glu
545                 550                 555                 560

Ala Cys Ala Val Leu Thr Ser Pro Thr Phe Glu Ala Cys His Arg Ala
                565                 570                 575

Val Ser Pro Leu Pro Tyr Leu Arg Asn Cys Arg Tyr Asp Val Cys Ser
            580                 585                 590

Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly Ala Leu Ala Ser Tyr Ala
        595                 600                 605

Ala Ala Cys Ala Gly Arg Gly Val Arg Val Ala Trp Arg Glu Pro Gly
    610                 615                 620

Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln Val Tyr Leu Gln Cys Gly
625                 630                 635                 640

Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu Ser Tyr Pro Asp Glu Glu
                645                 650                 655

Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe Cys Pro Pro Gly Leu Tyr
```

660 665 670

Met Asp Glu Arg Gly Asp Cys Val Pro Lys Ala Gln Cys Pro Cys Tyr
675 680 685

Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp Ile Phe Ser Asp His His
690 695 700

Thr Met Cys Tyr Cys Glu Asp Gly Phe Met His Cys Thr Met Ser Gly
705 710 715 720

Val Pro Gly Ser Leu Leu Pro Asp Ala Val Leu Ser Ser Pro Leu Ser
725 730 735

His Arg Ser Lys Arg Ser Leu Ser Cys Arg Pro Pro Met Val Lys Leu
740 745 750

Val Cys Pro Ala Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys Thr Lys
755 760 765

Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met Ser Met Gly Cys Val Ser
770 775 780

Gly Cys Leu Cys Pro Pro Gly Met Val Arg His Glu Asn Arg Cys Val
785 790 795 800

Ala Leu Glu Arg Cys Pro Cys Phe His Gln Gly Lys Glu Tyr Ala Pro
805 810 815

Gly Glu Thr Val Lys Ile Gly Cys Asn Thr Cys Val Cys Arg Asp Arg
820 825 830

Lys Trp Asn Cys Thr Asp His Val Cys Asp Ala Thr Cys Ser Thr Ile
835 840 845

Gly Met Ala His Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu Phe Pro
850 855 860

Gly Glu Cys Gln Tyr Val Leu Val Gln Asp Tyr Cys Gly Ser Asn Pro
865 870 875 880

Gly Thr Phe Arg Ile Leu Val Gly Asn Lys Gly Cys Ser His Pro Ser
885 890 895

Val Lys Cys Lys Lys Arg Val Thr Ile Leu Val Glu Gly Gly Glu Ile
900 905 910

```
Glu Leu Phe Asp Gly Glu Val Asn Val Lys Arg Pro Met Lys Asp Glu
        915                 920                 925

Thr His Phe Glu Val Val Glu Ser Gly Arg Tyr Ile Ile Leu Leu Leu
    930                 935                 940

Gly Lys Ala Leu Ser Val Val Trp Asp Arg His Leu Ser Ile Ser Val
945                 950                 955                 960

Val Leu Lys Gln Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys Gly Asn
                965                 970                 975

Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr Ser Ser Asn Leu Gln Val
            980                 985                 990

Glu Glu Asp Pro Val Asp Phe Gly  Asn Ser Trp Lys Val  Ser Ser Gln
        995                 1000                1005

Cys Ala  Asp Thr Arg Lys Val  Pro Leu Asp Ser Ser  Pro Ala Thr
    1010                1015                1020

Cys His  Asn Asn Ile Met Lys  Gln Thr Met Val Asp  Ser Ser Cys
    1025                1030                1035

Arg Ile  Leu Thr Ser Asp Val  Phe Gln Asp Cys Asn  Lys Leu Val
    1040                1045                1050

Asp Pro  Glu Pro Tyr Leu Asp  Val Cys Ile Tyr Asp  Thr Cys Ser
    1055                1060                1065

Cys Glu  Ser Ile Gly Asp Cys  Ala Cys Phe Cys Asp  Thr Ile Ala
    1070                1075                1080

Ala Tyr  Ala His Val Cys Ala  Gln His Gly Lys Val  Val Thr Trp
    1085                1090                1095

Arg Thr  Ala Thr Leu Cys Pro  Gln Ser Cys Glu Glu  Arg Asn Leu
    1100                1105                1110

Arg Glu  Asn Gly Tyr Glu Cys  Glu Trp Arg Tyr Asn  Ser Cys Ala
    1115                1120                1125

Pro Ala  Cys Gln Val Thr Cys  Gln His Pro Glu Pro  Leu Ala Cys
    1130                1135                1140

Pro Val  Gln Cys Val Glu Gly  Cys His Ala His Cys  Pro Pro Gly
    1145                1150                1155
```

Lys Ile Leu Asp Glu Leu Leu Gln Thr Cys Val Asp Pro Glu Asp
1160 1165 1170

Cys Pro Val Cys Glu Val Ala Gly Arg Arg Phe Ala Ser Gly Lys
1175 1180 1185

Lys Val Thr Leu Asn Pro Ser Asp Pro Glu His Cys Gln Ile Cys
1190 1195 1200

His Cys Asp Val Val Asn Leu Thr Cys Glu Ala Cys Gln Glu Pro
1205 1210 1215

Gly Gly Leu Val Val Pro Pro Thr Asp Ala Pro Val Ser Pro Thr
1220 1225 1230

Thr Leu Tyr Val Glu Asp Ile Ser Glu Pro Pro Leu His Asp Phe
1235 1240 1245

Tyr Cys Ser Arg Leu Leu Asp Leu Val Phe Leu Leu Asp Gly Ser
1250 1255 1260

Ser Arg Leu Ser Glu Ala Glu Phe Glu Val Leu Lys Ala Phe Val
1265 1270 1275

Val Asp Met Met Glu Arg Leu Arg Ile Ser Gln Lys Trp Val Arg
1280 1285 1290

Val Ala Val Val Glu Tyr His Asp Gly Ser His Ala Tyr Ile Gly
1295 1300 1305

Leu Lys Asp Arg Lys Arg Pro Ser Glu Leu Arg Arg Ile Ala Ser
1310 1315 1320

Gln Val Lys Tyr Ala Gly Ser Gln Val Ala Ser Thr Ser Glu Val
1325 1330 1335

Leu Lys Tyr Thr Leu Phe Gln Ile Phe Ser Lys Ile Asp Arg Pro
1340 1345 1350

Glu Ala Ser Arg Ile Ala Leu Leu Leu Met Ala Ser Gln Glu Pro
1355 1360 1365

Gln Arg Met Ser Arg Asn Phe Val Arg Tyr Val Gln Gly Leu Lys
1370 1375 1380

Lys Lys Lys Val Ile Val Ile Pro Val Gly Ile Gly Pro His Ala
1385 1390 1395

Asn Leu Lys Gln Ile Arg Leu Ile Glu Lys Gln Ala Pro Glu Asn
1400 1405 1410

Lys Ala Phe Val Leu Ser Ser Val Asp Glu Leu Glu Gln Gln Arg
1415 1420 1425

Asp Glu Ile Val Ser Tyr Leu Cys Asp Leu Ala Pro Glu Ala Pro
1430 1435 1440

Pro Pro Thr Leu Pro Pro His Met Ala Gln Val Thr Val Gly Pro
1445 1450 1455

Gly

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<400> 13

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1 5 10 15

Leu Pro Gly Thr Leu Cys Ala Glu Gly Thr Arg Gly Arg Ser Ser Thr
20 25 30

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

Ser Met Tyr Ser Phe Ala Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly
50 55 60

Cys Gln Lys Arg Ser Phe Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys
65 70 75 80

Arg Val Ser Leu Ser Val Tyr Leu Gly Glu Phe Phe Asp Ile His Leu
85 90 95

Phe Val Asn Gly Thr Val Thr Gln Gly Asp Gln Arg Val Ser Met Pro
100 105 110

Tyr Ala Ser Lys Gly Leu Tyr Leu Glu Thr Glu Ala Gly Tyr Tyr Lys
115 120 125

```
Leu Ser Gly Glu Ala Tyr Gly Phe Val Ala Arg Ile Asp Gly Ser Gly
    130                 135                 140

Asn Phe Gln Val Leu Leu Ser Asp Arg Tyr Phe Asn Lys Thr Cys Gly
145                 150                 155                 160

Leu Cys Gly Asn Phe Asn Ile Phe Ala Glu Asp Asp Phe Met Thr Gln
                165                 170                 175

Glu Gly Thr Leu Thr Ser Asp Pro Tyr Asp Phe Ala Asn Ser Trp Ala
            180                 185                 190

Leu Ser Ser Gly Glu Gln Trp Cys Glu Arg Ala Ser Pro Pro Ser Ser
        195                 200                 205

Ser Cys Asn Ile Ser Ser Gly Glu Met Gln Lys Gly Leu Trp Glu Gln
    210                 215                 220

Cys Gln Leu Leu Lys Ser Thr Ser Val Phe Ala Arg Cys His Pro Leu
225                 230                 235                 240

Val Asp Pro Glu Pro Phe Val Ala Leu Cys Glu Lys Thr Leu Cys Glu
                245                 250                 255

Cys Ala Gly Gly Leu Glu Cys Ala Cys Pro Ala Leu Leu Glu Tyr Ala
            260                 265                 270

Arg Thr Cys Ala Gln Glu Gly Met Val Leu Tyr Gly Trp Thr Asp His
        275                 280                 285

Ser Ala Cys Ser Pro Val Cys Pro Ala Gly Met Glu Tyr Arg Gln Cys
    290                 295                 300

Val Ser Pro Cys Ala Arg Thr Cys Gln Ser Leu His Ile Asn Glu Met
305                 310                 315                 320

Cys Gln Glu Arg Cys Val Asp Gly Cys Ser Cys Pro Glu Gly Gln Leu
                325                 330                 335

Leu Asp Glu Gly Leu Cys Val Glu Ser Thr Glu Cys Pro Cys Val His
            340                 345                 350

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

Thr Cys Ile Cys Arg Asn Ser Gln Trp Ile Cys Ser Asn Glu Glu Cys
    370                 375                 380
```

```
Pro Gly Glu Cys Leu Val Thr Gly Gln Ser His Phe Lys Ser Phe Asp
385                 390                 395                 400

Asn Arg Tyr Phe Thr Phe Ser Gly Ile Cys Gln Tyr Leu Leu Ala Arg
                405                 410                 415

Asp Cys Gln Asp His Ser Phe Ser Ile Val Ile Glu Thr Val Gln Cys
            420                 425                 430

Ala Asp Asp Arg Asp Ala Val Cys Thr Arg Ser Val Thr Val Arg Leu
        435                 440                 445

Pro Gly Leu His Asn Ser Leu Val Lys Leu Lys His Gly Ala Gly Val
    450                 455                 460

Ala Met Asp Gly Gln Asp Ile Gln Leu Pro Leu Leu Lys Gly Asp Leu
465                 470                 475                 480

Arg Ile Gln His Thr Val Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu
                485                 490                 495

Asp Leu Gln Met Asp Trp Asp Gly Arg Gly Arg Leu Leu Val Lys Leu
            500                 505                 510

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

Gly Asn Gln Gly Asp Asp Phe Leu Thr Pro Ser Gly Leu Ala Glu Pro
    530                 535                 540

Arg Val Glu Asp Phe Gly Asn Ala Trp Lys Leu His Gly Asp Cys Gln
545                 550                 555                 560

Asp Leu Gln Lys Gln His Ser Asp Pro Cys Ala Leu Asn Pro Arg Met
                565                 570                 575

Thr Arg Phe Ser Glu Glu Ala Cys Ala Val Leu Thr Ser Pro Thr Phe
            580                 585                 590

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

Arg Tyr Asp Val Cys Ser Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly
    610                 615                 620

Ala Leu Ala Ser Tyr Ala Ala Ala Cys Ala Gly Arg Gly Val Arg Val
```

625 630 635 640

Ala Trp Arg Glu Pro Gly Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln
645 650 655

Val Tyr Leu Gln Cys Gly Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu
660 665 670

Ser Tyr Pro Asp Glu Glu Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe
675 680 685

Cys Pro Pro Gly Leu Tyr Met Asp Glu Arg Gly Asp Cys Val Pro Lys
690 695 700

Ala Gln Cys Pro Cys Tyr Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp
705 710 715 720

Ile Phe Ser Asp His His Thr Met Cys Tyr Cys Glu Asp Gly Phe Met
725 730 735

His Cys Thr Met Ser Gly Val Pro Gly Ser Leu Leu Pro Asp Ala Val
740 745 750

Leu Ser Ser Pro Leu Ser His Arg Ser Lys Arg Ser Leu Ser Cys Arg
755 760 765

Pro Pro Met Val Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu
770 775 780

Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met
785 790 795 800

Ser Met Gly Cys Val Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg
805 810 815

His Glu Asn Arg Cys Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln
820 825 830

Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr
835 840 845

Cys Val Cys Arg Asp Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp
850 855 860

Ala Thr Cys Ser Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly
865 870 875 880

```
Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp
                885                 890                 895

Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys
            900                 905                 910

Gly Cys Ser His Pro Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu
        915                 920                 925

Val Glu Gly Gly Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys
    930                 935                 940

Arg Pro Met Lys Asp Glu Thr His Phe Glu Val Val Glu Ser Gly Arg
945                 950                 955                 960

Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg
                965                 970                 975

His Leu Ser Ile Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val
            980                 985                 990

Cys Gly Leu Cys Gly Asn Phe Asp  Gly Ile Gln Asn Asn  Asp Leu Thr
        995                 1000                1005

Ser Ser  Asn Leu Gln Val Glu  Glu Asp Pro Val Asp  Phe Gly Asn
    1010                1015                1020

Ser Trp  Lys Val Ser Ser Gln  Cys Ala Asp Thr Arg  Lys Val Pro
    1025                1030                1035

Leu Asp  Ser Ser Pro Ala Thr  Cys His Asn Asn Ile  Met Lys Gln
    1040                1045                1050

Thr Met  Val Asp Ser Ser Cys  Arg Ile Leu Thr Ser  Asp Val Phe
    1055                1060                1065

Gln Asp  Cys Asn Lys Leu Val  Asp Pro Glu Pro Tyr  Leu Asp Val
    1070                1075                1080

Cys Ile  Tyr Asp Thr Cys Ser  Cys Glu Ser Ile Gly  Asp Cys Ala
    1085                1090                1095

Cys Phe  Cys Asp Thr Ile Ala  Ala Tyr Ala His Val  Cys Ala Gln
    1100                1105                1110

His Gly  Lys Val Val Thr Trp  Arg Thr Ala Thr Leu  Cys Pro Gln
    1115                1120                1125
```

```
Ser Cys  Glu Glu Arg Asn Leu  Arg Glu Asn Gly Tyr  Glu Cys Glu
    1130                1135                1140

Trp Arg  Tyr Asn Ser Cys Ala  Pro Ala Cys Gln Val  Thr Cys Gln
    1145                1150                1155

His Pro  Glu Pro Leu Ala Cys  Pro Val Gln Cys Val  Glu Gly Cys
    1160                1165                1170

His Ala  His Cys Pro Pro Gly  Lys Ile Leu Asp Glu  Leu Leu Gln
    1175                1180                1185

Thr Cys  Val Asp Pro Glu Asp  Cys Pro Val Cys Glu  Val Ala Gly
    1190                1195                1200

Arg Arg  Phe Ala Ser Gly Lys  Lys Val Thr Leu Asn  Pro Ser Asp
    1205                1210                1215

Pro Glu  His Cys Gln Ile Cys  His Cys Asp Val Val  Asn Leu Thr
    1220                1225                1230

Cys Glu  Ala Cys Gln Glu Pro  Gly Gly Leu Val Val  Pro Pro Thr
    1235                1240                1245

Asp Ala  Pro Val Ser Pro Thr  Thr Leu Tyr Val Glu  Asp Ile Ser
    1250                1255                1260

Glu Pro  Pro Leu His Asp Phe  Tyr Cys Ser Arg Leu  Leu Asp Leu
    1265                1270                1275

Val Phe  Leu Leu Asp Gly Ser  Ser Arg Leu Ser Glu  Ala Glu Phe
    1280                1285                1290

Glu Val  Leu Lys Ala Phe Val  Val Asp Met Met Glu  Arg Leu Arg
    1295                1300                1305

Ile Ser  Gln Lys Trp Val Arg  Val Ala Val Val Glu  Tyr His Asp
    1310                1315                1320

Gly Ser  His Ala Tyr Ile Gly  Leu Lys Asp Arg Lys  Arg Pro Ser
    1325                1330                1335

Glu Leu  Arg Arg Ile Ala Ser  Gln Val Lys Tyr Ala  Gly Ser Gln
    1340                1345                1350

Val Ala  Ser Thr Ser Glu Val  Leu Lys Tyr Thr Leu  Phe Gln Ile
    1355                1360                1365
```

Phe Ser Lys Ile Asp Arg Pro Glu Ala Ser Arg Ile Ala Leu Leu
1370 1375 1380

Leu Met Ala Ser Gln Glu Pro Gln Arg Met Ser Arg Asn Phe Val
1385 1390 1395

Arg Tyr Val Gln Gly Leu Lys Lys Lys Lys Val Ile Val Ile Pro
1400 1405 1410

Val Gly Ile Gly Pro His Ala Asn Leu Lys Gln Ile Arg Leu Ile
1415 1420 1425

Glu Lys Gln Ala Pro Glu Asn Lys Ala Phe Val Leu Ser Ser Val
1430 1435 1440

Asp Glu Leu Glu Gln Gln Arg Asp Glu Ile Val Ser Tyr Leu Cys
1445 1450 1455

Asp Leu Ala Pro Glu Ala Pro Pro Pro Thr Leu Pro Pro His Met
1460 1465 1470

Ala Gln Val Thr Val Gly Pro Gly
1475 1480

<210> 14
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Ala Glu Gly Thr Arg Gly Arg Ser Ser Thr Ala Arg Cys Ser Leu Phe
1 5 10 15

Gly Ser Asp Phe Val Asn Thr Phe Asp Gly Ser Met Tyr Ser Phe Ala
20 25 30

Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly Cys Gln Lys Arg Ser Phe
35 40 45

Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys Arg Val Ser Leu Ser Val
50 55 60

Tyr Leu Gly Glu Phe Phe Asp Ile His Leu Phe Val Asn Gly Thr Val
65 70 75 80

```
Thr Gln Gly Asp Gln Arg Val Ser Met Pro Tyr Ala Ser Lys Gly Leu
                85                  90                  95

Tyr Leu Glu Thr Glu Ala Gly Tyr Tyr Lys Leu Ser Gly Glu Ala Tyr
            100                 105                 110

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

Ser Asp Arg Tyr Phe Asn Lys Thr Cys Gly Leu Cys Gly Asn Phe Asn
    130                 135                 140

Ile Phe Ala Glu Asp Asp Phe Met Thr Gln Glu Gly Thr Leu Thr Ser
145                 150                 155                 160

Asp Pro Tyr Asp Phe Ala Asn Ser Trp Ala Leu Ser Ser Gly Glu Gln
                165                 170                 175

Trp Cys Glu Arg Ala Ser Pro Pro Ser Ser Ser Cys Asn Ile Ser Ser
            180                 185                 190

Gly Glu Met Gln Lys Gly Leu Trp Glu Gln Cys Gln Leu Leu Lys Ser
        195                 200                 205

Thr Ser Val Phe Ala Arg Cys His Pro Leu Val Asp Pro Glu Pro Phe
    210                 215                 220

Val Ala Leu Cys Glu Lys Thr Leu Cys Glu Cys Ala Gly Gly Leu Glu
225                 230                 235                 240

Cys Ala Cys Pro Ala Leu Leu Glu Tyr Ala Arg Thr Cys Ala Gln Glu
                245                 250                 255

Gly Met Val Leu Tyr Gly Trp Thr Asp His Ser Ala Cys Ser Pro Val
            260                 265                 270

Cys Pro Ala Gly Met Glu Tyr Arg Gln Cys Val Ser Pro Cys Ala Arg
        275                 280                 285

Thr Cys Gln Ser Leu His Ile Asn Glu Met Cys Gln Glu Arg Cys Val
    290                 295                 300

Asp Gly Cys Ser Cys Pro Glu Gly Gln Leu Leu Asp Glu Gly Leu Cys
305                 310                 315                 320

Val Glu Ser Thr Glu Cys Pro Cys Val His Ser Gly Lys Arg Tyr Pro
                325                 330                 335
```

```
Pro Gly Thr Ser Leu Ser Arg Asp Cys Asn Thr Cys Ile Cys Arg Asn
            340                 345                 350

Ser Gln Trp Ile Cys Ser Asn Glu Glu Cys Pro Gly Glu Cys Leu Val
        355                 360                 365

Thr Gly Gln Ser His Phe Lys Ser Phe Asp Asn Arg Tyr Phe Thr Phe
    370                 375                 380

Ser Gly Ile Cys Gln Tyr Leu Leu Ala Arg Asp Cys Gln Asp His Ser
385                 390                 395                 400

Phe Ser Ile Val Ile Glu Thr Val Gln Cys Ala Asp Asp Arg Asp Ala
                405                 410                 415

