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<120> Cancer Vaccines

<130> PC71855A

<150> US 62/280,636
<151> 2016-01-19

<150> US 62/419,190
<151> 2016-11-08

<160> 621

<170> PatentIn version 3.5

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<213> Homo sapiens

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Val Leu Thr Val Val Thr Gly Ser Gly His Ala Ser Ser Thr Pro Gly
            20                  25                  30


Gly Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro Ser Ser
        35                  40                  45


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


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


Ala Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp Gly Gln
                85                  90                  95


Asp Val Thr Ser Val Pro Val Thr Arg Pro Ala Leu Gly Ser Thr Thr
            100                 105                 110


Pro Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro Ala Pro
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```
        115                 120                 125

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
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Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
145                 150                 155                 160

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
                165                 170                 175

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
            180                 185                 190

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
        195                 200                 205

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
    210                 215                 220

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
225                 230                 235                 240

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
                245                 250                 255

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
            260                 265                 270

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
        275                 280                 285

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
    290                 295                 300

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

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
                325                 330                 335
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```
Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
            340                 345                 350

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
        355                 360                 365

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
    370                 375                 380

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
385                 390                 395                 400

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
                405                 410                 415

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
            420                 425                 430

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
        435                 440                 445

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
    450                 455                 460

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
465                 470                 475                 480

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
                485                 490                 495

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
            500                 505                 510

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
        515                 520                 525

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

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
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545                 550                 555                 560

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
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Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
            580                 585                 590

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
        595                 600                 605

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
    610                 615                 620

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
625                 630                 635                 640

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
                645                 650                 655

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
            660                 665                 670

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
        675                 680                 685

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
    690                 695                 700

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
705                 710                 715                 720

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
                725                 730                 735

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
            740                 745                 750

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
        755                 760                 765
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```
Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
    770                 775                 780

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

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
                805                 810                 815

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
            820                 825                 830

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
        835                 840                 845

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
    850                 855                 860

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
865                 870                 875                 880

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
                885                 890                 895

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
            900                 905                 910

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
        915                 920                 925

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Asn
    930                 935                 940

Arg Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val Thr Ser
945                 950                 955                 960

Ala Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His Asn Gly
                965                 970                 975

Thr Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr Pro Phe
```

```
           980                 985                 990

Ser Ile Pro Ser His His Ser Asp  Thr Pro Thr Thr Leu  Ala Ser His
        995                 1000                1005

Ser Thr  Lys Thr Asp Ala Ser  Ser Thr His His Ser  Ser Val Pro
    1010                1015                1020

Pro Leu  Thr Ser Ser Asn His  Ser Thr Ser Pro Gln  Leu Ser Thr
    1025                1030                1035

Gly Val  Ser Phe Phe Phe Leu  Ser Phe His Ile Ser  Asn Leu Gln
    1040                1045                1050

Phe Asn  Ser Ser Leu Glu Asp  Pro Ser Thr Asp Tyr  Tyr Gln Glu
    1055                1060                1065

Leu Gln  Arg Asp Ile Ser Glu  Met Phe Leu Gln Ile  Tyr Lys Gln
    1070                1075                1080

Gly Gly  Phe Leu Gly Leu Ser  Asn Ile Lys Phe Arg  Pro Gly Ser
    1085                1090                1095

Val Val  Val Gln Leu Thr Leu  Ala Phe Arg Glu Gly  Thr Ile Asn
    1100                1105                1110

Val His  Asp Val Glu Thr Gln  Phe Asn Gln Tyr Lys  Thr Glu Ala
    1115                1120                1125

Ala Ser  Arg Tyr Asn Leu Thr  Ile Ser Asp Val Ser  Val Ser Asp
    1130                1135                1140

Val Pro  Phe Pro Phe Ser Ala  Gln Ser Gly Ala Gly  Val Pro Gly
    1145                1150                1155

Trp Gly  Ile Ala Leu Leu Val  Leu Val Cys Val Leu  Val Ala Leu
    1160                1165                1170

Ala Ile  Val Tyr Leu Ile Ala  Leu Ala Val Cys Gln  Cys Arg Arg
    1175                1180                1185
```

```
Lys Asn  Tyr Gly Gln Leu Asp  Ile Phe Pro Ala Arg  Asp Thr Tyr
    1190                1195                1200


His Pro  Met Ser Glu Tyr Pro  Thr Tyr His Thr His  Gly Arg Tyr
    1205                1210                1215


Val Pro  Pro Ser Ser Thr Asp  Arg Ser Pro Tyr Glu  Lys Val Ser
    1220                1225                1230


Ala Gly  Asn Gly Gly Ser Ser  Leu Ser Tyr Thr Asn  Pro Ala Val
    1235                1240                1245


Ala Ala  Thr Ser Ala Asn Leu
    1250                1255
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<213> Homo sapiens

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


Pro Ser Arg Thr Leu Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro Leu
        35                  40                  45


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


Gln Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu
65                  70                  75                  80


Arg Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu
                85                  90                  95


Ser Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro
            100                 105                 110
```

```
Glu Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro
        115                 120                 125

Asp Ala Phe Ser Gly Pro Gln Ala Cys Thr Arg Phe Phe Ser Arg Ile
    130                 135                 140

Thr Lys Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln
145                 150                 155                 160

Arg Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu
                165                 170                 175

Leu Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu
            180                 185                 190

Pro Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg Leu
        195                 200                 205

Val Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala Arg
    210                 215                 220

Ala Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr Trp
225                 230                 235                 240

Ser Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu Gly
                245                 250                 255

Gln Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp Arg
            260                 265                 270

Gln Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr Ile
        275                 280                 285

Leu Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro Ser
    290                 295                 300

Gly Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys Lys
305                 310                 315                 320
```

```
Trp Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln Met
                325                 330                 335

Asp Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val Leu
            340                 345                 350

Lys His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser Val
        355                 360                 365

Ile Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp Ile
    370                 375                 380

Arg Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu
385                 390                 395                 400

Val Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile Asp
                405                 410                 415

Arg Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp Thr
            420                 425                 430

Leu Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu Glu
        435                 440                 445

Leu Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln Asp
    450                 455                 460

Leu Asp Thr Cys Asp Pro Arg Gln Leu Asp Val Leu Tyr Pro Lys Ala
465                 470                 475                 480

Arg Leu Ala Phe Gln Asn Met Asn Gly Ser Glu Tyr Phe Val Lys Ile
                485                 490                 495

Gln Ser Phe Leu Gly Gly Ala Pro Thr Glu Asp Leu Lys Ala Leu Ser
            500                 505                 510

Gln Gln Asn Val Ser Met Asp Leu Ala Thr Phe Met Lys Leu Arg Thr
        515                 520                 525

Asp Ala Val Leu Pro Leu Thr Val Ala Glu Val Gln Lys Leu Leu Gly
    530                 535                 540
```

```
Pro His Val Glu Gly Leu Lys Ala Glu Glu Arg His Arg Pro Val Arg
545                 550                 555                 560


Asp Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly Leu
                565                 570                 575


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


Met Gln Glu Ala Leu Ser Gly Thr Pro Cys Leu Leu Gly Pro Gly Pro
        595                 600                 605


Val Leu Thr Val Leu Ala Leu Leu Leu Ala Ser Thr Leu Ala
    610                 615                 620


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<212>  PRT
<213>  Homo sapiens

<400>  3

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


His Tyr Arg Glu Val Leu Pro Leu Ala Thr Phe Val Arg Arg Leu Gly
            20                  25                  30


Pro Gln Gly Trp Arg Leu Val Gln Arg Gly Asp Pro Ala Ala Phe Arg
        35                  40                  45


Ala Leu Val Ala Gln Cys Leu Val Cys Val Pro Trp Asp Ala Arg Pro
    50                  55                  60


Pro Pro Ala Ala Pro Ser Phe Arg Gln Val Ser Cys Leu Lys Glu Leu
65                  70                  75                  80


Val Ala Arg Val Leu Gln Arg Leu Cys Glu Arg Gly Ala Lys Asn Val
                85                  90                  95


Leu Ala Phe Gly Phe Ala Leu Leu Asp Gly Ala Arg Gly Gly Pro Pro
```

```
            100                 105                 110

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

Asp Ala Leu Arg Gly Ser Gly Ala Trp Gly Leu Leu Leu Arg Arg Val
    130                 135                 140

Gly Asp Asp Val Leu Val His Leu Leu Ala Arg Cys Ala Leu Phe Val
145                 150                 155                 160

Leu Val Ala Pro Ser Cys Ala Tyr Gln Val Cys Gly Pro Pro Leu Tyr
                165                 170                 175

Gln Leu Gly Ala Ala Thr Gln Ala Arg Pro Pro Pro His Ala Ser Gly
            180                 185                 190

Pro Arg Arg Arg Leu Gly Cys Glu Arg Ala Trp Asn His Ser Val Arg
        195                 200                 205

Glu Ala Gly Val Pro Leu Gly Leu Pro Ala Pro Gly Ala Arg Arg Arg
    210                 215                 220

Gly Gly Ser Ala Ser Arg Ser Leu Pro Leu Pro Lys Arg Pro Arg Arg
225                 230                 235                 240

Gly Ala Ala Pro Glu Pro Glu Arg Thr Pro Val Gly Gln Gly Ser Trp
                245                 250                 255

Ala His Pro Gly Arg Thr Arg Gly Pro Ser Asp Arg Gly Phe Cys Val
            260                 265                 270

Val Ser Pro Ala Arg Pro Ala Glu Glu Ala Thr Ser Leu Glu Gly Ala
        275                 280                 285

Leu Ser Gly Thr Arg His Ser His Pro Ser Val Gly Arg Gln His His
    290                 295                 300

Ala Gly Pro Pro Ser Thr Ser Arg Pro Pro Arg Pro Trp Asp Thr Pro
305                 310                 315                 320
```

```
Cys Pro Pro Val Tyr Ala Glu Thr Lys His Phe Leu Tyr Ser Ser Gly
                325                 330                 335

Asp Lys Glu Gln Leu Arg Pro Ser Phe Leu Leu Ser Ser Leu Arg Pro
            340                 345                 350

Ser Leu Thr Gly Ala Arg Arg Leu Val Glu Thr Ile Phe Leu Gly Ser
        355                 360                 365

Arg Pro Trp Met Pro Gly Thr Pro Arg Arg Leu Pro Arg Leu Pro Gln
    370                 375                 380

Arg Tyr Trp Gln Met Arg Pro Leu Phe Leu Glu Leu Leu Gly Asn His
385                 390                 395                 400

Ala Gln Cys Pro Tyr Gly Val Leu Leu Lys Thr His Cys Pro Leu Arg
                405                 410                 415

Ala Ala Val Thr Pro Ala Ala Gly Val Cys Ala Arg Glu Lys Pro Gln
            420                 425                 430

Gly Ser Val Ala Ala Pro Glu Glu Glu Asp Thr Asp Pro Arg Arg Leu
        435                 440                 445

Val Gln Leu Leu Arg Gln His Ser Ser Pro Trp Gln Val Tyr Gly Phe
    450                 455                 460