Val Cys Thr Arg Ser Val Thr Val Arg Leu Pro Gly Leu His Asn Ser
            420                 425                 430

Leu Val Lys Leu Lys His Gly Ala Gly Val Ala Met Asp Gly Gln Asp
        435                 440                 445

Ile Gln Leu Pro Leu Leu Lys Gly Asp Leu Arg Ile Gln His Thr Val
    450                 455                 460

Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu Asp Leu Gln Met Asp Trp
465                 470                 475                 480

Asp Gly Arg Gly Arg Leu Leu Val Lys Leu Ser Pro Val Tyr Ala Gly
                485                 490                 495

Lys Thr Cys Gly Leu Cys Gly Asn Tyr Asn Gly Asn Gln Gly Asp Asp
            500                 505                 510

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

Asn Ala Trp Lys Leu His Gly Asp Cys Gln Asp Leu Gln Lys Gln His
    530                 535                 540

Ser Asp Pro Cys Ala Leu Asn Pro Arg Met Thr Arg Phe Ser Glu Glu
545                 550                 555                 560

Ala Cys Ala Val Leu Thr Ser Pro Thr Phe Glu Ala Cys His Arg Ala
                565                 570                 575

Val Ser Pro Leu Pro Tyr Leu Arg Asn Cys Arg Tyr Asp Val Cys Ser
```

580 585 590

Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly Ala Leu Ala Ser Tyr Ala
595 600 605

Ala Ala Cys Ala Gly Arg Gly Val Arg Val Ala Trp Arg Glu Pro Gly
610 615 620

Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln Val Tyr Leu Gln Cys Gly
625 630 635 640

Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu Ser Tyr Pro Asp Glu Glu
645 650 655

Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe Cys Pro Pro Gly Leu Tyr
660 665 670

Met Asp Glu Arg Gly Asp Cys Val Pro Lys Ala Gln Cys Pro Cys Tyr
675 680 685

Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp Ile Phe Ser Asp His His
690 695 700

Thr Met Cys Tyr Cys Glu Asp Gly Phe Met His Cys Thr Met Ser Gly
705 710 715 720

Val Pro Gly Ser Leu Leu Pro Asp Ala Val Leu Ser Ser Pro Leu Ser
725 730 735

His Arg Ser Lys Arg Ser Leu Ser Cys Arg Pro Pro Met Val Lys Leu
740 745 750

Val Cys Pro Ala Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys Thr Lys
755 760 765

Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met Ser Met Gly Cys Val Ser
770 775 780

Gly Cys Leu Cys Pro Pro Gly Met Val Arg His Glu Asn Arg Cys Val
785 790 795 800

Ala Leu Glu Arg Cys Pro Cys Phe His Gln Gly Lys Glu Tyr Ala Pro
805 810 815

Gly Glu Thr Val Lys Ile Gly Cys Asn Thr Cys Val Cys Arg Asp Arg
820 825 830

```
Lys Trp Asn Cys Thr Asp His Val Cys Asp Ala Thr Cys Ser Thr Ile
        835                 840                 845

Gly Met Ala His Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu Phe Pro
    850                 855                 860

Gly Glu Cys Gln Tyr Val Leu Val Gln Asp Tyr Cys Gly Ser Asn Pro
865                 870                 875                 880

Gly Thr Phe Arg Ile Leu Val Gly Asn Lys Gly Cys Ser His Pro Ser
                885                 890                 895

Val Lys Cys Lys Lys Arg Val Thr Ile Leu Val Glu Gly Gly Glu Ile
            900                 905                 910

Glu Leu Phe Asp Gly Glu Val Asn Val Lys Arg Pro Met Lys Asp Glu
        915                 920                 925

Thr His Phe Glu Val Val Glu Ser Gly Arg Tyr Ile Ile Leu Leu Leu
    930                 935                 940

Gly Lys Ala Leu Ser Val Val Trp Asp Arg His Leu Ser Ile Ser Val
945                 950                 955                 960

Val Leu Lys Gln Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys Gly Asn
                965                 970                 975

Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr Ser Ser Asn Leu Gln Val
            980                 985                 990

Glu Glu Asp Pro Val Asp Phe Gly  Asn Ser Trp Lys Val  Ser Ser Gln
        995                 1000                1005

Cys Ala  Asp Thr Arg Lys Val  Pro Leu Asp Ser Ser  Pro Ala Thr
    1010                1015                1020

Cys His  Asn Asn Ile Met Lys  Gln Thr Met Val Asp  Ser Ser Cys
    1025                1030                1035

Arg Ile  Leu Thr Ser Asp Val  Phe Gln Asp Cys Asn  Lys Leu Val
    1040                1045                1050

Asp Pro  Glu Pro Tyr Leu Asp  Val Cys Ile Tyr Asp  Thr Cys Ser
    1055                1060                1065

Cys Glu  Ser Ile Gly Asp Cys  Ala Cys Phe Cys Asp  Thr Ile Ala
    1070                1075                1080
```

```
Ala Tyr  Ala His Val Cys Ala  Gln His Gly Lys Val  Val Thr Trp
    1085                 1090                 1095

Arg Thr  Ala Thr Leu Cys Pro  Gln Ser Cys Glu Glu  Arg Asn Leu
    1100                 1105                 1110

Arg Glu  Asn Gly Tyr Glu Cys  Glu Trp Arg Tyr Asn  Ser Cys Ala
    1115                 1120                 1125

Pro Ala  Cys Gln Val Thr Cys  Gln His Pro Glu Pro  Leu Ala Cys
    1130                 1135                 1140

Pro Val  Gln Cys Val Glu Gly  Cys His Ala His Cys  Pro Pro Gly
    1145                 1150                 1155

Lys Ile  Leu Asp Glu Leu Leu  Gln Thr Cys Val Asp  Pro Glu Asp
    1160                 1165                 1170

Cys Pro  Val Cys Glu Val Ala  Gly Arg Arg Phe Ala  Ser Gly Lys
    1175                 1180                 1185

Lys Val  Thr Leu Asn Pro Ser  Asp Pro Glu His Cys  Gln Ile Cys
    1190                 1195                 1200

His Cys  Asp Val Val Asn Leu  Thr Cys Glu Ala Cys  Gln Glu Pro
    1205                 1210                 1215

Gly Gly  Leu Val Val Pro Pro  Thr Asp Ala Pro Val  Ser Pro Thr
    1220                 1225                 1230

Thr Leu  Tyr Val Glu Asp Ile  Ser Glu Pro Pro Leu  His Asp Phe
    1235                 1240                 1245

Tyr Cys  Ser Arg Leu Leu Asp  Leu Val Phe Leu Leu  Asp Gly Ser
    1250                 1255                 1260

Ser Arg  Leu Ser Glu Ala Glu  Phe Glu Val Leu Lys  Ala Phe Val
    1265                 1270                 1275

Val Asp  Met Met Glu Arg Leu  Arg Ile Ser Gln Lys  Trp Val Arg
    1280                 1285                 1290

Val Ala  Val Val Glu Tyr His  Asp Gly Ser His Ala  Tyr Ile Gly
    1295                 1300                 1305

Leu Lys  Asp Arg Lys Arg Pro  Ser Glu Leu Arg Arg  Ile Ala Ser
    1310                 1315                 1320
```

```
Gln Val  Lys Tyr Ala Gly Ser  Gln Val Ala Ser Thr  Ser Glu Val
    1325                 1330                 1335

Leu Lys  Tyr Thr Leu Phe Gln  Ile Phe Ser Lys Ile  Asp Arg Pro
    1340                 1345                 1350

Glu Ala  Ser Arg Ile Ala Leu  Leu Leu Met Ala Ser  Gln Glu Pro
    1355                 1360                 1365

Gln Arg  Met Ser Arg Asn Phe  Val Arg Tyr Val Gln  Gly Leu Lys
    1370                 1375                 1380

Lys Lys  Lys Val Ile Val Ile  Pro Val Gly Ile Gly  Pro His Ala
    1385                 1390                 1395

Asn Leu  Lys Gln Ile Arg Leu  Ile Glu Lys Gln Ala  Pro Glu Asn
    1400                 1405                 1410

Lys Ala  Phe Val Leu Ser Ser  Val Asp Glu Leu Glu  Gln Gln Arg
    1415                 1420                 1425

Asp Glu  Ile Val Ser Tyr Leu  Cys Asp Leu Ala Pro  Glu Ala Pro
    1430                 1435                 1440

Pro Pro  Thr Leu Pro Pro His  Met Ala Gln Val Thr  Val Gly Pro
    1445                 1450                 1455

Gly Leu  Leu Gly Val Ser Thr  Leu Gly Pro Lys Arg  Asn Ser Met
    1460                 1465                 1470

Val Leu  Asp Val Ala Phe Val  Leu Glu Gly Ser Asp  Lys Ile Gly
    1475                 1480                 1485

Glu Ala  Asp Phe Asn Arg Ser  Lys Glu Phe Met Glu  Glu Val Ile
    1490                 1495                 1500

Gln Arg  Met Asp Val Gly Gln  Asp Ser Ile His Val  Thr Val Leu
    1505                 1510                 1515

Gln Tyr  Ser Tyr Met Val Thr  Val Glu Tyr Pro Phe  Ser Glu Ala
    1520                 1525                 1530

Gln Ser  Lys Gly Asp Ile Leu  Gln Arg Val Arg Glu  Ile Arg Tyr
    1535                 1540                 1545

Gln Gly  Gly Asn Arg Thr Asn  Thr Gly Leu Ala Leu  Arg Tyr Leu
```

1550 1555 1560

Ser Asp His Ser Phe Leu Val Ser Gln Gly Asp Arg Glu Gln Ala
1565 1570 1575

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

Ile Lys Arg Leu Pro Gly Asp Ile Gln Val Val Pro Ile Gly Val
1595 1600 1605

Gly Pro Asn Ala Asn Val Gln Glu Leu Glu Arg Ile Gly Trp Pro
1610 1615 1620

Asn Ala Pro Ile Leu Ile Gln Asp Phe Glu Thr Leu Pro Arg Glu
1625 1630 1635

Ala Pro Asp Leu Val Leu Gln Arg Cys Cys Ser Gly Glu Gly Leu
1640 1645 1650

Gln Ile Pro Thr Leu Ser Pro Ala Pro Asp Cys Ser Gln Pro Leu
1655 1660 1665

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

Tyr Phe Asp Glu Met Lys Ser Phe Ala Lys Ala Phe Ile Ser Lys
1685 1690 1695

Ala Asn Ile Gly Pro Arg Leu Thr Gln Val Ser Val Leu Gln Tyr
1700 1705 1710

Gly Ser Ile Thr Thr Ile Asp Val Pro Trp Asn Val Val Pro Glu
1715 1720 1725

Lys Ala His Leu Leu Ser Leu Val Asp Val Met Gln Arg Glu Gly
1730 1735 1740

Gly Pro Ser Gln Ile Gly Asp Ala Leu Gly Phe Ala Val Arg Tyr
1745 1750 1755

Leu Thr Ser Glu Met His Gly Ala Arg Pro Gly Ala Ser Lys Ala
1760 1765 1770

Val Val Ile Leu Val Thr Asp Val Ser Val Asp Ser Val Asp Ala
1775 1780 1785

```
Ala Ala  Asp Ala Ala Arg Ser  Asn Arg Val Thr Val  Phe Pro Ile
    1790                 1795                 1800

Gly Ile  Gly Asp Arg Tyr Asp  Ala Ala Gln Leu Arg  Ile Leu Ala
    1805                 1810                 1815

Gly Pro  Ala Gly Asp Ser Asn  Val Val Lys Leu Gln  Arg Ile Glu
    1820                 1825                 1830

Asp Leu  Pro Thr Met Val Thr  Leu Gly Asn Ser Phe  Leu His Lys
    1835                 1840                 1845

Leu Cys  Ser Gly Phe Val Arg  Ile Cys
    1850                 1855
```

<210> 15
<211> 1879
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 15

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Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1               5                  10                  15

Leu Pro Gly Thr Leu Cys Ala Glu Gly Thr Arg Gly Arg Ser Ser Thr
            20                  25                  30

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

Ser Met Tyr Ser Phe Ala Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly
    50                  55                  60

Cys Gln Lys Arg Ser Phe Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys
65                  70                  75                  80

Arg Val Ser Leu Ser Val Tyr Leu Gly Glu Phe Phe Asp Ile His Leu
                85                  90                  95

Phe Val Asn Gly Thr Val Thr Gln Gly Asp Gln Arg Val Ser Met Pro
            100                 105                 110

Tyr Ala Ser Lys Gly Leu Tyr Leu Glu Thr Glu Ala Gly Tyr Tyr Lys
        115                 120                 125

Leu Ser Gly Glu Ala Tyr Gly Phe Val Ala Arg Ile Asp Gly Ser Gly
```

130 135 140

Asn Phe Gln Val Leu Leu Ser Asp Arg Tyr Phe Asn Lys Thr Cys Gly
145 150 155 160

Leu Cys Gly Asn Phe Asn Ile Phe Ala Glu Asp Asp Phe Met Thr Gln
165 170 175

Glu Gly Thr Leu Thr Ser Asp Pro Tyr Asp Phe Ala Asn Ser Trp Ala
180 185 190

Leu Ser Ser Gly Glu Gln Trp Cys Glu Arg Ala Ser Pro Pro Ser Ser
195 200 205

Ser Cys Asn Ile Ser Ser Gly Glu Met Gln Lys Gly Leu Trp Glu Gln
210 215 220

Cys Gln Leu Leu Lys Ser Thr Ser Val Phe Ala Arg Cys His Pro Leu
225 230 235 240

Val Asp Pro Glu Pro Phe Val Ala Leu Cys Glu Lys Thr Leu Cys Glu
245 250 255

Cys Ala Gly Gly Leu Glu Cys Ala Cys Pro Ala Leu Leu Glu Tyr Ala
260 265 270

Arg Thr Cys Ala Gln Glu Gly Met Val Leu Tyr Gly Trp Thr Asp His
275 280 285

Ser Ala Cys Ser Pro Val Cys Pro Ala Gly Met Glu Tyr Arg Gln Cys
290 295 300

Val Ser Pro Cys Ala Arg Thr Cys Gln Ser Leu His Ile Asn Glu Met
305 310 315 320

Cys Gln Glu Arg Cys Val Asp Gly Cys Ser Cys Pro Glu Gly Gln Leu
325 330 335

Leu Asp Glu Gly Leu Cys Val Glu Ser Thr Glu Cys Pro Cys Val His
340 345 350

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

Thr Cys Ile Cys Arg Asn Ser Gln Trp Ile Cys Ser Asn Glu Glu Cys
370 375 380

```
Pro Gly Glu Cys Leu Val Thr Gly Gln Ser His Phe Lys Ser Phe Asp
385                 390                 395                 400

Asn Arg Tyr Phe Thr Phe Ser Gly Ile Cys Gln Tyr Leu Leu Ala Arg
                405                 410                 415

Asp Cys Gln Asp His Ser Phe Ser Ile Val Ile Glu Thr Val Gln Cys
            420                 425                 430

Ala Asp Asp Arg Asp Ala Val Cys Thr Arg Ser Val Thr Val Arg Leu
        435                 440                 445

Pro Gly Leu His Asn Ser Leu Val Lys Leu Lys His Gly Ala Gly Val
    450                 455                 460

Ala Met Asp Gly Gln Asp Ile Gln Leu Pro Leu Leu Lys Gly Asp Leu
465                 470                 475                 480

Arg Ile Gln His Thr Val Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu
                485                 490                 495

Asp Leu Gln Met Asp Trp Asp Gly Arg Gly Arg Leu Leu Val Lys Leu
            500                 505                 510

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

Gly Asn Gln Gly Asp Asp Phe Leu Thr Pro Ser Gly Leu Ala Glu Pro
    530                 535                 540

Arg Val Glu Asp Phe Gly Asn Ala Trp Lys Leu His Gly Asp Cys Gln
545                 550                 555                 560

Asp Leu Gln Lys Gln His Ser Asp Pro Cys Ala Leu Asn Pro Arg Met
                565                 570                 575

Thr Arg Phe Ser Glu Glu Ala Cys Ala Val Leu Thr Ser Pro Thr Phe
            580                 585                 590

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

Arg Tyr Asp Val Cys Ser Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly
    610                 615                 620

Ala Leu Ala Ser Tyr Ala Ala Ala Cys Ala Gly Arg Gly Val Arg Val
625                 630                 635                 640
```

```
Ala Trp Arg Glu Pro Gly Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln
                645                 650                 655

Val Tyr Leu Gln Cys Gly Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu
            660                 665                 670

Ser Tyr Pro Asp Glu Glu Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe
        675                 680                 685

Cys Pro Pro Gly Leu Tyr Met Asp Glu Arg Gly Asp Cys Val Pro Lys
    690                 695                 700

Ala Gln Cys Pro Cys Tyr Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp
705                 710                 715                 720

Ile Phe Ser Asp His His Thr Met Cys Tyr Cys Glu Asp Gly Phe Met
                725                 730                 735

His Cys Thr Met Ser Gly Val Pro Gly Ser Leu Leu Pro Asp Ala Val
            740                 745                 750

Leu Ser Ser Pro Leu Ser His Arg Ser Lys Arg Ser Leu Ser Cys Arg
        755                 760                 765

Pro Pro Met Val Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu
    770                 775                 780

Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met
785                 790                 795                 800

Ser Met Gly Cys Val Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg
                805                 810                 815

His Glu Asn Arg Cys Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln
            820                 825                 830

Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr
        835                 840                 845

Cys Val Cys Arg Asp Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp
    850                 855                 860

Ala Thr Cys Ser Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly
865                 870                 875                 880

Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp
                885                 890                 895
```

```
Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys
            900                 905                 910

Gly Cys Ser His Pro Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu
        915                 920                 925

Val Glu Gly Gly Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys
    930                 935                 940

Arg Pro Met Lys Asp Glu Thr His Phe Glu Val Val Glu Ser Gly Arg
945                 950                 955                 960

Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg
                965                 970                 975

His Leu Ser Ile Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val
            980                 985                 990

Cys Gly Leu Cys Gly Asn Phe Asp  Gly Ile Gln Asn Asn  Asp Leu Thr
        995                 1000                1005

Ser Ser  Asn Leu Gln Val Glu  Glu Asp Pro Val Asp  Phe Gly Asn
    1010                1015                1020

Ser Trp  Lys Val Ser Ser Gln  Cys Ala Asp Thr Arg  Lys Val Pro
    1025                1030                1035

Leu Asp  Ser Ser Pro Ala Thr  Cys His Asn Asn Ile  Met Lys Gln
    1040                1045                1050

Thr Met  Val Asp Ser Ser Cys  Arg Ile Leu Thr Ser  Asp Val Phe
    1055                1060                1065

Gln Asp  Cys Asn Lys Leu Val  Asp Pro Glu Pro Tyr  Leu Asp Val
    1070                1075                1080

Cys Ile  Tyr Asp Thr Cys Ser  Cys Glu Ser Ile Gly  Asp Cys Ala
    1085                1090                1095

Cys Phe  Cys Asp Thr Ile Ala  Ala Tyr Ala His Val  Cys Ala Gln
    1100                1105                1110

His Gly  Lys Val Val Thr Trp  Arg Thr Ala Thr Leu  Cys Pro Gln
    1115                1120                1125

Ser Cys  Glu Glu Arg Asn Leu  Arg Glu Asn Gly Tyr  Glu Cys Glu
```