Val Arg Ala Cys Leu Arg Arg Leu Val Pro Pro Gly Leu Trp Gly Ser
465                 470                 475                 480

Arg His Asn Glu Arg Arg Phe Leu Arg Asn Thr Lys Lys Phe Ile Ser
                485                 490                 495

Leu Gly Lys His Ala Lys Leu Ser Leu Gln Glu Leu Thr Trp Lys Met
            500                 505                 510

Ser Val Arg Asp Cys Ala Trp Leu Arg Arg Ser Pro Gly Val Gly Cys
        515                 520                 525

Val Pro Ala Ala Glu His Arg Leu Arg Glu Glu Ile Leu Ala Lys Phe
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```
    530                 535                 540

Leu His Trp Leu Met Ser Val Tyr Val Val Glu Leu Leu Arg Ser Phe
545                 550                 555                 560

Phe Tyr Val Thr Glu Thr Thr Phe Gln Lys Asn Arg Leu Phe Phe Tyr
                565                 570                 575

Arg Lys Ser Val Trp Ser Lys Leu Gln Ser Ile Gly Ile Arg Gln His
            580                 585                 590

Leu Lys Arg Val Gln Leu Arg Glu Leu Ser Glu Ala Glu Val Arg Gln
        595                 600                 605

His Arg Glu Ala Arg Pro Ala Leu Leu Thr Ser Arg Leu Arg Phe Ile
    610                 615                 620

Pro Lys Pro Asp Gly Leu Arg Pro Ile Val Asn Met Asp Tyr Val Val
625                 630                 635                 640

Gly Ala Arg Thr Phe Arg Arg Glu Lys Arg Ala Glu Arg Leu Thr Ser
                645                 650                 655

Arg Val Lys Ala Leu Phe Ser Val Leu Asn Tyr Glu Arg Ala Arg Arg
            660                 665                 670

Pro Gly Leu Leu Gly Ala Ser Val Leu Gly Leu Asp Asp Ile His Arg
        675                 680                 685

Ala Trp Arg Thr Phe Val Leu Arg Val Arg Ala Gln Asp Pro Pro Pro
    690                 695                 700

Glu Leu Tyr Phe Val Lys Val Asp Val Thr Gly Ala Tyr Asp Thr Ile
705                 710                 715                 720

Pro Gln Asp Arg Leu Thr Glu Val Ile Ala Ser Ile Ile Lys Pro Gln
                725                 730                 735

Asn Thr Tyr Cys Val Arg Arg Tyr Ala Val Val Gln Lys Ala Ala His
            740                 745                 750
```

```
Gly His Val Arg Lys Ala Phe Lys Ser His Val Ser Thr Leu Thr Asp
        755                 760                 765

Leu Gln Pro Tyr Met Arg Gln Phe Val Ala His Leu Gln Glu Thr Ser
    770                 775                 780

Pro Leu Arg Asp Ala Val Val Ile Glu Gln Ser Ser Ser Leu Asn Glu
785                 790                 795                 800

Ala Ser Ser Gly Leu Phe Asp Val Phe Leu Arg Phe Met Cys His His
                805                 810                 815

Ala Val Arg Ile Arg Gly Lys Ser Tyr Val Gln Cys Gln Gly Ile Pro
            820                 825                 830

Gln Gly Ser Ile Leu Ser Thr Leu Leu Cys Ser Leu Cys Tyr Gly Asp
        835                 840                 845

Met Glu Asn Lys Leu Phe Ala Gly Ile Arg Arg Asp Gly Leu Leu Leu
    850                 855                 860

Arg Leu Val Asp Asp Phe Leu Leu Val Thr Pro His Leu Thr His Ala
865                 870                 875                 880

Lys Thr Phe Leu Arg Thr Leu Val Arg Gly Val Pro Glu Tyr Gly Cys
                885                 890                 895

Val Val Asn Leu Arg Lys Thr Val Val Asn Phe Pro Val Glu Asp Glu
            900                 905                 910

Ala Leu Gly Gly Thr Ala Phe Val Gln Met Pro Ala His Gly Leu Phe
        915                 920                 925

Pro Trp Cys Gly Leu Leu Leu Asp Thr Arg Thr Leu Glu Val Gln Ser
    930                 935                 940

Asp Tyr Ser Ser Tyr Ala Arg Thr Ser Ile Arg Ala Ser Leu Thr Phe
945                 950                 955                 960

Asn Arg Gly Phe Lys Ala Gly Arg Asn Met Arg Arg Lys Leu Phe Gly
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965 970 975

Val Leu Arg Leu Lys Cys His Ser Leu Phe Leu Asp Leu Gln Val Asn
980 985 990

Ser Leu Gln Thr Val Cys Thr Asn Ile Tyr Lys Ile Leu Leu Leu Gln
995 1000 1005

Ala Tyr Arg Phe His Ala Cys Val Leu Gln Leu Pro Phe His Gln
1010 1015 1020

Gln Val Trp Lys Asn Pro Thr Phe Phe Leu Arg Val Ile Ser Asp
1025 1030 1035

Thr Ala Ser Leu Cys Tyr Ser Ile Leu Lys Ala Lys Asn Ala Gly
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Met Ser Leu Gly Ala Lys Gly Ala Ala Gly Pro Leu Pro Ser Glu
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Ala Val Gln Trp Leu Cys His Gln Ala Phe Leu Leu Lys Leu Thr
1070 1075 1080

Arg His Arg Val Thr Tyr Val Pro Leu Leu Gly Ser Leu Arg Thr
1085 1090 1095

Ala Gln Thr Gln Leu Ser Arg Lys Leu Pro Gly Thr Thr Leu Thr
1100 1105 1110

Ala Leu Glu Ala Ala Ala Asn Pro Ala Leu Pro Ser Asp Phe Lys
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Thr Ile Leu Asp
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taaaaacgtc acccgccccg cccctaacgg tcgcccgtct ctcagccaat cagcgccccg 30180

catccccaaa ttcaaacacc tcatttgcat attaacgcgc acaaaaagtt tgaggtatat 30240

tattgatgat gg 30252

<210> 5
<211> 1692
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 5
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gtgtccggcc tgagcacaga gagagtgcgg gaactggctg tggccctggc ccagaaaaac 180

gtgaagctga gcaccgagca gctgcggtgc ctggcccaca gactgtctga gcctcccgag 240

gatctggacg ccctgcctct ggatctgctg ctgttcctga accccgacgc cttcagcgga 300

cctcaggcct gcacccggtt cttcagcaga atcaccaagg ccaacgtgga cctgctgccc 360

agaggcgccc ctgagagaca gagactgctg cctgctgctc tggcctgttg gggagtgcgg 420

ggctctctgc tgtctgaagc tgatgtgcgg gccctgggag gcctggcttg tgatctgcct 480

ggaagattcg tggccgagag cgccgaagtg ctgctgccta gactggtgtc ctgtcccggc 540

cctctggacc aggatcagca ggaagctgcc agagctgctc tgcagggcgg aggccctcct 600

tatggacctc ctagcacttg gagcgtgtcc accatggatg ccctgagggg cctgctgcca 660

gtgctgggcc agcctatcat cagatccatc ccacagggca tcgtggccgc ctggcggcag 720

agaagctcta gagatccctc ttggcggcag cccgagcgga caatcctgcg gcccaggttt 780

cggagagagg tggaaaagac cgcctgcccc tctggcaaga aggccagaga gatcgacgag 840

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acccagatgg acagagtgaa cgccatcccc ttcacctatg agcagctgga cgtgctgaag 960

cacaagctgg atgagctgta cccccagggc taccccgaga gcgtgatcca gcacctgggc 1020

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accctgaagg ccctgctgga agtgaacaag ggccacgaga tgtcccccca ggtggccaca 1140

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ctgacagtgg ctgaggtgca gaaactgctg ggcccccatg tggaagggct gaaggccgaa 1560

gaacggcaca gacccgtgcg cgactggatc ctgaggcaga gacaggatga cctggacaca 1620

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caggaagccc tg 1692

<210> 6
<211> 564
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 6

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Met Ala Ser Leu Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro Leu Asp
1               5                  10                  15


Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro Arg Gln
            20                  25                  30


Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu Arg
        35                  40                  45


Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu Ser
    50                  55                  60


Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro Glu
65                  70                  75                  80


Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro Asp
                85                  90                  95


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


Lys Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln Arg
        115                 120                 125


Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu Leu
    130                 135                 140


Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu Pro
145                 150                 155                 160


Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg Leu Val
                165                 170                 175
```

```
Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala Arg Ala
            180                 185                 190

Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr Trp Ser
        195                 200                 205

Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu Gly Gln
    210                 215                 220

Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp Arg Gln
225                 230                 235                 240

Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr Ile Leu
                245                 250                 255

Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro Ser Gly
            260                 265                 270

Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp
        275                 280                 285

Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln Met Asp
    290                 295                 300

Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys
305                 310                 315                 320

His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile
                325                 330                 335

Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp Ile Arg
            340                 345                 350

Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu Val
        355                 360                 365

Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile Asp Arg
    370                 375                 380

Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp Thr Leu
```

385 390 395 400

Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu Glu Leu
405 410 415

Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln Asp Leu
420 425 430

Asp Thr Cys Asp Pro Arg Gln Leu Asp Val Leu Tyr Pro Lys Ala Arg
435 440 445

Leu Ala Phe Gln Asn Met Asn Gly Ser Glu Tyr Phe Val Lys Ile Gln
450 455 460

Ser Phe Leu Gly Gly Ala Pro Thr Glu Asp Leu Lys Ala Leu Ser Gln
465 470 475 480

Gln Asn Val Ser Met Asp Leu Ala Thr Phe Met Lys Leu Arg Thr Asp
485 490 495

Ala Val Leu Pro Leu Thr Val Ala Glu Val Gln Lys Leu Leu Gly Pro
500 505 510

His Val Glu Gly Leu Lys Ala Glu Glu Arg His Arg Pro Val Arg Asp
515 520 525

Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly Leu Gly
530 535 540

Leu Gln Gly Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp Leu Ser Met
545 550 555 560

Gln Glu Ala Leu

<210> 7
<211> 1611
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 7
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gccacccaga gaagcagcgt gccaagcagc accgagaaga acgccgtgtc catgaccagc 180

tccgtgctga gcagccactc tcctggcagc ggcagcagca caacacaggg ccaggatgtg 240

acactggccc ctgccacaga acctgcctct ggatctgccg ccacctgggg acaggacgtg 300

acaagcgtgc cagtgaccag acctgccctg ggctctacaa cacccctgc ccacgatgtg 360

accagcgccc ctgataacaa gcctgcccct ggaagcacag cccctccagc tcatggcgtg 420

acctctgccc cagataccag accagcccca ggatctacag ccccacccgc acacggcgtg 480

acaagtgccc ctgacacaag acccgctcca ggctctactg ctcctcctgc ccatggcgtg 540

acaagcgctc ccgatacaag gccagctcct ggctccacag caccaccagc acatggcgtg 600

acatcagctc ccgacactag acctgctccc ggatcaaccg ctccaccagc tcacggcgtg 660

accagcgcac ctgataccag acctgctctg ggaagcaccg cccctcccgt gcacaatgtg 720

acatctgctt ccggcagcgc cagcggctct gcctctacac tggtgcacaa cggcaccagc 780

gccagagcca caacaacccc agccagcaag agcacccccct tcagcatccc tagccaccac 840

agcgacaccc ctaccacact ggccagccac tccaccaaga ccgatgcctc tagcacccac 900

cactccagcg tgccccctct gaccagcagc aaccacagca caagccccca gctgtctacc 960

ggcgtctcat tcttctttct gtccttccac atcagcaacc tgcagttcaa cagcagcctg 1020

gaagatccca gcaccgacta ctaccaggaa ctgcagcggg atatcagcga gatgttcctg 1080

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acccagttca accagtacaa gaccgaggcc gccagccggt acaacctgac catctccgat 1260

gtgtccgtgt ccgacgtgcc cttcccattc tctgcccagt ctggcgcagg cgtgccagga 1320

tggggaattg ctctgctggt gctcgtgtgc gtgctggtgg ccctggccat cgtgtatctg 1380

attgccctgg ccgtgtgcca gtgccggcgg aagaattacg gccagctgga catcttcccc 1440

gccagagaca cctaccaccc catgagcgag taccccacat accacaccca cggcagatac 1500

gtgccaccca gctccaccga cagatccccc tacgagaaag tgtctgccgg caacggcggc 1560

agctccctga gctacacaaa tcctgccgtg gccgctgcct ccgccaacct g 1611

<210> 8
<211> 536
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 8

Met Ala Ser Thr Pro Gly Thr Gln Ser Pro Phe Phe Leu Leu Leu Leu
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Leu Thr Val Leu Thr Val Val Thr Gly Ser Gly His Ala Ser Ser Thr
20 25 30

Pro Gly Gly Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro
35 40 45

Ser Ser Thr Glu Lys Asn Ala Val Ser Met Thr Ser Ser Val Leu Ser
50 55 60

Ser His Ser Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val
65 70 75 80

Thr Leu Ala Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp
85 90 95

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

Thr Thr Pro Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro
115 120 125

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
130 135 140

Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val
145 150 155 160

Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro

```
                165                 170                 175

Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser
            180                 185                 190

Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro
        195                 200                 205

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    210                 215                 220

Asp Thr Arg Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val
225                 230                 235                 240

Thr Ser Ala Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His
                245                 250                 255

Asn Gly Thr Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr
            260                 265                 270

Pro Phe Ser Ile Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala
        275                 280                 285

Ser His Ser Thr Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val
    290                 295                 300

Pro Pro Leu Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr
305                 310                 315                 320

Gly Val Ser Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln Phe
                325                 330                 335

Asn Ser Ser Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln
            340                 345                 350

Arg Asp Ile Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe
        355                 360                 365

Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln
    370                 375                 380
```

```
Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp Val Glu
385                 390                 395                 400


Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala Ala Ser Arg Tyr Asn Leu
                405                 410                 415


Thr Ile Ser Asp Val Ser Val Ser Asp Val Pro Phe Pro Phe Ser Ala
            420                 425                 430


Gln Ser Gly Ala Gly Val Pro Gly Trp Gly Ile Ala Leu Leu Val Leu
        435                 440                 445


Val Cys Val Leu Val Ala Leu Ala Ile Val Tyr Leu Ile Ala Leu Ala
    450                 455                 460


Val Cys Gln Cys Arg Arg Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro
465                 470                 475                 480


Ala Arg Asp Thr Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr His Thr
                485                 490                 495


His Gly Arg Tyr Val Pro Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu
            500                 505                 510


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


Ala Val Ala Ala Ala Ser Ala Asn
    530                 535


<210>  9
<211>  2679
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  9
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ggacgcacca ggggaccatc cgacagggga ttctgtgtgg tgtcaccggc caggccagca      120
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gaagaggcaa ccagcctcga gggagcgttg tctggaacca gacattccca cccgtcggtg 180

ggccggcagc accacgcggg accaccgtcc acttccagac cgccacggcc atgggacacc 240

ccttgcccgc ctgtgtatgc cgagactaaa cacttcctgt actcatccgg agacaaggaa 300

cagcttcggc cgtccttcct cctgtcgtcg ctcagaccga gcctgaccgg agcacgcaga 360

ttggtggaaa ctatcttcct tgggtcacgt ccgtggatgc caggtacccc acggcgcctc 420

ccgcgcctcc cacagagata ctggcagatg cggcctctgt tcctggaatt gctgggaaac 480

cacgctcagt gcccgtacgg agtcctgctc aagactcact gccctctgag ggcggcggtc 540

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gaggaggaca ccgatccgcg ccgcctcgtg caacttctgc gccagcactc ctcgccctgg 660

caagtctacg ggttcgtccg cgcctgcctg cgccgcctgg tgccgcctgg gctctggggt 720

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catgccaagt tgtcgctgca agaactcacg tggaagatgt cagtccgcga ttgcgcctgg 840

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gtgctgggac tggacgatat ccaccgggct tggcggacct ttgttctccg ggtgagagcc 1380

caagaccctc cgccggaact gtacttcgtg aaggtggcga tcaccggagc ctatgatact 1440

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tgcgtcaggc ggtacgccgt ggtccagaag gccgcgcatg gccacgtgag aaaggcgttc 1560

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gaagcgagca gcggtctgtt tgacgtgttc ctccgcttca tgtgtcatca cgcggtgcga 1740