1130 1135 1140

Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr Cys Gln
1145 1150 1155

His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly Cys
1160 1165 1170

His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln
1175 1180 1185

Thr Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly
1190 1195 1200

Arg Arg Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp
1205 1210 1215

Pro Glu His Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr
1220 1225 1230

Cys Glu Ala Cys Gln Glu Pro Gly Gly Leu Val Val Pro Pro Thr
1235 1240 1245

Asp Ala Pro Val Ser Pro Thr Thr Leu Tyr Val Glu Asp Ile Ser
1250 1255 1260

Glu Pro Pro Leu His Asp Phe Tyr Cys Ser Arg Leu Leu Asp Leu
1265 1270 1275

Val Phe Leu Leu Asp Gly Ser Ser Arg Leu Ser Glu Ala Glu Phe
1280 1285 1290

Glu Val Leu Lys Ala Phe Val Val Asp Met Met Glu Arg Leu Arg
1295 1300 1305

Ile Ser Gln Lys Trp Val Arg Val Ala Val Val Glu Tyr His Asp
1310 1315 1320

Gly Ser His Ala Tyr Ile Gly Leu Lys Asp Arg Lys Arg Pro Ser
1325 1330 1335

Glu Leu Arg Arg Ile Ala Ser Gln Val Lys Tyr Ala Gly Ser Gln
1340 1345 1350

Val Ala Ser Thr Ser Glu Val Leu Lys Tyr Thr Leu Phe Gln Ile
1355 1360 1365

```
Phe Ser  Lys Ile Asp Arg Pro  Glu Ala Ser Arg Ile  Ala Leu Leu
    1370                1375                1380

Leu Met  Ala Ser Gln Glu Pro  Gln Arg Met Ser Arg  Asn Phe Val
    1385                1390                1395

Arg Tyr  Val Gln Gly Leu Lys  Lys Lys Lys Val Ile  Val Ile Pro
    1400                1405                1410

Val Gly  Ile Gly Pro His Ala  Asn Leu Lys Gln Ile  Arg Leu Ile
    1415                1420                1425

Glu Lys  Gln Ala Pro Glu Asn  Lys Ala Phe Val Leu  Ser Ser Val
    1430                1435                1440

Asp Glu  Leu Glu Gln Gln Arg  Asp Glu Ile Val Ser  Tyr Leu Cys
    1445                1450                1455

Asp Leu  Ala Pro Glu Ala Pro  Pro Pro Thr Leu Pro  Pro His Met
    1460                1465                1470

Ala Gln  Val Thr Val Gly Pro  Gly Leu Leu Gly Val  Ser Thr Leu
    1475                1480                1485

Gly Pro  Lys Arg Asn Ser Met  Val Leu Asp Val Ala  Phe Val Leu
    1490                1495                1500

Glu Gly  Ser Asp Lys Ile Gly  Glu Ala Asp Phe Asn  Arg Ser Lys
    1505                1510                1515

Glu Phe  Met Glu Glu Val Ile  Gln Arg Met Asp Val  Gly Gln Asp
    1520                1525                1530

Ser Ile  His Val Thr Val Leu  Gln Tyr Ser Tyr Met  Val Thr Val
    1535                1540                1545

Glu Tyr  Pro Phe Ser Glu Ala  Gln Ser Lys Gly Asp  Ile Leu Gln
    1550                1555                1560

Arg Val  Arg Glu Ile Arg Tyr  Gln Gly Gly Asn Arg  Thr Asn Thr
    1565                1570                1575

Gly Leu  Ala Leu Arg Tyr Leu  Ser Asp His Ser Phe  Leu Val Ser
    1580                1585                1590

Gln Gly  Asp Arg Glu Gln Ala  Pro Asn Leu Val Tyr  Met Val Thr
    1595                1600                1605
```

```
Gly Asn  Pro Ala Ser Asp Glu  Ile Lys Arg Leu Pro  Gly Asp Ile
    1610                 1615                 1620

Gln Val  Val Pro Ile Gly Val  Gly Pro Asn Ala Asn  Val Gln Glu
    1625                 1630                 1635

Leu Glu  Arg Ile Gly Trp Pro  Asn Ala Pro Ile Leu  Ile Gln Asp
    1640                 1645                 1650

Phe Glu  Thr Leu Pro Arg Glu  Ala Pro Asp Leu Val  Leu Gln Arg
    1655                 1660                 1665

Cys Cys  Ser Gly Glu Gly Leu  Gln Ile Pro Thr Leu  Ser Pro Ala
    1670                 1675                 1680

Pro Asp  Cys Ser Gln Pro Leu  Asp Val Ile Leu Leu  Leu Asp Gly
    1685                 1690                 1695

Ser Ser  Ser Phe Pro Ala Ser  Tyr Phe Asp Glu Met  Lys Ser Phe
    1700                 1705                 1710

Ala Lys  Ala Phe Ile Ser Lys  Ala Asn Ile Gly Pro  Arg Leu Thr
    1715                 1720                 1725

Gln Val  Ser Val Leu Gln Tyr  Gly Ser Ile Thr Thr  Ile Asp Val
    1730                 1735                 1740

Pro Trp  Asn Val Val Pro Glu  Lys Ala His Leu Leu  Ser Leu Val
    1745                 1750                 1755

Asp Val  Met Gln Arg Glu Gly  Gly Pro Ser Gln Ile  Gly Asp Ala
    1760                 1765                 1770

Leu Gly  Phe Ala Val Arg Tyr  Leu Thr Ser Glu Met  His Gly Ala
    1775                 1780                 1785

Arg Pro  Gly Ala Ser Lys Ala  Val Val Ile Leu Val  Thr Asp Val
    1790                 1795                 1800

Ser Val  Asp Ser Val Asp Ala  Ala Ala Asp Ala Ala  Arg Ser Asn
    1805                 1810                 1815

Arg Val  Thr Val Phe Pro Ile  Gly Ile Gly Asp Arg  Tyr Asp Ala
    1820                 1825                 1830

Ala Gln  Leu Arg Ile Leu Ala  Gly Pro Ala Gly Asp  Ser Asn Val
    1835                 1840                 1845
```

Val Lys Leu Gln Arg Ile Glu Asp Leu Pro Thr Met Val Thr Leu
1850 1855 1860

Gly Asn Ser Phe Leu His Lys Leu Cys Ser Gly Phe Val Arg Ile
1865 1870 1875

Cys

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

<220>
<223> sequence

<400> 16

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
1 5 10 15

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
20 25 30

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
35 40 45

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
50 55 60

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
65 70 75 80

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
85 90 95

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
100 105 110

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
115 120 125

Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
130 135 140

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

```
Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
                165                 170                 175

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
            180                 185                 190

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
        195                 200                 205

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
    210                 215                 220

Pro Gly Lys
225
```

<210> 17
<211> 734
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 17

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

Leu Pro Gly Thr Leu Cys Ala Ser Leu Ser Cys Arg Pro Pro Met Val
            20                  25                  30

Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys
        35                  40                  45

Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met Ser Met Gly Cys
    50                  55                  60

Val Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg His Glu Asn Arg
65                  70                  75                  80

Cys Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln Gly Lys Glu Tyr
                85                  90                  95

Ala Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr Cys Val Cys Arg
            100                 105                 110

Asp Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp Ala Thr Cys Ser
        115                 120                 125
```

```
Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu
    130                 135                 140

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

Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys Gly Cys Ser His
                165                 170                 175

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

Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys Arg Pro Met Lys
        195                 200                 205

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

Leu Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg His Leu Ser Ile
225                 230                 235                 240

Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys
                245                 250                 255

Gly Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr Ser Ser Asn Leu
            260                 265                 270

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

Ser Gln Cys Ala Asp Thr Arg Lys Val Pro Leu Asp Ser Ser Pro Ala
    290                 295                 300

Thr Cys His Asn Asn Ile Met Lys Gln Thr Met Val Asp Ser Ser Cys
305                 310                 315                 320

Arg Ile Leu Thr Ser Asp Val Phe Gln Asp Cys Asn Lys Leu Val Asp
                325                 330                 335

Pro Glu Pro Tyr Leu Asp Val Cys Ile Tyr Asp Thr Cys Ser Cys Glu
            340                 345                 350

Ser Ile Gly Asp Cys Ala Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala
        355                 360                 365

His Val Cys Ala Gln His Gly Lys Val Val Thr Trp Arg Thr Ala Thr
    370                 375                 380
```

```
Leu Cys Pro Gln Ser Cys Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr
385                 390                 395                 400

Glu Cys Glu Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr
                405                 410                 415

Cys Gln His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly
            420                 425                 430

Cys His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln
        435                 440                 445

Thr Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly Arg
    450                 455                 460

Arg Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp Pro Glu
465                 470                 475                 480

His Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr Cys Glu Ala
                485                 490                 495

Cys Gln Glu Pro Gly Gly Leu Val Val Pro Pro Asp Lys Thr His Thr
            500                 505                 510

Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe
        515                 520                 525

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
    530                 535                 540

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
545                 550                 555                 560

Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
                565                 570                 575

Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val
            580                 585                 590

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
        595                 600                 605

Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
    610                 615                 620

Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
625                 630                 635                 640
```

Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
645 650 655

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
660 665 670

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
675 680 685

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
690 695 700

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
705 710 715 720

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
725 730

<210> 18
<211> 968
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 18

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1 5 10 15

Leu Pro Gly Thr Leu Cys Ala Ser Leu Ser Cys Arg Pro Pro Met Val
20 25 30

Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys
35 40 45

Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met Ser Met Gly Cys
50 55 60

Val Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg His Glu Asn Arg
65 70 75 80

Cys Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln Gly Lys Glu Tyr
85 90 95

Ala Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr Cys Val Cys Arg
100 105 110

```
Asp Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp Ala Thr Cys Ser
        115                 120                 125

Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu
    130                 135                 140

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

Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys Gly Cys Ser His
                165                 170                 175

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

Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys Arg Pro Met Lys
        195                 200                 205

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

Leu Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg His Leu Ser Ile
225                 230                 235                 240

Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys
                245                 250                 255

Gly Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr Ser Ser Asn Leu
            260                 265                 270

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

Ser Gln Cys Ala Asp Thr Arg Lys Val Pro Leu Asp Ser Ser Pro Ala
    290                 295                 300

Thr Cys His Asn Asn Ile Met Lys Gln Thr Met Val Asp Ser Ser Cys
305                 310                 315                 320

Arg Ile Leu Thr Ser Asp Val Phe Gln Asp Cys Asn Lys Leu Val Asp
                325                 330                 335

Pro Glu Pro Tyr Leu Asp Val Cys Ile Tyr Asp Thr Cys Ser Cys Glu
            340                 345                 350

Ser Ile Gly Asp Cys Ala Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala
        355                 360                 365
```

```
His Val Cys Ala Gln His Gly Lys Val Val Thr Trp Arg Thr Ala Thr
    370                 375                 380

Leu Cys Pro Gln Ser Cys Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr
385                 390                 395                 400

Glu Cys Glu Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr
                405                 410                 415

Cys Gln His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly
            420                 425                 430

Cys His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln
        435                 440                 445

Thr Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly Arg
    450                 455                 460

Arg Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp Pro Glu
465                 470                 475                 480

His Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr Cys Glu Ala
                485                 490                 495

Cys Gln Glu Pro Gly Gly Leu Val Val Pro Pro Thr Asp Ala Pro Val
            500                 505                 510

Ser Pro Thr Thr Leu Tyr Val Glu Asp Ile Ser Glu Pro Pro Leu His
        515                 520                 525

Asp Phe Tyr Cys Ser Arg Leu Leu Asp Leu Val Phe Leu Leu Asp Gly
    530                 535                 540

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

Val Asp Met Met Glu Arg Leu Arg Ile Ser Gln Lys Trp Val Arg Val
                565                 570                 575

Ala Val Val Glu Tyr His Asp Gly Ser His Ala Tyr Ile Gly Leu Lys
            580                 585                 590

Asp Arg Lys Arg Pro Ser Glu Leu Arg Arg Ile Ala Ser Gln Val Lys
        595                 600                 605

Tyr Ala Gly Ser Gln Val Ala Ser Thr Ser Glu Val Leu Lys Tyr Thr
```

610 615 620

Leu Phe Gln Ile Phe Ser Lys Ile Asp Arg Pro Glu Ala Ser Arg Ile
625 630 635 640

Ala Leu Leu Leu Met Ala Ser Gln Glu Pro Gln Arg Met Ser Arg Asn
645 650 655

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

Pro Val Gly Ile Gly Pro His Ala Asn Leu Lys Gln Ile Arg Leu Ile
675 680 685

Glu Lys Gln Ala Pro Glu Asn Lys Ala Phe Val Leu Ser Ser Val Asp
690 695 700

Glu Leu Glu Gln Gln Arg Asp Glu Ile Val Ser Tyr Leu Cys Asp Leu
705 710 715 720

Ala Pro Glu Ala Pro Pro Pro Thr Leu Pro Pro His Met Ala Gln Val
725 730 735

Thr Val Gly Pro Gly Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
740 745 750

Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro
755 760 765

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
770 775 780

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
785 790 795 800

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
805 810 815

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
820 825 830

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
835 840 845

Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
850 855 860

```
Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr
865                 870                 875                 880

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
                885                 890                 895

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
            900                 905                 910

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
        915                 920                 925

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
    930                 935                 940

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
945                 950                 955                 960

Ser Leu Ser Leu Ser Pro Gly Lys
                965
```

<210> 19
<211> 1366
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 19

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

Leu Pro Gly Thr Leu Cys Ala Ser Leu Ser Cys Arg Pro Pro Met Val
            20                  25                  30

Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys
        35                  40                  45

Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met Ser Met Gly Cys
    50                  55                  60

Val Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg His Glu Asn Arg
65                  70                  75                  80

Cys Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln Gly Lys Glu Tyr
                85                  90                  95

Ala Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr Cys Val Cys Arg
```

100 105 110

Asp Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp Ala Thr Cys Ser
115 120 125

Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu
130 135 140

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

Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys Gly Cys Ser His
165 170 175

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

Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys Arg Pro Met Lys
195 200 205

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

Leu Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg His Leu Ser Ile
225 230 235 240

Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys
245 250 255

Gly Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr Ser Ser Asn Leu
260 265 270

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

Ser Gln Cys Ala Asp Thr Arg Lys Val Pro Leu Asp Ser Ser Pro Ala
290 295 300

Thr Cys His Asn Asn Ile Met Lys Gln Thr Met Val Asp Ser Ser Cys
305 310 315 320

Arg Ile Leu Thr Ser Asp Val Phe Gln Asp Cys Asn Lys Leu Val Asp
325 330 335

Pro Glu Pro Tyr Leu Asp Val Cys Ile Tyr Asp Thr Cys Ser Cys Glu
340 345 350

```
Ser Ile Gly Asp Cys Ala Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala
        355                 360                 365

His Val Cys Ala Gln His Gly Lys Val Val Thr Trp Arg Thr Ala Thr
    370                 375                 380

Leu Cys Pro Gln Ser Cys Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr
385                 390                 395                 400

Glu Cys Glu Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr
                405                 410                 415

Cys Gln His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly
            420                 425                 430

Cys His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln
        435                 440                 445

Thr Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly Arg
    450                 455                 460

Arg Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp Pro Glu
465                 470                 475                 480

His Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr Cys Glu Ala
                485                 490                 495

Cys Gln Glu Pro Gly Gly Leu Val Val Pro Pro Thr Asp Ala Pro Val
            500                 505                 510

Ser Pro Thr Thr Leu Tyr Val Glu Asp Ile Ser Glu Pro Pro Leu His
        515                 520                 525

Asp Phe Tyr Cys Ser Arg Leu Leu Asp Leu Val Phe Leu Leu Asp Gly
    530                 535                 540

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

Val Asp Met Met Glu Arg Leu Arg Ile Ser Gln Lys Trp Val Arg Val
                565                 570                 575

Ala Val Val Glu Tyr His Asp Gly Ser His Ala Tyr Ile Gly Leu Lys
            580                 585                 590

Asp Arg Lys Arg Pro Ser Glu Leu Arg Arg Ile Ala Ser Gln Val Lys
        595                 600                 605
```

```
Tyr Ala Gly Ser Gln Val Ala Ser Thr Ser Glu Val Leu Lys Tyr Thr
    610                 615                 620

Leu Phe Gln Ile Phe Ser Lys Ile Asp Arg Pro Glu Ala Ser Arg Ile
625                 630                 635                 640

Ala Leu Leu Leu Met Ala Ser Gln Glu Pro Gln Arg Met Ser Arg Asn
                645                 650                 655

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

Pro Val Gly Ile Gly Pro His Ala Asn Leu Lys Gln Ile Arg Leu Ile
        675                 680                 685

Glu Lys Gln Ala Pro Glu Asn Lys Ala Phe Val Leu Ser Ser Val Asp
    690                 695                 700

Glu Leu Glu Gln Gln Arg Asp Glu Ile Val Ser Tyr Leu Cys Asp Leu
705                 710                 715                 720

Ala Pro Glu Ala Pro Pro Pro Thr Leu Pro Pro His Met Ala Gln Val
                725                 730                 735

Thr Val Gly Pro Gly Leu Leu Gly Val Ser Thr Leu Gly Pro Lys Arg
            740                 745                 750

Asn Ser Met Val Leu Asp Val Ala Phe Val Leu Glu Gly Ser Asp Lys
        755                 760                 765

Ile Gly Glu Ala Asp Phe Asn Arg Ser Lys Glu Phe Met Glu Glu Val
    770                 775                 780

Ile Gln Arg Met Asp Val Gly Gln Asp Ser Ile His Val Thr Val Leu
785                 790                 795                 800

Gln Tyr Ser Tyr Met Val Thr Val Glu Tyr Pro Phe Ser Glu Ala Gln
                805                 810                 815

Ser Lys Gly Asp Ile Leu Gln Arg Val Arg Glu Ile Arg Tyr Gln Gly
            820                 825                 830

Gly Asn Arg Thr Asn Thr Gly Leu Ala Leu Arg Tyr Leu Ser Asp His
        835                 840                 845

Ser Phe Leu Val Ser Gln Gly Asp Arg Glu Gln Ala Pro Asn Leu Val
    850                 855                 860
```

```
Tyr Met Val Thr Gly Asn Pro Ala Ser Asp Glu Ile Lys Arg Leu Pro
865                 870                 875                 880

Gly Asp Ile Gln Val Val Pro Ile Gly Val Gly Pro Asn Ala Asn Val
                885                 890                 895

Gln Glu Leu Glu Arg Ile Gly Trp Pro Asn Ala Pro Ile Leu Ile Gln
            900                 905                 910

Asp Phe Glu Thr Leu Pro Arg Glu Ala Pro Asp Leu Val Leu Gln Arg
        915                 920                 925

Cys Cys Ser Gly Glu Gly Leu Gln Ile Pro Thr Leu Ser Pro Ala Pro
    930                 935                 940

Asp Cys Ser Gln Pro Leu Asp Val Ile Leu Leu Leu Asp Gly Ser Ser
945                 950                 955                 960

Ser Phe Pro Ala Ser Tyr Phe Asp Glu Met Lys Ser Phe Ala Lys Ala
                965                 970                 975

Phe Ile Ser Lys Ala Asn Ile Gly Pro Arg Leu Thr Gln Val Ser Val
            980                 985                 990

Leu Gln Tyr Gly Ser Ile Thr Thr  Ile Asp Val Pro Trp  Asn Val Val
        995                 1000                1005

Pro Glu  Lys Ala His Leu Leu  Ser Leu Val Asp Val  Met Gln Arg
    1010                1015                1020

Glu Gly  Gly Pro Ser Gln Ile  Gly Asp Ala Leu Gly  Phe Ala Val
    1025                1030                1035

Arg Tyr  Leu Thr Ser Glu Met  His Gly Ala Arg Pro  Gly Ala Ser
    1040                1045                1050

Lys Ala  Val Val Ile Leu Val  Thr Asp Val Ser Val  Asp Ser Val
    1055                1060                1065

Asp Ala  Ala Ala Asp Ala Ala  Arg Ser Asn Arg Val  Thr Val Phe
    1070                1075                1080

Pro Ile  Gly Ile Gly Asp Arg  Tyr Asp Ala Ala Gln  Leu Arg Ile
    1085                1090                1095

Leu Ala  Gly Pro Ala Gly Asp  Ser Asn Val Val Lys  Leu Gln Arg
```

1100 1105 1110

Ile Glu Asp Leu Pro Thr Met Val Thr Leu Gly Asn Ser Phe Leu
1115 1120 1125

His Lys Leu Cys Ser Gly Phe Val Arg Ile Cys Asp Lys Thr His
1130 1135 1140

Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser
1145 1150 1155

Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
1160 1165 1170

Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
1175 1180 1185

Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
1190 1195 1200

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr
1205 1210 1215

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu
1220 1225 1230

Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro
1235 1240 1245

Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg
1250 1255 1260

Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr
1265 1270 1275

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro
1280 1285 1290

Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
1295 1300 1305

Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe
1310 1315 1320

Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln
1325 1330 1335

Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
1340 1345 1350

His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
1355 1360 1365

<210> 20
<211> 1474
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 20

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1 5 10 15

Leu Pro Gly Thr Leu Cys Ala Glu Gly Thr Arg Gly Arg Ser Ser Thr
20 25 30

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

Ser Met Tyr Ser Phe Ala Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly
50 55 60

Cys Gln Lys Arg Ser Phe Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys
65 70 75 80