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ctcttgtgtt ccctttgcta cggcgatatg gaaaacaagc tgttcgctgg gatcagacgg 1860

gacgggttgc tgctcagact ggtggacgac ttcctgctgg tgactccgca cctcactcac 1920

gccaaaacct ttctccgcac tctggtgagg ggagtgccag aatacggctg tgtggtcaat 1980

ctccggaaaa ctgtggtgaa tttccctgtc gaggatgagg cactcggagg aaccgcattt 2040

gtccaaatgc cagcacatgg cctgttccca tggtgcggtc tgctgctgga cacccgaact 2100

cttgaagtgc agtccgacta ctccagctat gcccggacga gcatccgcgc cagcctcact 2160

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ctgaagctga ccaggcacag agtgacctac gtcccgctgc tgggctcgct gcgcactgca 2580

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<210> 10
<211> 893
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 10

Met Gly Ala Ala Pro Glu Pro Glu Arg Thr Pro Val Gly Gln Gly Ser
1 5 10 15

Trp Ala His Pro Gly Arg Thr Arg Gly Pro Ser Asp Arg Gly Phe Cys
20 25 30

Val Val Ser Pro Ala Arg Pro Ala Glu Glu Ala Thr Ser Leu Glu Gly
35 40 45

```
Ala Leu Ser Gly Thr Arg His Ser His Pro Ser Val Gly Arg Gln His
    50                  55                  60

His Ala Gly Pro Pro Ser Thr Ser Arg Pro Pro Arg Pro Trp Asp Thr
65                  70                  75                  80

Pro Cys Pro Pro Val Tyr Ala Glu Thr Lys His Phe Leu Tyr Ser Ser
                85                  90                  95

Gly Asp Lys Glu Gln Leu Arg Pro Ser Phe Leu Leu Ser Ser Leu Arg
            100                 105                 110

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

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

Gln Arg Tyr Trp Gln Met Arg Pro Leu Phe Leu Glu Leu Leu Gly Asn
145                 150                 155                 160

His Ala Gln Cys Pro Tyr Gly Val Leu Leu Lys Thr His Cys Pro Leu
                165                 170                 175

Arg Ala Ala Val Thr Pro Ala Ala Gly Val Cys Ala Arg Glu Lys Pro
            180                 185                 190

Gln Gly Ser Val Ala Ala Pro Glu Glu Glu Asp Thr Asp Pro Arg Arg
        195                 200                 205

Leu Val Gln Leu Leu Arg Gln His Ser Ser Pro Trp Gln Val Tyr Gly
    210                 215                 220

Phe Val Arg Ala Cys Leu Arg Arg Leu Val Pro Pro Gly Leu Trp Gly
225                 230                 235                 240

Ser Arg His Asn Glu Arg Arg Phe Leu Arg Asn Thr Lys Lys Phe Ile
                245                 250                 255

Ser Leu Gly Lys His Ala Lys Leu Ser Leu Gln Glu Leu Thr Trp Lys
```

```
            260                 265                 270

Met Ser Val Arg Asp Cys Ala Trp Leu Arg Arg Ser Pro Gly Val Gly
        275                 280                 285

Cys Val Pro Ala Ala Glu His Arg Leu Arg Glu Glu Ile Leu Ala Lys
    290                 295                 300

Phe Leu His Trp Leu Met Ser Val Tyr Val Val Glu Leu Leu Arg Ser
305                 310                 315                 320

Phe Phe Tyr Val Thr Glu Thr Thr Phe Gln Lys Asn Arg Leu Phe Phe
                325                 330                 335

Tyr Arg Lys Ser Val Trp Ser Lys Leu Gln Ser Ile Gly Ile Arg Gln
            340                 345                 350

His Leu Lys Arg Val Gln Leu Arg Glu Leu Ser Glu Ala Glu Val Arg
        355                 360                 365

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

Ile Pro Lys Pro Asp Gly Leu Arg Pro Ile Val Asn Met Asp Tyr Val
385                 390                 395                 400

Val Gly Ala Arg Thr Phe Arg Arg Glu Lys Arg Ala Glu Arg Leu Thr
                405                 410                 415

Ser Arg Val Lys Ala Leu Phe Ser Val Leu Asn Tyr Glu Arg Ala Arg
            420                 425                 430

Arg Pro Gly Leu Leu Gly Ala Ser Val Leu Gly Leu Asp Asp Ile His
        435                 440                 445

Arg Ala Trp Arg Thr Phe Val Leu Arg Val Arg Ala Gln Asp Pro Pro
    450                 455                 460

Pro Glu Leu Tyr Phe Val Lys Val Ala Ile Thr Gly Ala Tyr Asp Thr
465                 470                 475                 480
```

```
Ile Pro Gln Asp Arg Leu Thr Glu Val Ile Ala Ser Ile Ile Lys Pro
                485                 490                 495

Gln Asn Thr Tyr Cys Val Arg Arg Tyr Ala Val Val Gln Lys Ala Ala
            500                 505                 510

His Gly His Val Arg Lys Ala Phe Lys Ser His Val Ser Thr Leu Thr
        515                 520                 525

Asp Leu Gln Pro Tyr Met Arg Gln Phe Val Ala His Leu Gln Glu Thr
    530                 535                 540

Ser Pro Leu Arg Asp Ala Val Val Ile Glu Gln Ser Ser Ser Leu Asn
545                 550                 555                 560

Glu Ala Ser Ser Gly Leu Phe Asp Val Phe Leu Arg Phe Met Cys His
                565                 570                 575

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

Pro Gln Gly Ser Ile Leu Ser Thr Leu Leu Cys Ser Leu Cys Tyr Gly
        595                 600                 605

Asp Met Glu Asn Lys Leu Phe Ala Gly Ile Arg Arg Asp Gly Leu Leu
    610                 615                 620

Leu Arg Leu Val Asp Asp Phe Leu Leu Val Thr Pro His Leu Thr His
625                 630                 635                 640

Ala Lys Thr Phe Leu Arg Thr Leu Val Arg Gly Val Pro Glu Tyr Gly
                645                 650                 655

Cys Val Val Asn Leu Arg Lys Thr Val Val Asn Phe Pro Val Glu Asp
            660                 665                 670

Glu Ala Leu Gly Gly Thr Ala Phe Val Gln Met Pro Ala His Gly Leu
        675                 680                 685

Phe Pro Trp Cys Gly Leu Leu Leu Asp Thr Arg Thr Leu Glu Val Gln
```

690 695 700

Ser Asp Tyr Ser Ser Tyr Ala Arg Thr Ser Ile Arg Ala Ser Leu Thr
705 710 715 720

Phe Asn Arg Gly Phe Lys Ala Gly Arg Asn Met Arg Arg Lys Leu Phe
725 730 735

Gly Val Leu Arg Leu Lys Cys His Ser Leu Phe Leu Asp Leu Gln Val
740 745 750

Asn Ser Leu Gln Thr Val Cys Thr Asn Ile Tyr Lys Ile Leu Leu Leu
755 760 765

Gln Ala Tyr Arg Phe His Ala Cys Val Leu Gln Leu Pro Phe His Gln
770 775 780

Gln Val Trp Lys Asn Pro Thr Phe Phe Leu Arg Val Ile Ser Asp Thr
785 790 795 800

Ala Ser Leu Cys Tyr Ser Ile Leu Lys Ala Lys Asn Ala Gly Met Ser
805 810 815

Leu Gly Ala Lys Gly Ala Ala Gly Pro Leu Pro Ser Glu Ala Val Gln
820 825 830

Trp Leu Cys His Gln Ala Phe Leu Leu Lys Leu Thr Arg His Arg Val
835 840 845

Thr Tyr Val Pro Leu Leu Gly Ser Leu Arg Thr Ala Gln Thr Gln Leu
850 855 860

Ser Arg Lys Leu Pro Gly Thr Thr Leu Thr Ala Leu Glu Ala Ala Ala
865 870 875 880

Asn Pro Ala Leu Pro Ser Asp Phe Lys Thr Ile Leu Asp
885 890

<210> 11
<211> 1782
<212> DNA

<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 11
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tctgtgtgga gcaagctgca gtcaatcggc attcgccagc atctgaagag ggtgcagctg 180

cgggaacttt ccgaggcaga agtccgccag caccgggagg cccggccggc gcttctcacg 240

tcgcgtctga gattcatccc aaagcccgac gggctgaggc ctatcgtcaa catggattac 300

gtcgtgggcg ctcgcacctt tcgccgtgaa aagcgggccg aacgcttgac ctcacgggtg 360

aaggccctct tctccgtgct gaactacgag agagcaagac ggcctggcct gctgggagct 420

tcggtgctgg gactggacga tatccaccgg gcttggcgga cctttgttct ccgggtgaga 480

gcccaagacc ctccgccgga actgtacttc gtgaaggtgg cgatcaccgg agcctatgat 540

actattccgc aagatcgact caccgaagtc atcgcctcga tcatcaaacc gcagaacact 600

tactgcgtca ggcggtacgc cgtggtccag aaggccgcgc atggccacgt gagaaaggcg 660

ttcaagtcgc acgtgtccac tctcaccgac ctccagcctt acatgaggca attcgttgcg 720

catttgcaag agacttcgcc cctgagagat gcggtggtca tcgagcagag ctccagcctg 780

aacgaagcga gcagcggtct gtttgacgtg ttcctccgct tcatgtgtca tcacgcggtg 840

cgaatcaggg gaaaatcata cgtgcagtgc cagggaatcc cacaaggcag cattctgtcg 900

actctcttgt gttccctttg ctacggcgat atggaaaaca agctgttcgc tgggatcaga 960

cgggacgggt tgctgctcag actggtggac gacttcctgc tggtgactcc gcacctcact 1020

cacgccaaaa cctttctccg cactctggtg aggggagtgc cagaatacgg ctgtgtggtc 1080

aatctccgga aaactgtggt gaatttccct gtcgaggatg aggcactcgg aggaaccgca 1140

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actcttgaag tgcagtccga ctactccagc tatgcccgga cgagcatccg cgccagcctc 1260