Arg Val Ser Leu Ser Val Tyr Leu Gly Glu Phe Phe Asp Ile His Leu
85 90 95

Phe Val Asn Gly Thr Val Thr Gln Gly Asp Gln Arg Val Ser Met Pro
100 105 110

Tyr Ala Ser Lys Gly Leu Tyr Leu Glu Thr Glu Ala Gly Tyr Tyr Lys
115 120 125

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

Asn Phe Gln Val Leu Leu Ser Asp Arg Tyr Phe Asn Lys Thr Cys Gly
145 150 155 160

Leu Cys Gly Asn Phe Asn Ile Phe Ala Glu Asp Asp Phe Met Thr Gln
165 170 175

Glu Gly Thr Leu Thr Ser Asp Pro Tyr Asp Phe Ala Asn Ser Trp Ala

180 185 190

Leu Ser Ser Gly Glu Gln Trp Cys Glu Arg Ala Ser Pro Pro Ser Ser
195 200 205

Ser Cys Asn Ile Ser Ser Gly Glu Met Gln Lys Gly Leu Trp Glu Gln
210 215 220

Cys Gln Leu Leu Lys Ser Thr Ser Val Phe Ala Arg Cys His Pro Leu
225 230 235 240

Val Asp Pro Glu Pro Phe Val Ala Leu Cys Glu Lys Thr Leu Cys Glu
245 250 255

Cys Ala Gly Gly Leu Glu Cys Ala Cys Pro Ala Leu Leu Glu Tyr Ala
260 265 270

Arg Thr Cys Ala Gln Glu Gly Met Val Leu Tyr Gly Trp Thr Asp His
275 280 285

Ser Ala Cys Ser Pro Val Cys Pro Ala Gly Met Glu Tyr Arg Gln Cys
290 295 300

Val Ser Pro Cys Ala Arg Thr Cys Gln Ser Leu His Ile Asn Glu Met
305 310 315 320

Cys Gln Glu Arg Cys Val Asp Gly Cys Ser Cys Pro Glu Gly Gln Leu
325 330 335

Leu Asp Glu Gly Leu Cys Val Glu Ser Thr Glu Cys Pro Cys Val His
340 345 350

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

Thr Cys Ile Cys Arg Asn Ser Gln Trp Ile Cys Ser Asn Glu Glu Cys
370 375 380

Pro Gly Glu Cys Leu Val Thr Gly Gln Ser His Phe Lys Ser Phe Asp
385 390 395 400

Asn Arg Tyr Phe Thr Phe Ser Gly Ile Cys Gln Tyr Leu Leu Ala Arg
405 410 415

Asp Cys Gln Asp His Ser Phe Ser Ile Val Ile Glu Thr Val Gln Cys
420 425 430

```
Ala Asp Asp Arg Asp Ala Val Cys Thr Arg Ser Val Thr Val Arg Leu
        435                 440                 445

Pro Gly Leu His Asn Ser Leu Val Lys Leu Lys His Gly Ala Gly Val
    450                 455                 460

Ala Met Asp Gly Gln Asp Ile Gln Leu Pro Leu Leu Lys Gly Asp Leu
465                 470                 475                 480

Arg Ile Gln His Thr Val Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu
                485                 490                 495

Asp Leu Gln Met Asp Trp Asp Gly Arg Gly Arg Leu Leu Val Lys Leu
            500                 505                 510

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

Gly Asn Gln Gly Asp Asp Phe Leu Thr Pro Ser Gly Leu Ala Glu Pro
    530                 535                 540

Arg Val Glu Asp Phe Gly Asn Ala Trp Lys Leu His Gly Asp Cys Gln
545                 550                 555                 560

Asp Leu Gln Lys Gln His Ser Asp Pro Cys Ala Leu Asn Pro Arg Met
                565                 570                 575

Thr Arg Phe Ser Glu Glu Ala Cys Ala Val Leu Thr Ser Pro Thr Phe
            580                 585                 590

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

Arg Tyr Asp Val Cys Ser Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly
    610                 615                 620

Ala Leu Ala Ser Tyr Ala Ala Ala Cys Ala Gly Arg Gly Val Arg Val
625                 630                 635                 640

Ala Trp Arg Glu Pro Gly Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln
                645                 650                 655

Val Tyr Leu Gln Cys Gly Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu
            660                 665                 670

Ser Tyr Pro Asp Glu Glu Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe
        675                 680                 685
```

```
Cys Pro Pro Gly Leu Tyr Met Asp Glu Arg Gly Asp Cys Val Pro Lys
    690                 695                 700

Ala Gln Cys Pro Cys Tyr Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp
705                 710                 715                 720

Ile Phe Ser Asp His His Thr Met Cys Tyr Cys Glu Asp Gly Phe Met
                725                 730                 735

His Cys Thr Met Ser Gly Val Pro Gly Ser Leu Leu Pro Asp Ala Val
            740                 745                 750

Leu Ser Ser Pro Leu Ser His Arg Ser Lys Arg Ser Leu Ser Cys Arg
        755                 760                 765

Pro Pro Met Val Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu
    770                 775                 780

Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met
785                 790                 795                 800

Ser Met Gly Cys Val Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg
                805                 810                 815

His Glu Asn Arg Cys Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln
            820                 825                 830

Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr
        835                 840                 845

Cys Val Cys Arg Asp Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp
    850                 855                 860

Ala Thr Cys Ser Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly
865                 870                 875                 880

Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp
                885                 890                 895

Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys
            900                 905                 910

Gly Cys Ser His Pro Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu
        915                 920                 925

Val Glu Gly Gly Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys
    930                 935                 940
```

```
Arg Pro Met Lys Asp Glu Thr His Phe Glu Val Val Glu Ser Gly Arg
945                 950                 955                 960

Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg
                965                 970                 975

His Leu Ser Ile Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val
            980                 985                 990

Cys Gly Leu Cys Gly Asn Phe Asp  Gly Ile Gln Asn Asn  Asp Leu Thr
        995                 1000                1005

Ser Ser  Asn Leu Gln Val Glu  Glu Asp Pro Val Asp  Phe Gly Asn
    1010                1015                1020

Ser Trp  Lys Val Ser Ser Gln  Cys Ala Asp Thr Arg  Lys Val Pro
    1025                1030                1035

Leu Asp  Ser Ser Pro Ala Thr  Cys His Asn Asn Ile  Met Lys Gln
    1040                1045                1050

Thr Met  Val Asp Ser Ser Cys  Arg Ile Leu Thr Ser  Asp Val Phe
    1055                1060                1065

Gln Asp  Cys Asn Lys Leu Val  Asp Pro Glu Pro Tyr  Leu Asp Val
    1070                1075                1080

Cys Ile  Tyr Asp Thr Cys Ser  Cys Glu Ser Ile Gly  Asp Cys Ala
    1085                1090                1095

Cys Phe  Cys Asp Thr Ile Ala  Ala Tyr Ala His Val  Cys Ala Gln
    1100                1105                1110

His Gly  Lys Val Val Thr Trp  Arg Thr Ala Thr Leu  Cys Pro Gln
    1115                1120                1125

Ser Cys  Glu Glu Arg Asn Leu  Arg Glu Asn Gly Tyr  Glu Cys Glu
    1130                1135                1140

Trp Arg  Tyr Asn Ser Cys Ala  Pro Ala Cys Gln Val  Thr Cys Gln
    1145                1150                1155

His Pro  Glu Pro Leu Ala Cys  Pro Val Gln Cys Val  Glu Gly Cys
    1160                1165                1170

His Ala  His Cys Pro Pro Gly  Lys Ile Leu Asp Glu  Leu Leu Gln
```

1175 1180 1185

Thr Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly
1190 1195 1200

Arg Arg Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp
1205 1210 1215

Pro Glu His Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr
1220 1225 1230

Cys Glu Ala Cys Gln Glu Pro Gly Gly Leu Val Val Pro Pro Asp
1235 1240 1245

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
1250 1255 1260

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
1265 1270 1275

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
1280 1285 1290

Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
1295 1300 1305

Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr
1310 1315 1320

Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
1325 1330 1335

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
1340 1345 1350

Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
1355 1360 1365

Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp
1370 1375 1380

Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly
1385 1390 1395

Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
1400 1405 1410

Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
1415 1420 1425

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg
1430 1435 1440

Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
1445 1450 1455

Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
1460 1465 1470

Lys

<210> 21
<211> 1708
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 21

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1 5 10 15

Leu Pro Gly Thr Leu Cys Ala Glu Gly Thr Arg Gly Arg Ser Ser Thr
20 25 30

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

Ser Met Tyr Ser Phe Ala Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly
50 55 60

Cys Gln Lys Arg Ser Phe Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys
65 70 75 80

Arg Val Ser Leu Ser Val Tyr Leu Gly Glu Phe Phe Asp Ile His Leu
85 90 95

Phe Val Asn Gly Thr Val Thr Gln Gly Asp Gln Arg Val Ser Met Pro
100 105 110

Tyr Ala Ser Lys Gly Leu Tyr Leu Glu Thr Glu Ala Gly Tyr Tyr Lys
115 120 125

Leu Ser Gly Glu Ala Tyr Gly Phe Val Ala Arg Ile Asp Gly Ser Gly

130 135 140

Asn Phe Gln Val Leu Leu Ser Asp Arg Tyr Phe Asn Lys Thr Cys Gly
145 150 155 160

Leu Cys Gly Asn Phe Asn Ile Phe Ala Glu Asp Asp Phe Met Thr Gln
165 170 175

Glu Gly Thr Leu Thr Ser Asp Pro Tyr Asp Phe Ala Asn Ser Trp Ala
180 185 190

Leu Ser Ser Gly Glu Gln Trp Cys Glu Arg Ala Ser Pro Pro Ser Ser
195 200 205

Ser Cys Asn Ile Ser Ser Gly Glu Met Gln Lys Gly Leu Trp Glu Gln
210 215 220

Cys Gln Leu Leu Lys Ser Thr Ser Val Phe Ala Arg Cys His Pro Leu
225 230 235 240

Val Asp Pro Glu Pro Phe Val Ala Leu Cys Glu Lys Thr Leu Cys Glu
245 250 255

Cys Ala Gly Gly Leu Glu Cys Ala Cys Pro Ala Leu Leu Glu Tyr Ala
260 265 270

Arg Thr Cys Ala Gln Glu Gly Met Val Leu Tyr Gly Trp Thr Asp His
275 280 285

Ser Ala Cys Ser Pro Val Cys Pro Ala Gly Met Glu Tyr Arg Gln Cys
290 295 300

Val Ser Pro Cys Ala Arg Thr Cys Gln Ser Leu His Ile Asn Glu Met
305 310 315 320

Cys Gln Glu Arg Cys Val Asp Gly Cys Ser Cys Pro Glu Gly Gln Leu
325 330 335

Leu Asp Glu Gly Leu Cys Val Glu Ser Thr Glu Cys Pro Cys Val His
340 345 350

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

Thr Cys Ile Cys Arg Asn Ser Gln Trp Ile Cys Ser Asn Glu Glu Cys
370 375 380

```
Pro Gly Glu Cys Leu Val Thr Gly Gln Ser His Phe Lys Ser Phe Asp
385                 390                 395                 400

Asn Arg Tyr Phe Thr Phe Ser Gly Ile Cys Gln Tyr Leu Leu Ala Arg
                405                 410                 415

Asp Cys Gln Asp His Ser Phe Ser Ile Val Ile Glu Thr Val Gln Cys
            420                 425                 430

Ala Asp Asp Arg Asp Ala Val Cys Thr Arg Ser Val Thr Val Arg Leu
        435                 440                 445

Pro Gly Leu His Asn Ser Leu Val Lys Leu Lys His Gly Ala Gly Val
    450                 455                 460

Ala Met Asp Gly Gln Asp Ile Gln Leu Pro Leu Leu Lys Gly Asp Leu
465                 470                 475                 480

Arg Ile Gln His Thr Val Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu
                485                 490                 495

Asp Leu Gln Met Asp Trp Asp Gly Arg Gly Arg Leu Leu Val Lys Leu
            500                 505                 510

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

Gly Asn Gln Gly Asp Asp Phe Leu Thr Pro Ser Gly Leu Ala Glu Pro
    530                 535                 540

Arg Val Glu Asp Phe Gly Asn Ala Trp Lys Leu His Gly Asp Cys Gln
545                 550                 555                 560

Asp Leu Gln Lys Gln His Ser Asp Pro Cys Ala Leu Asn Pro Arg Met
                565                 570                 575

Thr Arg Phe Ser Glu Glu Ala Cys Ala Val Leu Thr Ser Pro Thr Phe
            580                 585                 590

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

Arg Tyr Asp Val Cys Ser Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly
    610                 615                 620

Ala Leu Ala Ser Tyr Ala Ala Ala Cys Ala Gly Arg Gly Val Arg Val
625                 630                 635                 640
```

```
Ala Trp Arg Glu Pro Gly Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln
                645                 650                 655

Val Tyr Leu Gln Cys Gly Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu
            660                 665                 670

Ser Tyr Pro Asp Glu Glu Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe
        675                 680                 685

Cys Pro Pro Gly Leu Tyr Met Asp Glu Arg Gly Asp Cys Val Pro Lys
    690                 695                 700

Ala Gln Cys Pro Cys Tyr Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp
705                 710                 715                 720

Ile Phe Ser Asp His His Thr Met Cys Tyr Cys Glu Asp Gly Phe Met
                725                 730                 735

His Cys Thr Met Ser Gly Val Pro Gly Ser Leu Leu Pro Asp Ala Val
            740                 745                 750

Leu Ser Ser Pro Leu Ser His Arg Ser Lys Arg Ser Leu Ser Cys Arg
        755                 760                 765

Pro Pro Met Val Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu
    770                 775                 780

Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met
785                 790                 795                 800

Ser Met Gly Cys Val Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg
                805                 810                 815

His Glu Asn Arg Cys Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln
            820                 825                 830

Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr
        835                 840                 845

Cys Val Cys Arg Asp Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp
    850                 855                 860

Ala Thr Cys Ser Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly
865                 870                 875                 880

Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp
                885                 890                 895
```

```
Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys
            900                 905                 910

Gly Cys Ser His Pro Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu
        915                 920                 925

Val Glu Gly Gly Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys
    930                 935                 940

Arg Pro Met Lys Asp Glu Thr His Phe Glu Val Val Glu Ser Gly Arg
945                 950                 955                 960

Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg
                965                 970                 975

His Leu Ser Ile Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val
            980                 985                 990

Cys Gly Leu Cys Gly Asn Phe Asp  Gly Ile Gln Asn Asn  Asp Leu Thr
        995                 1000                1005

Ser Ser  Asn Leu Gln Val Glu  Glu Asp Pro Val Asp  Phe Gly Asn
    1010                1015                1020

Ser Trp  Lys Val Ser Ser Gln  Cys Ala Asp Thr Arg  Lys Val Pro
    1025                1030                1035

Leu Asp  Ser Ser Pro Ala Thr  Cys His Asn Asn Ile  Met Lys Gln
    1040                1045                1050

Thr Met  Val Asp Ser Ser Cys  Arg Ile Leu Thr Ser  Asp Val Phe
    1055                1060                1065

Gln Asp  Cys Asn Lys Leu Val  Asp Pro Glu Pro Tyr  Leu Asp Val
    1070                1075                1080

Cys Ile  Tyr Asp Thr Cys Ser  Cys Glu Ser Ile Gly  Asp Cys Ala
    1085                1090                1095

Cys Phe  Cys Asp Thr Ile Ala  Ala Tyr Ala His Val  Cys Ala Gln
    1100                1105                1110

His Gly  Lys Val Val Thr Trp  Arg Thr Ala Thr Leu  Cys Pro Gln
    1115                1120                1125

Ser Cys  Glu Glu Arg Asn Leu  Arg Glu Asn Gly Tyr  Glu Cys Glu
```

1130 1135 1140

Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr Cys Gln
1145 1150 1155

His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly Cys
1160 1165 1170

His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln
1175 1180 1185

Thr Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly
1190 1195 1200

Arg Arg Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp
1205 1210 1215

Pro Glu His Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr
1220 1225 1230

Cys Glu Ala Cys Gln Glu Pro Gly Gly Leu Val Val Pro Pro Thr
1235 1240 1245

Asp Ala Pro Val Ser Pro Thr Thr Leu Tyr Val Glu Asp Ile Ser
1250 1255 1260

Glu Pro Pro Leu His Asp Phe Tyr Cys Ser Arg Leu Leu Asp Leu
1265 1270 1275

Val Phe Leu Leu Asp Gly Ser Ser Arg Leu Ser Glu Ala Glu Phe
1280 1285 1290

Glu Val Leu Lys Ala Phe Val Val Asp Met Met Glu Arg Leu Arg
1295 1300 1305

Ile Ser Gln Lys Trp Val Arg Val Ala Val Val Glu Tyr His Asp
1310 1315 1320

Gly Ser His Ala Tyr Ile Gly Leu Lys Asp Arg Lys Arg Pro Ser
1325 1330 1335

Glu Leu Arg Arg Ile Ala Ser Gln Val Lys Tyr Ala Gly Ser Gln
1340 1345 1350

Val Ala Ser Thr Ser Glu Val Leu Lys Tyr Thr Leu Phe Gln Ile
1355 1360 1365

```
Phe Ser  Lys Ile Asp Arg Pro  Glu Ala Ser Arg Ile  Ala Leu Leu
    1370                 1375                 1380

Leu Met  Ala Ser Gln Glu Pro  Gln Arg Met Ser Arg  Asn Phe Val
    1385                 1390                 1395

Arg Tyr  Val Gln Gly Leu Lys  Lys Lys Lys Val Ile  Val Ile Pro
    1400                 1405                 1410

Val Gly  Ile Gly Pro His Ala  Asn Leu Lys Gln Ile  Arg Leu Ile
    1415                 1420                 1425

Glu Lys  Gln Ala Pro Glu Asn  Lys Ala Phe Val Leu  Ser Ser Val
    1430                 1435                 1440

Asp Glu  Leu Glu Gln Gln Arg  Asp Glu Ile Val Ser  Tyr Leu Cys
    1445                 1450                 1455

Asp Leu  Ala Pro Glu Ala Pro  Pro Pro Thr Leu Pro  Pro His Met
    1460                 1465                 1470

Ala Gln  Val Thr Val Gly Pro  Gly Asp Lys Thr His  Thr Cys Pro
    1475                 1480                 1485

Pro Cys  Pro Ala Pro Glu Leu  Leu Gly Gly Pro Ser  Val Phe Leu
    1490                 1495                 1500

Phe Pro  Pro Lys Pro Lys Asp  Thr Leu Met Ile Ser  Arg Thr Pro
    1505                 1510                 1515

Glu Val  Thr Cys Val Val Val  Asp Val Ser His Glu  Asp Pro Glu
    1520                 1525                 1530

Val Lys  Phe Asn Trp Tyr Val  Asp Gly Val Glu Val  His Asn Ala
    1535                 1540                 1545

Lys Thr  Lys Pro Arg Glu Glu  Gln Tyr Asn Ser Thr  Tyr Arg Val
    1550                 1555                 1560

Val Ser  Val Leu Thr Val Leu  His Gln Asp Trp Leu  Asn Gly Lys
    1565                 1570                 1575

Glu Tyr  Lys Cys Lys Val Ser  Asn Lys Ala Leu Pro  Ala Pro Ile
    1580                 1585                 1590

Glu Lys  Thr Ile Ser Lys Ala  Lys Gly Gln Pro Arg  Glu Pro Gln
    1595                 1600                 1605
```

```
Val Tyr  Thr Leu Pro Pro Ser  Arg Asp Glu Leu Thr  Lys Asn Gln
    1610                 1615                 1620

Val Ser  Leu Thr Cys Leu Val  Lys Gly Phe Tyr Pro  Ser Asp Ile
    1625                 1630                 1635

Ala Val  Glu Trp Glu Ser Asn  Gly Gln Pro Glu Asn  Asn Tyr Lys
    1640                 1645                 1650

Thr Thr  Pro Pro Val Leu Asp  Ser Asp Gly Ser Phe  Phe Leu Tyr
    1655                 1660                 1665

Ser Lys  Leu Thr Val Asp Lys  Ser Arg Trp Gln Gln  Gly Asn Val
    1670                 1675                 1680

Phe Ser  Cys Ser Val Met His  Glu Ala Leu His Asn  His Tyr Thr
    1685                 1690                 1695

Gln Lys  Ser Leu Ser Leu Ser  Pro Gly Lys
    1700                 1705
```

<210> 22
<211> 2106
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 22

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Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1               5                  10                  15

Leu Pro Gly Thr Leu Cys Ala Glu Gly Thr Arg Gly Arg Ser Ser Thr
            20                  25                  30

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

Ser Met Tyr Ser Phe Ala Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly
    50                  55                  60

Cys Gln Lys Arg Ser Phe Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys
65                  70                  75                  80

Arg Val Ser Leu Ser Val Tyr Leu Gly Glu Phe Phe Asp Ile His Leu
                85                  90                  95
```

```
Phe Val Asn Gly Thr Val Thr Gln Gly Asp Gln Arg Val Ser Met Pro
            100                 105                 110

Tyr Ala Ser Lys Gly Leu Tyr Leu Glu Thr Glu Ala Gly Tyr Tyr Lys
        115                 120                 125

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

Asn Phe Gln Val Leu Leu Ser Asp Arg Tyr Phe Asn Lys Thr Cys Gly
145                 150                 155                 160

Leu Cys Gly Asn Phe Asn Ile Phe Ala Glu Asp Asp Phe Met Thr Gln
                165                 170                 175

Glu Gly Thr Leu Thr Ser Asp Pro Tyr Asp Phe Ala Asn Ser Trp Ala
            180                 185                 190

Leu Ser Ser Gly Glu Gln Trp Cys Glu Arg Ala Ser Pro Pro Ser Ser
        195                 200                 205

Ser Cys Asn Ile Ser Ser Gly Glu Met Gln Lys Gly Leu Trp Glu Gln
    210                 215                 220

Cys Gln Leu Leu Lys Ser Thr Ser Val Phe Ala Arg Cys His Pro Leu
225                 230                 235                 240

Val Asp Pro Glu Pro Phe Val Ala Leu Cys Glu Lys Thr Leu Cys Glu
                245                 250                 255

Cys Ala Gly Gly Leu Glu Cys Ala Cys Pro Ala Leu Leu Glu Tyr Ala
            260                 265                 270

Arg Thr Cys Ala Gln Glu Gly Met Val Leu Tyr Gly Trp Thr Asp His
        275                 280                 285

Ser Ala Cys Ser Pro Val Cys Pro Ala Gly Met Glu Tyr Arg Gln Cys
    290                 295                 300

Val Ser Pro Cys Ala Arg Thr Cys Gln Ser Leu His Ile Asn Glu Met
305                 310                 315                 320

Cys Gln Glu Arg Cys Val Asp Gly Cys Ser Cys Pro Glu Gly Gln Leu
                325                 330                 335

Leu Asp Glu Gly Leu Cys Val Glu Ser Thr Glu Cys Pro Cys Val His
            340                 345                 350
```

```
Ser Gly Lys Arg Tyr Pro Pro Gly Thr Ser Leu Ser Arg Asp Cys Asn
        355                 360                 365

Thr Cys Ile Cys Arg Asn Ser Gln Trp Ile Cys Ser Asn Glu Glu Cys
    370                 375                 380

Pro Gly Glu Cys Leu Val Thr Gly Gln Ser His Phe Lys Ser Phe Asp
385                 390                 395                 400

Asn Arg Tyr Phe Thr Phe Ser Gly Ile Cys Gln Tyr Leu Leu Ala Arg
                405                 410                 415

Asp Cys Gln Asp His Ser Phe Ser Ile Val Ile Glu Thr Val Gln Cys
            420                 425                 430

Ala Asp Asp Arg Asp Ala Val Cys Thr Arg Ser Val Thr Val Arg Leu
        435                 440                 445

Pro Gly Leu His Asn Ser Leu Val Lys Leu Lys His Gly Ala Gly Val
    450                 455                 460

Ala Met Asp Gly Gln Asp Ile Gln Leu Pro Leu Leu Lys Gly Asp Leu
465                 470                 475                 480

Arg Ile Gln His Thr Val Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu
                485                 490                 495

Asp Leu Gln Met Asp Trp Asp Gly Arg Gly Arg Leu Leu Val Lys Leu
            500                 505                 510

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

Gly Asn Gln Gly Asp Asp Phe Leu Thr Pro Ser Gly Leu Ala Glu Pro
    530                 535                 540

Arg Val Glu Asp Phe Gly Asn Ala Trp Lys Leu His Gly Asp Cys Gln
545                 550                 555                 560

Asp Leu Gln Lys Gln His Ser Asp Pro Cys Ala Leu Asn Pro Arg Met
                565                 570                 575

Thr Arg Phe Ser Glu Glu Ala Cys Ala Val Leu Thr Ser Pro Thr Phe
            580                 585                 590

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

```
Arg Tyr Asp Val Cys Ser Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly
    610                 615                 620

Ala Leu Ala Ser Tyr Ala Ala Ala Cys Ala Gly Arg Gly Val Arg Val
625                 630                 635                 640

Ala Trp Arg Glu Pro Gly Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln
                645                 650                 655

Val Tyr Leu Gln Cys Gly Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu
            660                 665                 670

Ser Tyr Pro Asp Glu Glu Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe
        675                 680                 685

Cys Pro Pro Gly Leu Tyr Met Asp Glu Arg Gly Asp Cys Val Pro Lys
    690                 695                 700

Ala Gln Cys Pro Cys Tyr Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp
705                 710                 715                 720

Ile Phe Ser Asp His His Thr Met Cys Tyr Cys Glu Asp Gly Phe Met
                725                 730                 735

His Cys Thr Met Ser Gly Val Pro Gly Ser Leu Leu Pro Asp Ala Val
            740                 745                 750

Leu Ser Ser Pro Leu Ser His Arg Ser Lys Arg Ser Leu Ser Cys Arg
        755                 760                 765

Pro Pro Met Val Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu
    770                 775                 780

Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met
785                 790                 795                 800

Ser Met Gly Cys Val Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg
                805                 810                 815

His Glu Asn Arg Cys Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln
            820                 825                 830

Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr
        835                 840                 845

Cys Val Cys Arg Asp Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp
```

850 855 860

Ala Thr Cys Ser Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly
865 870 875 880

Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp
885 890 895

Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys
900 905 910

Gly Cys Ser His Pro Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu
915 920 925

Val Glu Gly Gly Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys
930 935 940

Arg Pro Met Lys Asp Glu Thr His Phe Glu Val Val Glu Ser Gly Arg
945 950 955 960

Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg
965 970 975

His Leu Ser Ile Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val
980 985 990

Cys Gly Leu Cys Gly Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr
995 1000 1005

Ser Ser Asn Leu Gln Val Glu Glu Asp Pro Val Asp Phe Gly Asn
1010 1015 1020

Ser Trp Lys Val Ser Ser Gln Cys Ala Asp Thr Arg Lys Val Pro
1025 1030 1035

Leu Asp Ser Ser Pro Ala Thr Cys His Asn Asn Ile Met Lys Gln
1040 1045 1050

Thr Met Val Asp Ser Ser Cys Arg Ile Leu Thr Ser Asp Val Phe
1055 1060 1065

Gln Asp Cys Asn Lys Leu Val Asp Pro Glu Pro Tyr Leu Asp Val
1070 1075 1080

Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser Ile Gly Asp Cys Ala
1085 1090 1095

```
Cys Phe  Cys Asp Thr Ile Ala  Ala Tyr Ala His Val  Cys Ala Gln
    1100                 1105                 1110

His Gly  Lys Val Val Thr Trp  Arg Thr Ala Thr Leu  Cys Pro Gln
    1115                 1120                 1125

Ser Cys  Glu Glu Arg Asn Leu  Arg Glu Asn Gly Tyr  Glu Cys Glu
    1130                 1135                 1140

Trp Arg  Tyr Asn Ser Cys Ala  Pro Ala Cys Gln Val  Thr Cys Gln
    1145                 1150                 1155

His Pro  Glu Pro Leu Ala Cys  Pro Val Gln Cys Val  Glu Gly Cys
    1160                 1165                 1170

His Ala  His Cys Pro Pro Gly  Lys Ile Leu Asp Glu  Leu Leu Gln
    1175                 1180                 1185

Thr Cys  Val Asp Pro Glu Asp  Cys Pro Val Cys Glu  Val Ala Gly
    1190                 1195                 1200

Arg Arg  Phe Ala Ser Gly Lys  Lys Val Thr Leu Asn  Pro Ser Asp
    1205                 1210                 1215

Pro Glu  His Cys Gln Ile Cys  His Cys Asp Val Val  Asn Leu Thr
    1220                 1225                 1230

Cys Glu  Ala Cys Gln Glu Pro  Gly Gly Leu Val Val  Pro Pro Thr
    1235                 1240                 1245

Asp Ala  Pro Val Ser Pro Thr  Thr Leu Tyr Val Glu  Asp Ile Ser
    1250                 1255                 1260

Glu Pro  Pro Leu His Asp Phe  Tyr Cys Ser Arg Leu  Leu Asp Leu
    1265                 1270                 1275

Val Phe  Leu Leu Asp Gly Ser  Ser Arg Leu Ser Glu  Ala Glu Phe
    1280                 1285                 1290

Glu Val  Leu Lys Ala Phe Val  Val Asp Met Met Glu  Arg Leu Arg
    1295                 1300                 1305

Ile Ser  Gln Lys Trp Val Arg  Val Ala Val Val Glu  Tyr His Asp
    1310                 1315                 1320

Gly Ser  His Ala Tyr Ile Gly  Leu Lys Asp Arg Lys  Arg Pro Ser
    1325                 1330                 1335
```

```
Glu Leu  Arg Arg Ile Ala Ser  Gln Val Lys Tyr Ala  Gly Ser Gln
    1340                 1345                 1350

Val Ala  Ser Thr Ser Glu Val  Leu Lys Tyr Thr Leu  Phe Gln Ile
    1355                 1360                 1365

Phe Ser  Lys Ile Asp Arg Pro  Glu Ala Ser Arg Ile  Ala Leu Leu
    1370                 1375                 1380

Leu Met  Ala Ser Gln Glu Pro  Gln Arg Met Ser Arg  Asn Phe Val
    1385                 1390                 1395

Arg Tyr  Val Gln Gly Leu Lys  Lys Lys Lys Val Ile  Val Ile Pro
    1400                 1405                 1410

Val Gly  Ile Gly Pro His Ala  Asn Leu Lys Gln Ile  Arg Leu Ile
    1415                 1420                 1425

Glu Lys  Gln Ala Pro Glu Asn  Lys Ala Phe Val Leu  Ser Ser Val
    1430                 1435                 1440

Asp Glu  Leu Glu Gln Gln Arg  Asp Glu Ile Val Ser  Tyr Leu Cys
    1445                 1450                 1455

Asp Leu  Ala Pro Glu Ala Pro  Pro Pro Thr Leu Pro  Pro His Met
    1460                 1465                 1470

Ala Gln  Val Thr Val Gly Pro  Gly Leu Leu Gly Val  Ser Thr Leu
    1475                 1480                 1485

Gly Pro  Lys Arg Asn Ser Met  Val Leu Asp Val Ala  Phe Val Leu
    1490                 1495                 1500

Glu Gly  Ser Asp Lys Ile Gly  Glu Ala Asp Phe Asn  Arg Ser Lys
    1505                 1510                 1515

Glu Phe  Met Glu Glu Val Ile  Gln Arg Met Asp Val  Gly Gln Asp
    1520                 1525                 1530

Ser Ile  His Val Thr Val Leu  Gln Tyr Ser Tyr Met  Val Thr Val
    1535                 1540                 1545

Glu Tyr  Pro Phe Ser Glu Ala  Gln Ser Lys Gly Asp  Ile Leu Gln
    1550                 1555                 1560

Arg Val  Arg Glu Ile Arg Tyr  Gln Gly Gly Asn Arg  Thr Asn Thr
    1565                 1570                 1575
```

```
Gly Leu  Ala Leu Arg Tyr Leu  Ser Asp His Ser Phe  Leu Val Ser
    1580                 1585                 1590

Gln Gly  Asp Arg Glu Gln Ala  Pro Asn Leu Val Tyr  Met Val Thr
    1595                 1600                 1605

Gly Asn  Pro Ala Ser Asp Glu  Ile Lys Arg Leu Pro  Gly Asp Ile
    1610                 1615                 1620

Gln Val  Val Pro Ile Gly Val  Gly Pro Asn Ala Asn  Val Gln Glu
    1625                 1630                 1635

Leu Glu  Arg Ile Gly Trp Pro  Asn Ala Pro Ile Leu  Ile Gln Asp
    1640                 1645                 1650

Phe Glu  Thr Leu Pro Arg Glu  Ala Pro Asp Leu Val  Leu Gln Arg
    1655                 1660                 1665

Cys Cys  Ser Gly Glu Gly Leu  Gln Ile Pro Thr Leu  Ser Pro Ala
    1670                 1675                 1680

Pro Asp  Cys Ser Gln Pro Leu  Asp Val Ile Leu Leu  Leu Asp Gly
    1685                 1690                 1695

Ser Ser  Ser Phe Pro Ala Ser  Tyr Phe Asp Glu Met  Lys Ser Phe
    1700                 1705                 1710

Ala Lys  Ala Phe Ile Ser Lys  Ala Asn Ile Gly Pro  Arg Leu Thr
    1715                 1720                 1725

Gln Val  Ser Val Leu Gln Tyr  Gly Ser Ile Thr Thr  Ile Asp Val
    1730                 1735                 1740

Pro Trp  Asn Val Val Pro Glu  Lys Ala His Leu Leu  Ser Leu Val
    1745                 1750                 1755

Asp Val  Met Gln Arg Glu Gly  Gly Pro Ser Gln Ile  Gly Asp Ala
    1760                 1765                 1770

Leu Gly  Phe Ala Val Arg Tyr  Leu Thr Ser Glu Met  His Gly Ala
    1775                 1780                 1785

Arg Pro  Gly Ala Ser Lys Ala  Val Val Ile Leu Val  Thr Asp Val
    1790                 1795                 1800

Ser Val  Asp Ser Val Asp Ala  Ala Ala Asp Ala Ala  Arg Ser Asn
```

1805 1810 1815

Arg Val Thr Val Phe Pro Ile Gly Ile Gly Asp Arg Tyr Asp Ala
1820 1825 1830

Ala Gln Leu Arg Ile Leu Ala Gly Pro Ala Gly Asp Ser Asn Val
1835 1840 1845

Val Lys Leu Gln Arg Ile Glu Asp Leu Pro Thr Met Val Thr Leu
1850 1855 1860

Gly Asn Ser Phe Leu His Lys Leu Cys Ser Gly Phe Val Arg Ile
1865 1870 1875

Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu
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Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
1895 1900 1905

Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val
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Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
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Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
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Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu
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His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser
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Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala
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Ser Met Tyr Ser Phe Ala Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly

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Cys Gln Lys Arg Ser Phe Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys
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Glu Gly Thr Leu Thr Ser Asp Pro Tyr Asp Phe Ala Asn Ser Trp Ala
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Leu Ser Ser Gly Glu Gln Trp Cys Glu Arg Ala Ser Pro Pro Ser Ser
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Ser Cys Asn Ile Ser Ser Gly Glu Met Gln Lys Gly Leu Trp Glu Gln
210 215 220

Cys Gln Leu Leu Lys Ser Thr Ser Val Phe Ala Arg Cys His Pro Leu
225 230 235 240

Val Asp Pro Glu Pro Phe Val Ala Leu Cys Glu Lys Thr Leu Cys Glu
245 250 255

Cys Ala Gly Gly Leu Glu Cys Ala Cys Pro Ala Leu Leu Glu Tyr Ala
260 265 270

Arg Thr Cys Ala Gln Glu Gly Met Val Leu Tyr Gly Trp Thr Asp His
275 280 285

Ser Ala Cys Ser Pro Val Cys Pro Ala Gly Met Glu Tyr Arg Gln Cys
290 295 300

```
Val Ser Pro Cys Ala Arg Thr Cys Gln Ser Leu His Ile Asn Glu Met
305                 310                 315                 320

Cys Gln Glu Arg Cys Val Asp Gly Cys Ser Cys Pro Glu Gly Gln Leu
                325                 330                 335

Leu Asp Glu Gly Leu Cys Val Glu Ser Thr Glu Cys Pro Cys Val His
            340                 345                 350

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

Thr Cys Ile Cys Arg Asn Ser Gln Trp Ile Cys Ser Asn Glu Glu Cys
    370                 375                 380

Pro Gly Glu Cys Leu Val Thr Gly Gln Ser His Phe Lys Ser Phe Asp
385                 390                 395                 400

Asn Arg Tyr Phe Thr Phe Ser Gly Ile Cys Gln Tyr Leu Leu Ala Arg
                405                 410                 415

Asp Cys Gln Asp His Ser Phe Ser Ile Val Ile Glu Thr Val Gln Cys
            420                 425                 430

Ala Asp Asp Arg Asp Ala Val Cys Thr Arg Ser Val Thr Val Arg Leu
        435                 440                 445

Pro Gly Leu His Asn Ser Leu Val Lys Leu Lys His Gly Ala Gly Val
    450                 455                 460

Ala Met Asp Gly Gln Asp Ile Gln Leu Pro Leu Leu Lys Gly Asp Leu
465                 470                 475                 480

Arg Ile Gln His Thr Val Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu
                485                 490                 495

Asp Leu Gln Met Asp Trp Asp Gly Arg Gly Arg Leu Leu Val Lys Leu
            500                 505                 510

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

Gly Asn Gln Gly Asp Asp Phe Leu Thr Pro Ser Gly Leu Ala Glu Pro
    530                 535                 540

Arg Val Glu Asp Phe Gly Asn Ala Trp Lys Leu His Gly Asp Cys Gln
545                 550                 555                 560
```

```
Asp Leu Gln Lys Gln His Ser Asp Pro Cys Ala Leu Asn Pro Arg Met
                565                 570                 575

Thr Arg Phe Ser Glu Glu Ala Cys Ala Val Leu Thr Ser Pro Thr Phe
            580                 585                 590

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

Arg Tyr Asp Val Cys Ser Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly
    610                 615                 620

Ala Leu Ala Ser Tyr Ala Ala Ala Cys Ala Gly Arg Gly Val Arg Val
625                 630                 635                 640

Ala Trp Arg Glu Pro Gly Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln
                645                 650                 655

Val Tyr Leu Gln Cys Gly Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu
            660                 665                 670

Ser Tyr Pro Asp Glu Glu Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe
        675                 680                 685

Cys Pro Pro Gly Leu Tyr Met Asp Glu Arg Gly Asp Cys Val Pro Lys
    690                 695                 700

Ala Gln Cys Pro Cys Tyr Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp
705                 710                 715                 720

Ile Phe Ser Asp His His Thr Met Cys Tyr Cys Glu Asp Gly Phe Met
                725                 730                 735

His Cys Thr Met Ser Gly Val Pro Gly Ser Leu Leu Pro Asp Ala Val
            740                 745                 750

Leu Ser Ser Pro Leu Ser His Arg Ser Lys Arg Ser Leu Ser Cys Arg
        755                 760                 765

Pro Pro Met Val Lys Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu
    770                 775                 780

Gly Leu Glu Cys Thr Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met
785                 790                 795                 800

Ser Met Gly Cys Val Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg
                805                 810                 815
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His Glu Asn Arg Cys Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln
            820                 825                 830

Gly Lys Glu Tyr Ala Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr
        835                 840                 845

Cys Val Cys Arg Asp Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp
    850                 855                 860

Ala Thr Cys Ser Thr Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly
865                 870                 875                 880

Leu Lys Tyr Leu Phe Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp
                885                 890                 895

Tyr Cys Gly Ser Asn Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys
            900                 905                 910

Gly Cys Ser His Pro Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu
        915                 920                 925

Val Glu Gly Gly Glu Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys
    930                 935                 940

Arg Pro Met Lys Asp Glu Thr His Phe Glu Val Val Glu Ser Gly Arg
945                 950                 955                 960

Tyr Ile Ile Leu Leu Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg
                965                 970                 975

His Leu Ser Ile Ser Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val
            980                 985                 990

Cys Gly Leu Cys Gly Asn Phe Asp  Gly Ile Gln Asn Asn  Asp Leu Thr
        995                 1000                1005

Ser Ser  Asn Leu Gln Val Glu  Glu Asp Pro Val Asp  Phe Gly Asn
    1010                1015                1020

Ser Trp  Lys Val Ser Ser Gln  Cys Ala Asp Thr Arg  Lys Val Pro
    1025                1030                1035

Leu Asp  Ser Ser Pro Ala Thr  Cys His Asn Asn Ile  Met Lys Gln
    1040                1045                1050

Thr Met  Val Asp Ser Ser Cys  Arg Ile Leu Thr Ser  Asp Val Phe
```

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Gln Asp Cys Asn Lys Leu Val Asp Pro Glu Pro Tyr Leu Asp Val
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Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser Ile Gly Asp Cys Ala
1085 1090 1095

Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala His Val Cys Ala Gln
1100 1105 1110

His Gly Lys Val Val Thr Trp Arg Thr Ala Thr Leu Cys Pro Gln
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Ser Cys Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr Glu Cys Glu
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Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr Cys Gln
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His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly Cys
1160 1165 1170

His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln
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Thr Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly
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Arg Arg Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp
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Pro Glu His Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr
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Cys Glu Ala Cys Gln Glu Pro Gly Gly Leu Val Val Pro Pro Thr
1235 1240 1245

Asp Ala Pro Val Ser Pro Thr Thr Leu Tyr Val Glu Asp Ile Ser
1250 1255 1260

Glu Pro Pro Leu His Asp Phe Tyr Cys Ser Arg Leu Leu Asp Leu
1265 1270 1275

Val Phe Leu Leu Asp Gly Ser Ser Arg Leu Ser Glu Ala Glu Phe
1280 1285 1290

```
Glu Val  Leu Lys Ala Phe Val  Val Asp Met Met Glu  Arg Leu Arg
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Ile Ser  Gln Lys Trp Val Arg  Val Ala Val Val Glu  Tyr His Asp
    1310                 1315                 1320

Gly Ser  His Ala Tyr Ile Gly  Leu Lys Asp Arg Lys  Arg Pro Ser
    1325                 1330                 1335

Glu Leu  Arg Arg Ile Ala Ser  Gln Val Lys Tyr Ala  Gly Ser Gln
    1340                 1345                 1350

Val Ala  Ser Thr Ser Glu Val  Leu Lys Tyr Thr Leu  Phe Gln Ile
    1355                 1360                 1365

Phe Ser  Lys Ile Asp Arg Pro  Glu Ala Ser Arg Ile  Ala Leu Leu
    1370                 1375                 1380

Leu Met  Ala Ser Gln Glu Pro  Gln Arg Met Ser Arg  Asn Phe Val
    1385                 1390                 1395

Arg Tyr  Val Gln Gly Leu Lys  Lys Lys Lys Val Ile  Val Ile Pro
    1400                 1405                 1410

Val Gly  Ile Gly Pro His Ala  Asn Leu Lys Gln Ile  Arg Leu Ile
    1415                 1420                 1425

Glu Lys  Gln Ala Pro Glu Asn  Lys Ala Phe Val Leu  Ser Ser Val
    1430                 1435                 1440

Asp Glu  Leu Glu Gln Gln Arg  Asp Glu Ile Val Ser  Tyr Leu Cys
    1445                 1450                 1455

Asp Leu  Ala Pro Glu Ala Pro  Pro Pro Thr Leu Pro  Pro His Met
    1460                 1465                 1470

Ala Gln  Val Thr Val Gly Pro  Gly Leu Leu Gly Val  Ser Thr Leu
    1475                 1480                 1485

Gly Pro  Lys Arg Asn Ser Met  Val Leu Asp Val Ala  Phe Val Leu
    1490                 1495                 1500

Glu Gly  Ser Asp Lys Ile Gly  Glu Ala Asp Phe Asn  Arg Ser Lys
    1505                 1510                 1515

Glu Phe  Met Glu Glu Val Ile  Gln Arg Met Asp Val  Gly Gln Asp
    1520                 1525                 1530
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```
Ser Ile  His Val Thr Val Leu  Gln Tyr Ser Tyr Met  Val Thr Val
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Glu Tyr  Pro Phe Ser Glu Ala  Gln Ser Lys Gly Asp  Ile Leu Gln
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Arg Val  Arg Glu Ile Arg Tyr  Gln Gly Gly Asn Arg  Thr Asn Thr
    1565                1570                1575

Gly Leu  Ala Leu Arg Tyr Leu  Ser Asp His Ser Phe  Leu Val Ser
    1580                1585                1590

Gln Gly  Asp Arg Glu Gln Ala  Pro Asn Leu Val Tyr  Met Val Thr
    1595                1600                1605

Gly Asn  Pro Ala Ser Asp Glu  Ile Lys Arg Leu Pro  Gly Asp Ile
    1610                1615                1620

Gln Val  Val Pro Ile Gly Val  Gly Pro Asn Ala Asn  Val Gln Glu
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Leu Glu  Arg Ile Gly Trp Pro  Asn Ala Pro Ile Leu  Ile Gln Asp
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Phe Glu  Thr Leu Pro Arg Glu  Ala Pro Asp Leu Val  Leu Gln Arg
    1655                1660                1665

Cys Cys  Ser Gly Glu Gly Leu  Gln Ile Pro Thr Leu  Ser Pro Ala
    1670                1675                1680

Pro Asp  Cys Ser Gln Pro Leu  Asp Val Ile Leu Leu  Leu Asp Gly
    1685                1690                1695

Ser Ser  Ser Phe Pro Ala Ser  Tyr Phe Asp Glu Met  Lys Ser Phe
    1700                1705                1710

Ala Lys  Ala Phe Ile Ser Lys  Ala Asn Ile Gly Pro  Arg Leu Thr
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Gln Val  Ser Val Leu Gln Tyr  Gly Ser Ile Thr Thr  Ile Asp Val
    1730                1735                1740

Pro Trp  Asn Val Val Pro Glu  Lys Ala His Leu Leu  Ser Leu Val
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Asp Val  Met Gln Arg Glu Gly  Gly Pro Ser Gln Ile  Gly Asp Ala
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```

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Leu Gly  Phe Ala Val Arg Tyr  Leu Thr Ser Glu Met  His Gly Ala
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Arg Pro  Gly Ala Ser Lys Ala  Val Val Ile Leu Val  Thr Asp Val
    1790                 1795                 1800

Ser Val  Asp Ser Val Asp Ala  Ala Ala Asp Ala Ala  Arg Ser Asn
    1805                 1810                 1815

Arg Val  Thr Val Phe Pro Ile  Gly Ile Gly Asp Arg  Tyr Asp Ala
    1820                 1825                 1830

Ala Gln  Leu Arg Ile Leu Ala  Gly Pro Ala Gly Asp  Ser Asn Val
    1835                 1840                 1845

Val Lys  Leu Gln Arg Ile Glu  Asp Leu Pro Thr Met  Val Thr Leu
    1850                 1855                 1860

Gly Asn  Ser Phe Leu His Lys  Leu Cys Ser Gly Phe  Val Arg Ile
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Cys Met  Asp Glu Asp Gly Asn  Glu Lys Arg Pro Gly  Asp Val Trp
    1880                 1885                 1890

Thr Leu  Pro Asp Gln Cys His  Thr Val Thr Cys Gln  Pro Asp Gly
    1895                 1900                 1905

Gln Thr  Leu Leu Lys Ser His  Arg Val Asn Cys Asp  Arg Gly Leu
    1910                 1915                 1920

Arg Pro  Ser Cys Pro Asn Ser  Gln Ser Pro Val Lys  Val Glu Glu
    1925                 1930                 1935

Thr Cys  Gly Cys Arg Trp Thr  Cys Pro Cys Val Cys  Thr Gly Ser
    1940                 1945                 1950

Ser Thr  Arg His Ile Val Thr  Phe Asp Gly Gln Asn  Phe Lys Leu
    1955                 1960                 1965

Thr Gly  Ser Cys Ser Tyr Val  Leu Phe Gln Asn Lys  Glu Gln Asp
    1970                 1975                 1980

Leu Glu  Val Ile Leu His Asn  Gly Ala Cys Ser Pro  Gly Ala Arg
    1985                 1990                 1995

Gln Gly  Cys Met Lys Ser Ile  Glu Val Lys His Ser  Ala Leu Ser
```

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Val Glu Leu His Ser Asp Met Glu Val Thr Val Asn Gly Arg Leu
2015 2020 2025

Val Ser Val Pro Tyr Val Gly Gly Asn Met Glu Val Asn Val Tyr
2030 2035 2040

Gly Ala Ile Met His Glu Val Arg Phe Asn His Leu Gly His Ile
2045 2050 2055

Phe Thr Phe Thr Pro Gln Asn Asn Glu Phe Gln Leu Gln Leu Ser
2060 2065 2070

Pro Lys Thr Phe Ala Ser Lys Thr Tyr Gly Leu Cys Gly Ile Cys
2075 2080 2085

Asp Glu Asn Gly Ala Asn Asp Phe Met Leu Arg Asp Gly Thr Val
2090 2095 2100

Thr Thr Asp Trp Lys Thr Leu Val Gln Glu Trp Thr Val Gln Arg
2105 2110 2115

Pro Gly Gln Thr Cys Gln Pro Ile Leu Glu Glu Gln Cys Leu Val
2120 2125 2130

Pro Asp Ser Ser His Cys Gln Val Leu Leu Leu Pro Leu Phe Ala
2135 2140 2145

Glu Cys His Lys Val Leu Ala Pro Ala Thr Phe Tyr Ala Ile Cys
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Gln Gln Asp Ser Cys His Gln Glu Gln Val Cys Glu Val Ile Ala
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Ser Tyr Ala His Leu Cys Arg Thr Asn Gly Val Cys Val Asp Trp
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Arg Thr Pro Asp Phe Cys Ala Met Ser Cys Pro Pro Ser Leu Val
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Tyr Asn His Cys Glu His Gly Cys Pro Arg His Cys Asp Gly Asn
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Val Ser Ser Cys Gly Asp His Pro Ser Glu Gly Cys Phe Cys Pro
2225 2230 2235

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Pro Asp  Lys Val Met Leu Glu  Gly Ser Cys Val Pro  Glu Glu Ala
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Cys Thr  Gln Cys Ile Gly Glu  Asp Gly Val Gln His  Gln Phe Leu
    2255                2260                2265

Glu Ala  Trp Val Pro Asp His  Gln Pro Cys Gln Ile  Cys Thr Cys
    2270                2275                2280

Leu Ser  Gly Arg Lys Val Asn  Cys Thr Thr Gln Pro  Cys Pro Thr
    2285                2290                2295

Ala Lys  Ala Pro Thr Cys Gly  Leu Cys Glu Val Ala  Arg Leu Arg
    2300                2305                2310

Gln Asn  Ala Asp Gln Cys Cys  Pro Glu Tyr Glu Cys  Val Cys Asp
    2315                2320                2325

Pro Val  Ser Cys Asp Leu Pro  Pro Val Pro His Cys  Glu Arg Gly
    2330                2335                2340

Leu Gln  Pro Thr Leu Thr Asn  Pro Gly Glu Cys Arg  Pro Asn Phe
    2345                2350                2355

Thr Cys  Ala Cys Arg Lys Glu  Glu Cys Lys Arg Val  Ser Pro Pro
    2360                2365                2370

Ser Cys  Pro Pro His Arg Leu  Pro Thr Leu Arg Lys  Thr Gln Cys
    2375                2380                2385

Cys Asp  Glu Tyr Glu Cys Ala  Cys Asn Cys Val Asn  Ser Thr Val
    2390                2395                2400

Ser Cys  Pro Leu Gly Tyr Leu  Ala Ser Thr Ala Thr  Asn Asp Cys
    2405                2410                2415

Gly Cys  Thr Thr Thr Thr Cys  Leu Pro Asp Lys Val  Cys Val His
    2420                2425                2430

Arg Ser  Thr Ile Tyr Pro Val  Gly Gln Phe Trp Glu  Glu Gly Cys
    2435                2440                2445

Asp Val  Cys Thr Cys Thr Asp  Met Glu Asp Ala Val  Met Gly Leu
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Arg Val  Ala Gln Cys Ser Gln  Lys Pro Cys Glu Asp  Ser Cys Arg
    2465                2470                2475
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Ser Gly Phe Thr Tyr Val Leu His Glu Gly Glu Cys Cys Gly Arg
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Cys Leu Pro Ser Ala Cys Glu Val Val Thr Gly Ser Pro Arg Gly
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Asp Ser Gln Ser Ser Trp Lys Ser Val Gly Ser Gln Trp Ala Ser
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Val Pro Val Cys Pro Ser Gly Phe Gln Leu Ser Cys Lys Thr Ser
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Leu Asn Gly Thr Val Ile Gly Pro Gly Lys Thr Val Met Ile Asp
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Val Cys Thr Thr Cys Arg Cys Met Val Gln Val Gly Val Ile Ser
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Gly Phe Lys Leu Glu Cys Arg Lys Thr Thr Cys Asn Pro Cys Pro
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Leu Gly Tyr Lys Glu Glu Asn Asn Thr Gly Glu Cys Cys Gly Arg
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Cys Leu Pro Thr Ala Cys Thr Ile Gln Leu Arg Gly Gly Gln Ile
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Met Thr Leu Lys Arg Asp Glu Thr Leu Gln Asp Gly Cys Asp Thr
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His Phe Cys Lys Val Asn Glu Arg Gly Glu Tyr Phe Trp Glu Lys
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Arg Val Thr Gly Cys Pro Pro Phe Asp Glu His Lys Cys Leu Ala
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Val Lys Val Gly Ser Cys Lys Ser Glu Val Glu Val Asp Ile His
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tgtccgctac gtccagggcc tgaagaagaa gaaggtcatt gtgatcccgg tgggcattgg 4500

gccccatgcc aacctcaagc agatccgcct catcgagaag caggcccctg agaacaaggc 4560

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aagctgtaag tctgaagtag aggtggatat ccactactgc cagggcaaat gtgccagcaa 8520

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cagctgcatg ggtgcctgct gctgcctgcc ttggcctgat ggccaggcca gagtgctgcc 8760

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tcttgcaaaa ggc 8833

<210> 31
<211> 763
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 31

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1 5 10 15

Leu Pro Gly Thr Leu Cys Ala Glu Gly Thr Arg Gly Arg Ser Ser Thr
20 25 30

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

Ser Met Tyr Ser Phe Ala Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly
50 55 60

Cys Gln Lys Arg Ser Phe Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys
65 70 75 80

Arg Val Ser Leu Ser Val Tyr Leu Gly Glu Phe Phe Asp Ile His Leu
85 90 95

Phe Val Asn Gly Thr Val Thr Gln Gly Asp Gln Arg Val Ser Met Pro
100 105 110

Tyr Ala Ser Lys Gly Leu Tyr Leu Glu Thr Glu Ala Gly Tyr Tyr Lys
115 120 125

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

```
Asn Phe Gln Val Leu Leu Ser Asp Arg Tyr Phe Asn Lys Thr Cys Gly
145                 150                 155                 160

Leu Cys Gly Asn Phe Asn Ile Phe Ala Glu Asp Asp Phe Met Thr Gln
                165                 170                 175

Glu Gly Thr Leu Thr Ser Asp Pro Tyr Asp Phe Ala Asn Ser Trp Ala
            180                 185                 190

Leu Ser Ser Gly Glu Gln Trp Cys Glu Arg Ala Ser Pro Pro Ser Ser
        195                 200                 205

Ser Cys Asn Ile Ser Ser Gly Glu Met Gln Lys Gly Leu Trp Glu Gln
    210                 215                 220

Cys Gln Leu Leu Lys Ser Thr Ser Val Phe Ala Arg Cys His Pro Leu
225                 230                 235                 240

Val Asp Pro Glu Pro Phe Val Ala Leu Cys Glu Lys Thr Leu Cys Glu
                245                 250                 255

Cys Ala Gly Gly Leu Glu Cys Ala Cys Pro Ala Leu Leu Glu Tyr Ala
            260                 265                 270

Arg Thr Cys Ala Gln Glu Gly Met Val Leu Tyr Gly Trp Thr Asp His
        275                 280                 285

Ser Ala Cys Ser Pro Val Cys Pro Ala Gly Met Glu Tyr Arg Gln Cys
    290                 295                 300

Val Ser Pro Cys Ala Arg Thr Cys Gln Ser Leu His Ile Asn Glu Met
305                 310                 315                 320

Cys Gln Glu Arg Cys Val Asp Gly Cys Ser Cys Pro Glu Gly Gln Leu
                325                 330                 335

Leu Asp Glu Gly Leu Cys Val Glu Ser Thr Glu Cys Pro Cys Val His
            340                 345                 350

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

Thr Cys Ile Cys Arg Asn Ser Gln Trp Ile Cys Ser Asn Glu Glu Cys
    370                 375                 380

Pro Gly Glu Cys Leu Val Thr Gly Gln Ser His Phe Lys Ser Phe Asp
385                 390                 395                 400
```

```
Asn Arg Tyr Phe Thr Phe Ser Gly Ile Cys Gln Tyr Leu Leu Ala Arg
                405                 410                 415

Asp Cys Gln Asp His Ser Phe Ser Ile Val Ile Glu Thr Val Gln Cys
            420                 425                 430

Ala Asp Asp Arg Asp Ala Val Cys Thr Arg Ser Val Thr Val Arg Leu
        435                 440                 445

Pro Gly Leu His Asn Ser Leu Val Lys Leu Lys His Gly Ala Gly Val
    450                 455                 460

Ala Met Asp Gly Gln Asp Ile Gln Leu Pro Leu Leu Lys Gly Asp Leu
465                 470                 475                 480

Arg Ile Gln His Thr Val Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu
                485                 490                 495

Asp Leu Gln Met Asp Trp Asp Gly Arg Gly Arg Leu Leu Val Lys Leu
            500                 505                 510

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

Gly Asn Gln Gly Asp Asp Phe Leu Thr Pro Ser Gly Leu Ala Glu Pro
    530                 535                 540

Arg Val Glu Asp Phe Gly Asn Ala Trp Lys Leu His Gly Asp Cys Gln
545                 550                 555                 560

Asp Leu Gln Lys Gln His Ser Asp Pro Cys Ala Leu Asn Pro Arg Met
                565                 570                 575

Thr Arg Phe Ser Glu Glu Ala Cys Ala Val Leu Thr Ser Pro Thr Phe
            580                 585                 590

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

Arg Tyr Asp Val Cys Ser Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly
    610                 615                 620

Ala Leu Ala Ser Tyr Ala Ala Ala Cys Ala Gly Arg Gly Val Arg Val
625                 630                 635                 640

Ala Trp Arg Glu Pro Gly Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln
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645 650 655

Val Tyr Leu Gln Cys Gly Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu
660 665 670

Ser Tyr Pro Asp Glu Glu Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe
675 680 685

Cys Pro Pro Gly Leu Tyr Met Asp Glu Arg Gly Asp Cys Val Pro Lys
690 695 700

Ala Gln Cys Pro Cys Tyr Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp
705 710 715 720

Ile Phe Ser Asp His His Thr Met Cys Tyr Cys Glu Asp Gly Phe Met
725 730 735

His Cys Thr Met Ser Gly Val Pro Gly Ser Leu Leu Pro Asp Ala Val
740 745 750

Leu Ser Ser Pro Leu Ser His Arg Ser Lys Arg
755 760

<210> 32
<211> 2289
<212> DNA
<213> Artificial Sequence

<220>
<223> sequence

<400> 32
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ctgtgcgccg agggcaccag aggcagatcc agcaccgccc ggtgcagcct gttcggcagc 120

gacttcgtga acaccttcga cggcagcatg tacagcttcg ccggctactg tagctacctg 180

ctggctggcg gctgccagaa gcggagcttc agcatcatcg gcgacttcca gaacggcaag 240

cgggtgtccc tgagcgtgta cctgggcgag ttcttcgaca tccacctgtt cgtgaacggc 300

accgtgaccc agggcgatca gagggtgtcc atgccctacg ccagcaaggg cctgtacctg 360

gaaaccgagg ccggctacta caagctgtcc ggcgaggcct acggcttcgt ggcccggatc 420

gacggctccg gcaacttcca ggtgctgctg tccgaccggt acttcaacaa gacctgcggc 480

ctgtgcggca acttcaacat cttcgccgag gacgacttca tgacccagga aggcaccctg 540

accagcgacc cctacgactt cgccaacagc tgggccctga gcagcggcga gcagtggtgc 600

gagagagcca gccccccccag cagcagctgc aacatcagct ccggcgagat gcagaaaggc 660

ctgtgggagc agtgccagct gctgaagtcc acctccgtgt tcgcccggtg ccacccccctg 720

gtggaccccg agccctttgt ggccctgtgc gaaaagaccc tgtgcgagtg cgctggcggc 780

ctggaatgcg cctgccctgc cctgctggaa tacgcccgga cctgcgccca agaagggatg 840

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cggatccagc acaccgtgac cgccagcgtg agactgtcct acggcgagga cctgcagatg 1500

gactgggacg gcagaggccg gctgctcgtg aagctgtccc ccgtgtacgc cggcaagaca 1560

tgtggcctgt gtgggaacta caacggcaac cagggcgacg actttctgac ccccagcggc 1620

ctggccgagc ccagagtgga ggacttcggc aacgcctgga agctgcacgg cgattgccag 1680

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cccctgccct acctgcggaa ctgcagatac gatgtgtgta gctgctctga cggccgggag 1860

tgcctgtgtg gcgccctggc cagctatgcc gctgcctgcg ccggacgcgg tgtgagagtg 1920

gcttggcggg agcctggcag atgcgagctg aactgcccca agggccaggt gtacctgcag 1980

tgcggcaccc cctgcaacct gacctgccgg tccctgagct accccgacga agagtgcaac 2040

gaggcctgtc tcgaaggctg cttctgcccc cctggcctgt acatggacga gcggggcgac 2100

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atcttcagcg accaccacac catgtgctac tgcgaggacg gctttatgca ctgcaccatg 2220

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tccaagcgg 2289

<210> 33
<211> 506
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 33

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1 5 10 15

Leu Pro Gly Thr Leu Cys Ser Leu Ser Cys Arg Pro Pro Met Val Lys
20 25 30

Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys Thr
35 40 45

Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met Ser Met Gly Cys Val
50 55 60

Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg His Glu Asn Arg Cys
65 70 75 80

Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln Gly Lys Glu Tyr Ala
85 90 95

Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr Cys Val Cys Arg Asp
100 105 110

Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp Ala Thr Cys Ser Thr
115 120 125

Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu Phe
130 135 140

Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp Tyr Cys Gly Ser Asn
145 150 155 160

Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys Gly Cys Ser His Pro
165 170 175

Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu Val Glu Gly Gly Glu
180 185 190

Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys Arg Pro Met Lys Asp
195 200 205

Glu Thr His Phe Glu Val Val Glu Ser Gly Arg Tyr Ile Ile Leu Leu
210 215 220

Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg His Leu Ser Ile Ser
225 230 235 240

```
Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys Gly
                245                 250                 255

Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr Ser Ser Asn Leu Gln
            260                 265                 270

Val Glu Glu Asp Pro Val Asp Phe Gly Asn Ser Trp Lys Val Ser Ser
        275                 280                 285

Gln Cys Ala Asp Thr Arg Lys Val Pro Leu Asp Ser Ser Pro Ala Thr
    290                 295                 300

Cys His Asn Asn Ile Met Lys Gln Thr Met Val Asp Ser Ser Cys Arg
305                 310                 315                 320

Ile Leu Thr Ser Asp Val Phe Gln Asp Cys Asn Lys Leu Val Asp Pro
                325                 330                 335

Glu Pro Tyr Leu Asp Val Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser
            340                 345                 350

Ile Gly Asp Cys Ala Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala His
        355                 360                 365

Val Cys Ala Gln His Gly Lys Val Val Thr Trp Arg Thr Ala Thr Leu
    370                 375                 380

Cys Pro Gln Ser Cys Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr Glu
385                 390                 395                 400

Cys Glu Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr Cys
                405                 410                 415

Gln His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly Cys
            420                 425                 430

His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln Thr
        435                 440                 445

Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly Arg Arg
    450                 455                 460

Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp Pro Glu His
465                 470                 475                 480

Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr Cys Glu Ala Cys
                485                 490                 495
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Gln Glu Pro Gly Gly Leu Val Val Pro Pro
500 505

<210> 34
<211> 740
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 34

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1 5 10 15

Leu Pro Gly Thr Leu Cys Ser Leu Ser Cys Arg Pro Pro Met Val Lys
20 25 30

Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys Thr
35 40 45

Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met Ser Met Gly Cys Val
50 55 60

Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg His Glu Asn Arg Cys
65 70 75 80

Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln Gly Lys Glu Tyr Ala
85 90 95

Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr Cys Val Cys Arg Asp
100 105 110

Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp Ala Thr Cys Ser Thr
115 120 125

Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu Phe
130 135 140

Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp Tyr Cys Gly Ser Asn
145 150 155 160

Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys Gly Cys Ser His Pro
165 170 175

Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu Val Glu Gly Gly Glu
180 185 190

```
Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys Arg Pro Met Lys Asp
        195                 200                 205

Glu Thr His Phe Glu Val Val Glu Ser Gly Arg Tyr Ile Ile Leu Leu
    210                 215                 220

Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg His Leu Ser Ile Ser
225                 230                 235                 240

Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys Gly
                245                 250                 255

Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr Ser Ser Asn Leu Gln
            260                 265                 270

Val Glu Glu Asp Pro Val Asp Phe Gly Asn Ser Trp Lys Val Ser Ser
        275                 280                 285

Gln Cys Ala Asp Thr Arg Lys Val Pro Leu Asp Ser Ser Pro Ala Thr
    290                 295                 300

Cys His Asn Asn Ile Met Lys Gln Thr Met Val Asp Ser Ser Cys Arg
305                 310                 315                 320

Ile Leu Thr Ser Asp Val Phe Gln Asp Cys Asn Lys Leu Val Asp Pro
                325                 330                 335

Glu Pro Tyr Leu Asp Val Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser
            340                 345                 350

Ile Gly Asp Cys Ala Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala His
        355                 360                 365

Val Cys Ala Gln His Gly Lys Val Val Thr Trp Arg Thr Ala Thr Leu
    370                 375                 380

Cys Pro Gln Ser Cys Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr Glu
385                 390                 395                 400

Cys Glu Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr Cys
                405                 410                 415

Gln His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly Cys
            420                 425                 430

His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln Thr
        435                 440                 445
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Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly Arg Arg
    450                 455                 460

Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp Pro Glu His
465                 470                 475                 480

Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr Cys Glu Ala Cys
                485                 490                 495

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

Pro Thr Thr Leu Tyr Val Glu Asp Ile Ser Glu Pro Pro Leu His Asp
        515                 520                 525

Phe Tyr Cys Ser Arg Leu Leu Asp Leu Val Phe Leu Leu Asp Gly Ser
    530                 535                 540

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

Asp Met Met Glu Arg Leu Arg Ile Ser Gln Lys Trp Val Arg Val Ala
                565                 570                 575

Val Val Glu Tyr His Asp Gly Ser His Ala Tyr Ile Gly Leu Lys Asp
            580                 585                 590

Arg Lys Arg Pro Ser Glu Leu Arg Arg Ile Ala Ser Gln Val Lys Tyr
        595                 600                 605

Ala Gly Ser Gln Val Ala Ser Thr Ser Glu Val Leu Lys Tyr Thr Leu
    610                 615                 620

Phe Gln Ile Phe Ser Lys Ile Asp Arg Pro Glu Ala Ser Arg Ile Ala
625                 630                 635                 640

Leu Leu Leu Met Ala Ser Gln Glu Pro Gln Arg Met Ser Arg Asn Phe
                645                 650                 655

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

Val Gly Ile Gly Pro His Ala Asn Leu Lys Gln Ile Arg Leu Ile Glu
        675                 680                 685

Lys Gln Ala Pro Glu Asn Lys Ala Phe Val Leu Ser Ser Val Asp Glu
    690                 695                 700
```

Leu Glu Gln Gln Arg Asp Glu Ile Val Ser Tyr Leu Cys Asp Leu Ala
705 710 715 720

Pro Glu Ala Pro Pro Pro Thr Leu Pro Pro His Met Ala Gln Val Thr
725 730 735

Val Gly Pro Gly
740

<210> 35
<211> 1138
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 35

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1 5 10 15

Leu Pro Gly Thr Leu Cys Ser Leu Ser Cys Arg Pro Pro Met Val Lys
20 25 30

Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys Thr
35 40 45

Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met Ser Met Gly Cys Val
50 55 60

Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg His Glu Asn Arg Cys
65 70 75 80

Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln Gly Lys Glu Tyr Ala
85 90 95

Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr Cys Val Cys Arg Asp
100 105 110

Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp Ala Thr Cys Ser Thr
115 120 125

Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu Phe
130 135 140

Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp Tyr Cys Gly Ser Asn
145 150 155 160

```
Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys Gly Cys Ser His Pro
                165                 170                 175

Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu Val Glu Gly Gly Glu
            180                 185                 190

Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys Arg Pro Met Lys Asp
        195                 200                 205

Glu Thr His Phe Glu Val Val Glu Ser Gly Arg Tyr Ile Ile Leu Leu
    210                 215                 220

Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg His Leu Ser Ile Ser
225                 230                 235                 240

Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys Gly
                245                 250                 255

Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr Ser Ser Asn Leu Gln
            260                 265                 270

Val Glu Glu Asp Pro Val Asp Phe Gly Asn Ser Trp Lys Val Ser Ser
        275                 280                 285

Gln Cys Ala Asp Thr Arg Lys Val Pro Leu Asp Ser Ser Pro Ala Thr
    290                 295                 300

Cys His Asn Asn Ile Met Lys Gln Thr Met Val Asp Ser Ser Cys Arg
305                 310                 315                 320

Ile Leu Thr Ser Asp Val Phe Gln Asp Cys Asn Lys Leu Val Asp Pro
                325                 330                 335

Glu Pro Tyr Leu Asp Val Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser
            340                 345                 350

Ile Gly Asp Cys Ala Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala His
        355                 360                 365

Val Cys Ala Gln His Gly Lys Val Val Thr Trp Arg Thr Ala Thr Leu
    370                 375                 380

Cys Pro Gln Ser Cys Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr Glu
385                 390                 395                 400

Cys Glu Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr Cys
                405                 410                 415
```

```
Gln His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly Cys
            420                 425                 430

His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln Thr
        435                 440                 445

Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly Arg Arg
    450                 455                 460

Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp Pro Glu His
465                 470                 475                 480

Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr Cys Glu Ala Cys
                485                 490                 495

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

Pro Thr Thr Leu Tyr Val Glu Asp Ile Ser Glu Pro Pro Leu His Asp
        515                 520                 525

Phe Tyr Cys Ser Arg Leu Leu Asp Leu Val Phe Leu Leu Asp Gly Ser
    530                 535                 540

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

Asp Met Met Glu Arg Leu Arg Ile Ser Gln Lys Trp Val Arg Val Ala
                565                 570                 575

Val Val Glu Tyr His Asp Gly Ser His Ala Tyr Ile Gly Leu Lys Asp
            580                 585                 590

Arg Lys Arg Pro Ser Glu Leu Arg Arg Ile Ala Ser Gln Val Lys Tyr
        595                 600                 605

Ala Gly Ser Gln Val Ala Ser Thr Ser Glu Val Leu Lys Tyr Thr Leu
    610                 615                 620

Phe Gln Ile Phe Ser Lys Ile Asp Arg Pro Glu Ala Ser Arg Ile Ala
625                 630                 635                 640

Leu Leu Leu Met Ala Ser Gln Glu Pro Gln Arg Met Ser Arg Asn Phe
                645                 650                 655

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

660 665 670

Val Gly Ile Gly Pro His Ala Asn Leu Lys Gln Ile Arg Leu Ile Glu
675 680 685

Lys Gln Ala Pro Glu Asn Lys Ala Phe Val Leu Ser Ser Val Asp Glu
690 695 700

Leu Glu Gln Gln Arg Asp Glu Ile Val Ser Tyr Leu Cys Asp Leu Ala
705 710 715 720

Pro Glu Ala Pro Pro Pro Thr Leu Pro Pro His Met Ala Gln Val Thr
725 730 735

Val Gly Pro Gly Leu Leu Gly Val Ser Thr Leu Gly Pro Lys Arg Asn
740 745 750

Ser Met Val Leu Asp Val Ala Phe Val Leu Glu Gly Ser Asp Lys Ile
755 760 765

Gly Glu Ala Asp Phe Asn Arg Ser Lys Glu Phe Met Glu Glu Val Ile
770 775 780

Gln Arg Met Asp Val Gly Gln Asp Ser Ile His Val Thr Val Leu Gln
785 790 795 800

Tyr Ser Tyr Met Val Thr Val Glu Tyr Pro Phe Ser Glu Ala Gln Ser
805 810 815

Lys Gly Asp Ile Leu Gln Arg Val Arg Glu Ile Arg Tyr Gln Gly Gly
820 825 830

Asn Arg Thr Asn Thr Gly Leu Ala Leu Arg Tyr Leu Ser Asp His Ser
835 840 845

Phe Leu Val Ser Gln Gly Asp Arg Glu Gln Ala Pro Asn Leu Val Tyr
850 855 860

Met Val Thr Gly Asn Pro Ala Ser Asp Glu Ile Lys Arg Leu Pro Gly
865 870 875 880

Asp Ile Gln Val Val Pro Ile Gly Val Gly Pro Asn Ala Asn Val Gln
885 890 895

Glu Leu Glu Arg Ile Gly Trp Pro Asn Ala Pro Ile Leu Ile Gln Asp
900 905 910

Phe Glu Thr Leu Pro Arg Glu Ala Pro Asp Leu Val Leu Gln Arg Cys
915 920 925

Cys Ser Gly Glu Gly Leu Gln Ile Pro Thr Leu Ser Pro Ala Pro Asp
930 935 940

Cys Ser Gln Pro Leu Asp Val Ile Leu Leu Leu Asp Gly Ser Ser Ser
945 950 955 960

Phe Pro Ala Ser Tyr Phe Asp Glu Met Lys Ser Phe Ala Lys Ala Phe
965 970 975

Ile Ser Lys Ala Asn Ile Gly Pro Arg Leu Thr Gln Val Ser Val Leu
980 985 990

Gln Tyr Gly Ser Ile Thr Thr Ile Asp Val Pro Trp Asn Val Val Pro
995 1000 1005

Glu Lys Ala His Leu Leu Ser Leu Val Asp Val Met Gln Arg Glu
1010 1015 1020

Gly Gly Pro Ser Gln Ile Gly Asp Ala Leu Gly Phe Ala Val Arg
1025 1030 1035

Tyr Leu Thr Ser Glu Met His Gly Ala Arg Pro Gly Ala Ser Lys
1040 1045 1050

Ala Val Val Ile Leu Val Thr Asp Val Ser Val Asp Ser Val Asp
1055 1060 1065

Ala Ala Ala Asp Ala Ala Arg Ser Asn Arg Val Thr Val Phe Pro
1070 1075 1080

Ile Gly Ile Gly Asp Arg Tyr Asp Ala Ala Gln Leu Arg Ile Leu
1085 1090 1095

Ala Gly Pro Ala Gly Asp Ser Asn Val Val Lys Leu Gln Arg Ile
1100 1105 1110

Glu Asp Leu Pro Thr Met Val Thr Leu Gly Asn Ser Phe Leu His
1115 1120 1125

Lys Leu Cys Ser Gly Phe Val Arg Ile Cys
1130 1135

<210> 36
<211> 733
<212> PRT

<213> Artificial Sequence

<220>
<223> sequence

<400> 36

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1 5 10 15

Leu Pro Gly Thr Leu Cys Ser Leu Ser Cys Arg Pro Pro Met Val Lys
20 25 30

Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys Thr
35 40 45

Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met Ser Met Gly Cys Val
50 55 60

Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg His Glu Asn Arg Cys
65 70 75 80

Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln Gly Lys Glu Tyr Ala
85 90 95

Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr Cys Val Cys Arg Asp
100 105 110

Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp Ala Thr Cys Ser Thr
115 120 125

Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu Phe
130 135 140

Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp Tyr Cys Gly Ser Asn
145 150 155 160

Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys Gly Cys Ser His Pro
165 170 175

Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu Val Glu Gly Gly Glu
180 185 190

Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys Arg Pro Met Lys Asp
195 200 205

Glu Thr His Phe Glu Val Val Glu Ser Gly Arg Tyr Ile Ile Leu Leu
210 215 220

```
Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg His Leu Ser Ile Ser
225                 230                 235                 240

Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys Gly
                245                 250                 255

Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr Ser Ser Asn Leu Gln
            260                 265                 270

Val Glu Glu Asp Pro Val Asp Phe Gly Asn Ser Trp Lys Val Ser Ser
        275                 280                 285

Gln Cys Ala Asp Thr Arg Lys Val Pro Leu Asp Ser Ser Pro Ala Thr
    290                 295                 300

Cys His Asn Asn Ile Met Lys Gln Thr Met Val Asp Ser Ser Cys Arg
305                 310                 315                 320

Ile Leu Thr Ser Asp Val Phe Gln Asp Cys Asn Lys Leu Val Asp Pro
                325                 330                 335

Glu Pro Tyr Leu Asp Val Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser
            340                 345                 350

Ile Gly Asp Cys Ala Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala His
        355                 360                 365

Val Cys Ala Gln His Gly Lys Val Val Thr Trp Arg Thr Ala Thr Leu
    370                 375                 380

Cys Pro Gln Ser Cys Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr Glu
385                 390                 395                 400

Cys Glu Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr Cys
                405                 410                 415

Gln His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly Cys
            420                 425                 430

His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln Thr
        435                 440                 445

Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly Arg Arg
    450                 455                 460

Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp Pro Glu His
465                 470                 475                 480
```

```
Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr Cys Glu Ala Cys
                485                 490                 495

Gln Glu Pro Gly Gly Leu Val Val Pro Pro Asp Lys Thr His Thr Cys
            500                 505                 510

Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu
        515                 520                 525

Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu
    530                 535                 540

Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys
545                 550                 555                 560

Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys
                565                 570                 575

Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu
            580                 585                 590

Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys
        595                 600                 605

Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys
    610                 615                 620

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

Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys
                645                 650                 655

Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
            660                 665                 670

Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly
        675                 680                 685

Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln
    690                 695                 700

Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
705                 710                 715                 720

His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
                725                 730
```

<210> 37
<211> 2199
<212> DNA
<213> Artificial Sequence

<220>
<223> sequence

<400> 37
atgatccccg ccagattcgc cggcgtgctg ctggccctgg ccctgatcct gcccggcacc 60

ctgtgcagcc tgagctgcag acccccccatg gtcaagctcg tgtgcccagc cgacaatctg 120

cgggccgagg ggctggaatg caccaagacc tgccagaact acgacctgga atgcatgagc 180

atgggctgcg tgagcggctg cctgtgccca cccggcatgg tccggcacga gaacagatgc 240

gtggccctgg aacggtgccc atgcttccac cagggcaaag agtacgcccc tggcgagaca 300

gtgaagatcg gctgcaatac ctgcgtgtgc cgggaccgga agtggaactg caccgaccac 360

gtgtgcgacg ccacatgcag caccatcggc atggcccact acctgacctt tgacggcctg 420

aagtacctgt tccccggcga gtgccagtac gtgctggtgc aggactactg cggcagcaac 480

cccggcacct tccggatcct cgtgggcaac aagggatgca gccaccccag cgtgaagtgc 540

aagaaacgcg tgaccatcct ggtggagggc ggcgagatcg agctgttcga cggcgaagtg 600

aacgtgaagc ggcccatgaa ggacgagaca cacttcgagg tggtggagag cggccggtac 660

atcatcctgc tgctgggcaa ggctctgagc gtcgtgtggg accggcacct gagcatcagc 720

gtggtgctga agcagaccta ccaggaaaaa gtctgcggcc tctgtggcaa tttcgacggc 780

atccagaaca acgatctgac cagcagcaac ctgcaggtgg aagaggaccc cgtggacttt 840

ggcaatagct ggaaggtgtc cagccagtgt gccgacacca gaaaagtgcc cctggactct 900

agccccgcca cctgccacaa caacatcatg aagcagacaa tggtggacag ctcctgccgg 960

atcctgacct ccgacgtgtt ccaggactgt aacaaactgg tggatcctga gccttacctg 1020

gacgtgtgca tctacgacac ctgcagctgc gagagcatcg gcgattgcgc ctgcttctgc 1080

gacacaatcg ccgcctacgc ccatgtgtgc gcccagcacg gcaaggtggt cacctggcgg 1140

accgcaaccc tgtgccccca gagctgcgag gaacggaacc tgcgggagaa cggctacgag 1200

tgcgagtggc ggtacaacag ctgcgcccca gcctgccagg tcacctgcca gcaccccgag 1260

cctctggcct gccccgtgca gtgcgtggag ggctgccacg cccactgccc tccaggcaag 1320

atcctggacg agctgctgca gacctgcgtg gaccctgagg actgccctgt gtgcgaggtg 1380

gccggcaggc ggttcgcctc cggcaagaaa gtgaccctga accctagcga ccccgagcac 1440

tgccagatct gccactgcga cgtggtcaat ctgacctgcg aggcttgcca ggaaccaggc 1500

ggcctcgtcg tgcccctga caaaactcac acatgcccac cgtgcccagc acctgaactc 1560

ctgggggggac cgtcagtctt cctcttcccc ccaaaaccca aggacaccct catgatctcc 1620

cggacccctg aggtcacatg cgtggtggtg gacgtgagcc acgaagaccc tgaggtcaag 1680

ttcaactggt acgtggacgg cgtggaggtg cataatgcca agacaaagcc gcgggaggag 1740

cagtacaaca gcacgtaccg tgtggtcagc gtcctcaccg tcctgcacca ggactggctg 1800

aatggcaagg agtacaagtg caaggtctcc aacaaagccc tcccagcccc catcgagaaa 1860

accatctcca aagccaaagg gcagccccga gagccacagg tgtacaccct gccccatcc 1920

cgggatgagc tgaccaagaa ccaggtcagc ctgacctgcc tggtcaaagg cttctatccc 1980

agcgacatcg ccgtggagtg ggagagcaat gggcagccgg agaacaacta caagaccacg 2040

cctcccgtgc tggactccga cggctccttc ttcctctaca gcaagctcac cgtggacaag 2100

agcaggtggc agcaggggaa cgtcttctca tgctccgtga tgcatgaggc tctgcacaac 2160

cactacacgc agaagagcct ctccctgtct ccgggtaaa 2199

<210> 38
<211> 967
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 38

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
1 5 10 15

Leu Pro Gly Thr Leu Cys Ser Leu Ser Cys Arg Pro Pro Met Val Lys
20 25 30

Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys Thr
35 40 45

Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met Ser Met Gly Cys Val
50 55 60

Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg His Glu Asn Arg Cys
65 70 75 80

Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln Gly Lys Glu Tyr Ala
85 90 95

Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr Cys Val Cys Arg Asp
100 105 110

Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp Ala Thr Cys Ser Thr
115 120 125

```
Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu Phe
    130                 135                 140

Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp Tyr Cys Gly Ser Asn
145                 150                 155                 160

Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys Gly Cys Ser His Pro
                165                 170                 175

Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu Val Glu Gly Gly Glu
            180                 185                 190

Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys Arg Pro Met Lys Asp
        195                 200                 205

Glu Thr His Phe Glu Val Val Glu Ser Gly Arg Tyr Ile Ile Leu Leu
    210                 215                 220

Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg His Leu Ser Ile Ser
225                 230                 235                 240

Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys Gly
                245                 250                 255

Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr Ser Ser Asn Leu Gln
            260                 265                 270

Val Glu Glu Asp Pro Val Asp Phe Gly Asn Ser Trp Lys Val Ser Ser
        275                 280                 285

Gln Cys Ala Asp Thr Arg Lys Val Pro Leu Asp Ser Ser Pro Ala Thr
    290                 295                 300

Cys His Asn Asn Ile Met Lys Gln Thr Met Val Asp Ser Ser Cys Arg
305                 310                 315                 320

Ile Leu Thr Ser Asp Val Phe Gln Asp Cys Asn Lys Leu Val Asp Pro
                325                 330                 335

Glu Pro Tyr Leu Asp Val Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser
            340                 345                 350

Ile Gly Asp Cys Ala Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala His
        355                 360                 365

Val Cys Ala Gln His Gly Lys Val Val Thr Trp Arg Thr Ala Thr Leu
```

370 375 380

Cys Pro Gln Ser Cys Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr Glu
385 390 395 400

Cys Glu Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr Cys
405 410 415

Gln His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly Cys
420 425 430

His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln Thr
435 440 445

Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly Arg Arg
450 455 460

Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp Pro Glu His
465 470 475 480

Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr Cys Glu Ala Cys
485 490 495

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

Pro Thr Thr Leu Tyr Val Glu Asp Ile Ser Glu Pro Pro Leu His Asp
515 520 525

Phe Tyr Cys Ser Arg Leu Leu Asp Leu Val Phe Leu Leu Asp Gly Ser
530 535 540

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

Asp Met Met Glu Arg Leu Arg Ile Ser Gln Lys Trp Val Arg Val Ala
565 570 575

Val Val Glu Tyr His Asp Gly Ser His Ala Tyr Ile Gly Leu Lys Asp
580 585 590

Arg Lys Arg Pro Ser Glu Leu Arg Arg Ile Ala Ser Gln Val Lys Tyr
595 600 605

Ala Gly Ser Gln Val Ala Ser Thr Ser Glu Val Leu Lys Tyr Thr Leu
610 615 620

```
Phe Gln Ile Phe Ser Lys Ile Asp Arg Pro Glu Ala Ser Arg Ile Ala
625                 630                 635                 640

Leu Leu Leu Met Ala Ser Gln Glu Pro Gln Arg Met Ser Arg Asn Phe
                645                 650                 655

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

Val Gly Ile Gly Pro His Ala Asn Leu Lys Gln Ile Arg Leu Ile Glu
        675                 680                 685

Lys Gln Ala Pro Glu Asn Lys Ala Phe Val Leu Ser Ser Val Asp Glu
    690                 695                 700

Leu Glu Gln Gln Arg Asp Glu Ile Val Ser Tyr Leu Cys Asp Leu Ala
705                 710                 715                 720

Pro Glu Ala Pro Pro Pro Thr Leu Pro Pro His Met Ala Gln Val Thr
                725                 730                 735

Val Gly Pro Gly Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro
            740                 745                 750

Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys
        755                 760                 765

Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val
    770                 775                 780

Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp
785                 790                 795                 800

Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr
                805                 810                 815

Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp
            820                 825                 830

Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu
        835                 840                 845

Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg
    850                 855                 860

Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys
865                 870                 875                 880
```

```
Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp
                885                 890                 895

Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys
            900                 905                 910

Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser
        915                 920                 925

Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser
    930                 935                 940

Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser
945                 950                 955                 960

Leu Ser Leu Ser Pro Gly Lys
                965
```

<210> 39
<211> 1365
<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 39

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

Leu Pro Gly Thr Leu Cys Ser Leu Ser Cys Arg Pro Pro Met Val Lys
            20                  25                  30

Leu Val Cys Pro Ala Asp Asn Leu Arg Ala Glu Gly Leu Glu Cys Thr
        35                  40                  45

Lys Thr Cys Gln Asn Tyr Asp Leu Glu Cys Met Ser Met Gly Cys Val
    50                  55                  60

Ser Gly Cys Leu Cys Pro Pro Gly Met Val Arg His Glu Asn Arg Cys
65                  70                  75                  80

Val Ala Leu Glu Arg Cys Pro Cys Phe His Gln Gly Lys Glu Tyr Ala
                85                  90                  95

Pro Gly Glu Thr Val Lys Ile Gly Cys Asn Thr Cys Val Cys Arg Asp
            100                 105                 110
```

```
Arg Lys Trp Asn Cys Thr Asp His Val Cys Asp Ala Thr Cys Ser Thr
        115                 120                 125

Ile Gly Met Ala His Tyr Leu Thr Phe Asp Gly Leu Lys Tyr Leu Phe
    130                 135                 140

Pro Gly Glu Cys Gln Tyr Val Leu Val Gln Asp Tyr Cys Gly Ser Asn
145                 150                 155                 160

Pro Gly Thr Phe Arg Ile Leu Val Gly Asn Lys Gly Cys Ser His Pro
                165                 170                 175

Ser Val Lys Cys Lys Lys Arg Val Thr Ile Leu Val Glu Gly Gly Glu
            180                 185                 190

Ile Glu Leu Phe Asp Gly Glu Val Asn Val Lys Arg Pro Met Lys Asp
        195                 200                 205

Glu Thr His Phe Glu Val Val Glu Ser Gly Arg Tyr Ile Ile Leu Leu
    210                 215                 220

Leu Gly Lys Ala Leu Ser Val Val Trp Asp Arg His Leu Ser Ile Ser
225                 230                 235                 240

Val Val Leu Lys Gln Thr Tyr Gln Glu Lys Val Cys Gly Leu Cys Gly
                245                 250                 255

Asn Phe Asp Gly Ile Gln Asn Asn Asp Leu Thr Ser Ser Asn Leu Gln
            260                 265                 270

Val Glu Glu Asp Pro Val Asp Phe Gly Asn Ser Trp Lys Val Ser Ser
        275                 280                 285

Gln Cys Ala Asp Thr Arg Lys Val Pro Leu Asp Ser Ser Pro Ala Thr
    290                 295                 300

Cys His Asn Asn Ile Met Lys Gln Thr Met Val Asp Ser Ser Cys Arg
305                 310                 315                 320

Ile Leu Thr Ser Asp Val Phe Gln Asp Cys Asn Lys Leu Val Asp Pro
                325                 330                 335

Glu Pro Tyr Leu Asp Val Cys Ile Tyr Asp Thr Cys Ser Cys Glu Ser
            340                 345                 350

Ile Gly Asp Cys Ala Cys Phe Cys Asp Thr Ile Ala Ala Tyr Ala His
        355                 360                 365
```

```
Val Cys Ala Gln His Gly Lys Val Val Thr Trp Arg Thr Ala Thr Leu
    370                 375                 380

Cys Pro Gln Ser Cys Glu Glu Arg Asn Leu Arg Glu Asn Gly Tyr Glu
385                 390                 395                 400

Cys Glu Trp Arg Tyr Asn Ser Cys Ala Pro Ala Cys Gln Val Thr Cys
                405                 410                 415

Gln His Pro Glu Pro Leu Ala Cys Pro Val Gln Cys Val Glu Gly Cys
            420                 425                 430

His Ala His Cys Pro Pro Gly Lys Ile Leu Asp Glu Leu Leu Gln Thr
        435                 440                 445

Cys Val Asp Pro Glu Asp Cys Pro Val Cys Glu Val Ala Gly Arg Arg
    450                 455                 460

Phe Ala Ser Gly Lys Lys Val Thr Leu Asn Pro Ser Asp Pro Glu His
465                 470                 475                 480

Cys Gln Ile Cys His Cys Asp Val Val Asn Leu Thr Cys Glu Ala Cys
                485                 490                 495

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

Pro Thr Thr Leu Tyr Val Glu Asp Ile Ser Glu Pro Pro Leu His Asp
        515                 520                 525

Phe Tyr Cys Ser Arg Leu Leu Asp Leu Val Phe Leu Leu Asp Gly Ser
    530                 535                 540

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

Asp Met Met Glu Arg Leu Arg Ile Ser Gln Lys Trp Val Arg Val Ala
                565                 570                 575

Val Val Glu Tyr His Asp Gly Ser His Ala Tyr Ile Gly Leu Lys Asp
            580                 585                 590

Arg Lys Arg Pro Ser Glu Leu Arg Arg Ile Ala Ser Gln Val Lys Tyr
        595                 600                 605

Ala Gly Ser Gln Val Ala Ser Thr Ser Glu Val Leu Lys Tyr Thr Leu
    610                 615                 620
```

```
Phe Gln Ile Phe Ser Lys Ile Asp Arg Pro Glu Ala Ser Arg Ile Ala
625                 630                 635                 640

Leu Leu Leu Met Ala Ser Gln Glu Pro Gln Arg Met Ser Arg Asn Phe
                645                 650                 655

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

Val Gly Ile Gly Pro His Ala Asn Leu Lys Gln Ile Arg Leu Ile Glu
        675                 680                 685

Lys Gln Ala Pro Glu Asn Lys Ala Phe Val Leu Ser Ser Val Asp Glu
    690                 695                 700

Leu Glu Gln Gln Arg Asp Glu Ile Val Ser Tyr Leu Cys Asp Leu Ala
705                 710                 715                 720

Pro Glu Ala Pro Pro Pro Thr Leu Pro Pro His Met Ala Gln Val Thr
                725                 730                 735

Val Gly Pro Gly Leu Leu Gly Val Ser Thr Leu Gly Pro Lys Arg Asn
            740                 745                 750

Ser Met Val Leu Asp Val Ala Phe Val Leu Glu Gly Ser Asp Lys Ile
        755                 760                 765

Gly Glu Ala Asp Phe Asn Arg Ser Lys Glu Phe Met Glu Glu Val Ile
    770                 775                 780

Gln Arg Met Asp Val Gly Gln Asp Ser Ile His Val Thr Val Leu Gln
785                 790                 795                 800

Tyr Ser Tyr Met Val Thr Val Glu Tyr Pro Phe Ser Glu Ala Gln Ser
                805                 810                 815

Lys Gly Asp Ile Leu Gln Arg Val Arg Glu Ile Arg Tyr Gln Gly Gly
            820                 825                 830

Asn Arg Thr Asn Thr Gly Leu Ala Leu Arg Tyr Leu Ser Asp His Ser
        835                 840                 845

Phe Leu Val Ser Gln Gly Asp Arg Glu Gln Ala Pro Asn Leu Val Tyr
    850                 855                 860

Met Val Thr Gly Asn Pro Ala Ser Asp Glu Ile Lys Arg Leu Pro Gly
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865 870 875 880

Asp Ile Gln Val Val Pro Ile Gly Val Gly Pro Asn Ala Asn Val Gln
885 890 895

Glu Leu Glu Arg Ile Gly Trp Pro Asn Ala Pro Ile Leu Ile Gln Asp
900 905 910

Phe Glu Thr Leu Pro Arg Glu Ala Pro Asp Leu Val Leu Gln Arg Cys
915 920 925

Cys Ser Gly Glu Gly Leu Gln Ile Pro Thr Leu Ser Pro Ala Pro Asp
930 935 940

Cys Ser Gln Pro Leu Asp Val Ile Leu Leu Leu Asp Gly Ser Ser Ser
945 950 955 960

Phe Pro Ala Ser Tyr Phe Asp Glu Met Lys Ser Phe Ala Lys Ala Phe
965 970 975

Ile Ser Lys Ala Asn Ile Gly Pro Arg Leu Thr Gln Val Ser Val Leu
980 985 990

Gln Tyr Gly Ser Ile Thr Thr Ile Asp Val Pro Trp Asn Val Val Pro
995 1000 1005

Glu Lys Ala His Leu Leu Ser Leu Val Asp Val Met Gln Arg Glu
1010 1015 1020

Gly Gly Pro Ser Gln Ile Gly Asp Ala Leu Gly Phe Ala Val Arg
1025 1030 1035

Tyr Leu Thr Ser Glu Met His Gly Ala Arg Pro Gly Ala Ser Lys
1040 1045 1050

Ala Val Val Ile Leu Val Thr Asp Val Ser Val Asp Ser Val Asp
1055 1060 1065

Ala Ala Ala Asp Ala Ala Arg Ser Asn Arg Val Thr Val Phe Pro
1070 1075 1080

Ile Gly Ile Gly Asp Arg Tyr Asp Ala Ala Gln Leu Arg Ile Leu
1085 1090 1095

Ala Gly Pro Ala Gly Asp Ser Asn Val Val Lys Leu Gln Arg Ile
1100 1105 1110

```
Glu Asp  Leu Pro Thr Met Val  Thr Leu Gly Asn Ser  Phe Leu His
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Lys Leu  Cys Ser Gly Phe Val  Arg Ile Cys Asp Lys  Thr His Thr
    1130                 1135                 1140

Cys Pro  Pro Cys Pro Ala Pro  Glu Leu Leu Gly Gly  Pro Ser Val
    1145                 1150                 1155

Phe Leu  Phe Pro Pro Lys Pro  Lys Asp Thr Leu Met  Ile Ser Arg
    1160                 1165                 1170

Thr Pro  Glu Val Thr Cys Val  Val Val Asp Val Ser  His Glu Asp
    1175                 1180                 1185

Pro Glu  Val Lys Phe Asn Trp  Tyr Val Asp Gly Val  Glu Val His
    1190                 1195                 1200

Asn Ala  Lys Thr Lys Pro Arg  Glu Glu Gln Tyr Asn  Ser Thr Tyr
    1205                 1210                 1215

Arg Val  Val Ser Val Leu Thr  Val Leu His Gln Asp  Trp Leu Asn
    1220                 1225                 1230

Gly Lys  Glu Tyr Lys Cys Lys  Val Ser Asn Lys Ala  Leu Pro Ala
    1235                 1240                 1245

Pro Ile  Glu Lys Thr Ile Ser  Lys Ala Lys Gly Gln  Pro Arg Glu
    1250                 1255                 1260

Pro Gln  Val Tyr Thr Leu Pro  Pro Ser Arg Asp Glu  Leu Thr Lys
    1265                 1270                 1275

Asn Gln  Val Ser Leu Thr Cys  Leu Val Lys Gly Phe  Tyr Pro Ser
    1280                 1285                 1290

Asp Ile  Ala Val Glu Trp Glu  Ser Asn Gly Gln Pro  Glu Asn Asn
    1295                 1300                 1305

Tyr Lys  Thr Thr Pro Pro Val  Leu Asp Ser Asp Gly  Ser Phe Phe
    1310                 1315                 1320

Leu Tyr  Ser Lys Leu Thr Val  Asp Lys Ser Arg Trp  Gln Gln Gly
    1325                 1330                 1335

Asn Val  Phe Ser Cys Ser Val  Met His Glu Ala Leu  His Asn His
    1340                 1345                 1350
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Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
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<212> PRT
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<223> sequence

<400> 40

Met Ile Pro Ala Arg Phe Ala Gly Val Leu Leu Ala Leu Ala Leu Ile
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Leu Pro Gly Thr Leu Cys
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<212> PRT
<213> Artificial Sequence

<220>
<223> sequence

<400> 41

Ala Glu Gly Thr Arg Gly Arg Ser Ser Thr Ala Arg Cys Ser Leu Phe
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Gly Ser Asp Phe Val Asn Thr Phe Asp Gly Ser Met Tyr Ser Phe Ala
20 25 30

Gly Tyr Cys Ser Tyr Leu Leu Ala Gly Gly Cys Gln Lys Arg Ser Phe
35 40 45

Ser Ile Ile Gly Asp Phe Gln Asn Gly Lys Arg Val Ser Leu Ser Val
50 55 60

Tyr Leu Gly Glu Phe Phe Asp Ile His Leu Phe Val Asn Gly Thr Val
65 70 75 80

Thr Gln Gly Asp Gln Arg Val Ser Met Pro Tyr Ala Ser Lys Gly Leu
85 90 95

Tyr Leu Glu Thr Glu Ala Gly Tyr Tyr Lys Leu Ser Gly Glu Ala Tyr
100 105 110

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

```
Ser Asp Arg Tyr Phe Asn Lys Thr Cys Gly Leu Cys Gly Asn Phe Asn
    130                 135                 140

Ile Phe Ala Glu Asp Asp Phe Met Thr Gln Glu Gly Thr Leu Thr Ser
145                 150                 155                 160

Asp Pro Tyr Asp Phe Ala Asn Ser Trp Ala Leu Ser Ser Gly Glu Gln
                165                 170                 175

Trp Cys Glu Arg Ala Ser Pro Pro Ser Ser Ser Cys Asn Ile Ser Ser
            180                 185                 190

Gly Glu Met Gln Lys Gly Leu Trp Glu Gln Cys Gln Leu Leu Lys Ser
        195                 200                 205

Thr Ser Val Phe Ala Arg Cys His Pro Leu Val Asp Pro Glu Pro Phe
    210                 215                 220

Val Ala Leu Cys Glu Lys Thr Leu Cys Glu Cys Ala Gly Gly Leu Glu
225                 230                 235                 240

Cys Ala Cys Pro Ala Leu Leu Glu Tyr Ala Arg Thr Cys Ala Gln Glu
                245                 250                 255

Gly Met Val Leu Tyr Gly Trp Thr Asp His Ser Ala Cys Ser Pro Val
            260                 265                 270

Cys Pro Ala Gly Met Glu Tyr Arg Gln Cys Val Ser Pro Cys Ala Arg
        275                 280                 285

Thr Cys Gln Ser Leu His Ile Asn Glu Met Cys Gln Glu Arg Cys Val
    290                 295                 300

Asp Gly Cys Ser Cys Pro Glu Gly Gln Leu Leu Asp Glu Gly Leu Cys
305                 310                 315                 320

Val Glu Ser Thr Glu Cys Pro Cys Val His Ser Gly Lys Arg Tyr Pro
                325                 330                 335

Pro Gly Thr Ser Leu Ser Arg Asp Cys Asn Thr Cys Ile Cys Arg Asn
            340                 345                 350

Ser Gln Trp Ile Cys Ser Asn Glu Glu Cys Pro Gly Glu Cys Leu Val
        355                 360                 365

Thr Gly Gln Ser His Phe Lys Ser Phe Asp Asn Arg Tyr Phe Thr Phe
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370 375 380

Ser Gly Ile Cys Gln Tyr Leu Leu Ala Arg Asp Cys Gln Asp His Ser
385 390 395 400

Phe Ser Ile Val Ile Glu Thr Val Gln Cys Ala Asp Asp Arg Asp Ala
405 410 415

Val Cys Thr Arg Ser Val Thr Val Arg Leu Pro Gly Leu His Asn Ser
420 425 430

Leu Val Lys Leu Lys His Gly Ala Gly Val Ala Met Asp Gly Gln Asp
435 440 445

Ile Gln Leu Pro Leu Leu Lys Gly Asp Leu Arg Ile Gln His Thr Val
450 455 460

Thr Ala Ser Val Arg Leu Ser Tyr Gly Glu Asp Leu Gln Met Asp Trp
465 470 475 480

Asp Gly Arg Gly Arg Leu Leu Val Lys Leu Ser Pro Val Tyr Ala Gly
485 490 495

Lys Thr Cys Gly Leu Cys Gly Asn Tyr Asn Gly Asn Gln Gly Asp Asp
500 505 510

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

Asn Ala Trp Lys Leu His Gly Asp Cys Gln Asp Leu Gln Lys Gln His
530 535 540

Ser Asp Pro Cys Ala Leu Asn Pro Arg Met Thr Arg Phe Ser Glu Glu
545 550 555 560

Ala Cys Ala Val Leu Thr Ser Pro Thr Phe Glu Ala Cys His Arg Ala
565 570 575

Val Ser Pro Leu Pro Tyr Leu Arg Asn Cys Arg Tyr Asp Val Cys Ser
580 585 590

Cys Ser Asp Gly Arg Glu Cys Leu Cys Gly Ala Leu Ala Ser Tyr Ala
595 600 605

Ala Ala Cys Ala Gly Arg Gly Val Arg Val Ala Trp Arg Glu Pro Gly
610 615 620

```
Arg Cys Glu Leu Asn Cys Pro Lys Gly Gln Val Tyr Leu Gln Cys Gly
625                 630                 635                 640

Thr Pro Cys Asn Leu Thr Cys Arg Ser Leu Ser Tyr Pro Asp Glu Glu
                645                 650                 655

Cys Asn Glu Ala Cys Leu Glu Gly Cys Phe Cys Pro Pro Gly Leu Tyr
            660                 665                 670

Met Asp Glu Arg Gly Asp Cys Val Pro Lys Ala Gln Cys Pro Cys Tyr
        675                 680                 685

Tyr Asp Gly Glu Ile Phe Gln Pro Glu Asp Ile Phe Ser Asp His His
    690                 695                 700

Thr Met Cys Tyr Cys Glu Asp Gly Phe Met His Cys Thr Met Ser Gly
705                 710                 715                 720

Val Pro Gly Ser Leu Leu Pro Asp Ala Val Leu Ser Ser Pro Leu Ser
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His Arg Ser Lys Arg
            740
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<211> 2904
<212> DNA
<213> Artificial Sequence

<220>
<223> sequence

<400> 42

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cgggccgagg ggctggaatg caccaagacc tgccagaact acgacctgga atgcatgagc      180

atgggctgcg tgagcggctg cctgtgccca cccggcatgg tccggcacga gaacagatgc      240

gtggccctgg aacggtgccc atgcttccac cagggcaaag agtacgcccc tggcgagaca      300

gtgaagatcg gctgcaatac ctgcgtgtgc cgggaccgga agtggaactg caccgaccac      360

gtgtgcgacg ccacatgcag caccatcggc atggcccact acctgacctt tgacggcctg      420

aagtacctgt tccccggcga gtgccagtac gtgctggtgc aggactactg cggcagcaac      480

cccggcacct tccggatcct cgtgggcaac aagggatgca gccaccccag cgtgaagtgc      540

aagaaacgcg tgaccatcct ggtggagggc ggcgagatcg agctgttcga cggcgaagtg      600

aacgtgaagc ggcccatgaa ggacgagaca cacttcgagg tggtggagag cggccggtac      660
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