actttcaatc gcggctttaa ggccggacga aacatgcgca gaaagctttt cggagtcctc 1320

cggcttaaat gccattcgct ctttctcgat ctccaagtca attcgctgca gaccgtgtgc 1380

acgaacatct acaagatcct gctgctccaa gcctaccggt tccacgcttg cgtgcttcag 1440

ctgccgtttc accaacaggt gtggaagaac ccgaccttct ttctgcgggt cattagcgat 1500

actgcctccc tgtgttactc aatcctcaag gcaaagaacg ccggaatgtc gctgggtgcg 1560

aaaggagccg cgggacctct tcctagcgaa gcggtgcagt ggctctgcca ccaggctttc 1620

ctcctgaagc tgaccaggca cagagtgacc tacgtcccgc tgctgggctc gctgcgcact 1680

gcacagaccc agctgtctag aaaactcccc ggcaccaccc tgaccgctct ggaagccgcc 1740

gccaacccag cattgccgtc agatttcaag accatcttgg ac 1782

<210> 12
<211> 594
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 12

Met Ala Ser Ala Lys Phe Leu His Trp Leu Met Ser Val Tyr Val Val
1 5 10 15

Glu Leu Leu Arg Ser Phe Phe Tyr Val Thr Glu Thr Thr Phe Gln Lys
20 25 30

Asn Arg Leu Phe Phe Tyr Arg Lys Ser Val Trp Ser Lys Leu Gln Ser
35 40 45

Ile Gly Ile Arg Gln His Leu Lys Arg Val Gln Leu Arg Glu Leu Ser
50 55 60

Glu Ala Glu Val Arg Gln His Arg Glu Ala Arg Pro Ala Leu Leu Thr
65 70 75 80

Ser Arg Leu Arg Phe Ile Pro Lys Pro Asp Gly Leu Arg Pro Ile Val
85 90 95

Asn Met Asp Tyr Val Val Gly Ala Arg Thr Phe Arg Arg Glu Lys Arg
100 105 110

Ala Glu Arg Leu Thr Ser Arg Val Lys Ala Leu Phe Ser Val Leu Asn
115 120 125

```
Tyr Glu Arg Ala Arg Arg Pro Gly Leu Leu Gly Ala Ser Val Leu Gly
    130                 135                 140

Leu Asp Asp Ile His Arg Ala Trp Arg Thr Phe Val Leu Arg Val Arg
145                 150                 155                 160

Ala Gln Asp Pro Pro Pro Glu Leu Tyr Phe Val Lys Val Ala Ile Thr
                165                 170                 175

Gly Ala Tyr Asp Thr Ile Pro Gln Asp Arg Leu Thr Glu Val Ile Ala
            180                 185                 190

Ser Ile Ile Lys Pro Gln Asn Thr Tyr Cys Val Arg Arg Tyr Ala Val
        195                 200                 205

Val Gln Lys Ala Ala His Gly His Val Arg Lys Ala Phe Lys Ser His
    210                 215                 220

Val Ser Thr Leu Thr Asp Leu Gln Pro Tyr Met Arg Gln Phe Val Ala
225                 230                 235                 240

His Leu Gln Glu Thr Ser Pro Leu Arg Asp Ala Val Val Ile Glu Gln
                245                 250                 255

Ser Ser Ser Leu Asn Glu Ala Ser Ser Gly Leu Phe Asp Val Phe Leu
            260                 265                 270

Arg Phe Met Cys His His Ala Val Arg Ile Arg Gly Lys Ser Tyr Val
        275                 280                 285

Gln Cys Gln Gly Ile Pro Gln Gly Ser Ile Leu Ser Thr Leu Leu Cys
    290                 295                 300

Ser Leu Cys Tyr Gly Asp Met Glu Asn Lys Leu Phe Ala Gly Ile Arg
305                 310                 315                 320

Arg Asp Gly Leu Leu Leu Arg Leu Val Asp Asp Phe Leu Leu Val Thr
                325                 330                 335

Pro His Leu Thr His Ala Lys Thr Phe Leu Arg Thr Leu Val Arg Gly
```

```
            340                 345                 350

Val Pro Glu Tyr Gly Cys Val Val Asn Leu Arg Lys Thr Val Val Asn
        355                 360                 365

Phe Pro Val Glu Asp Glu Ala Leu Gly Gly Thr Ala Phe Val Gln Met
    370                 375                 380

Pro Ala His Gly Leu Phe Pro Trp Cys Gly Leu Leu Leu Asp Thr Arg
385                 390                 395                 400

Thr Leu Glu Val Gln Ser Asp Tyr Ser Ser Tyr Ala Arg Thr Ser Ile
                405                 410                 415

Arg Ala Ser Leu Thr Phe Asn Arg Gly Phe Lys Ala Gly Arg Asn Met
            420                 425                 430

Arg Arg Lys Leu Phe Gly Val Leu Arg Leu Lys Cys His Ser Leu Phe
        435                 440                 445

Leu Asp Leu Gln Val Asn Ser Leu Gln Thr Val Cys Thr Asn Ile Tyr
    450                 455                 460

Lys Ile Leu Leu Leu Gln Ala Tyr Arg Phe His Ala Cys Val Leu Gln
465                 470                 475                 480

Leu Pro Phe His Gln Gln Val Trp Lys Asn Pro Thr Phe Phe Leu Arg
                485                 490                 495

Val Ile Ser Asp Thr Ala Ser Leu Cys Tyr Ser Ile Leu Lys Ala Lys
            500                 505                 510

Asn Ala Gly Met Ser Leu Gly Ala Lys Gly Ala Ala Gly Pro Leu Pro
        515                 520                 525

Ser Glu Ala Val Gln Trp Leu Cys His Gln Ala Phe Leu Leu Lys Leu
    530                 535                 540

Thr Arg His Arg Val Thr Tyr Val Pro Leu Leu Gly Ser Leu Arg Thr
545                 550                 555                 560
```

Ala Gln Thr Gln Leu Ser Arg Lys Leu Pro Gly Thr Thr Leu Thr Ala
565 570 575

Leu Glu Ala Ala Ala Asn Pro Ala Leu Pro Ser Asp Phe Lys Thr Ile
580 585 590

Leu Asp

<210> 13
<211> 2373
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 13
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gaaactatct tccttgggtc acgtccgtgg atgccaggta ccccacggcg cctcccgcgc 120

ctcccacaga gatactggca gatgcggcct ctgttcctgg aattgctggg aaaccacgct 180

cagtgcccgt acggagtcct gctcaagact cactgccctc tgagggcggc ggtcactccg 240

gcggccggag tgtgcgcacg ggagaagccc cagggaagcg tggcagctcc ggaagaggag 300

gacaccgatc cgcgccgcct cgtgcaactt ctgcgccagc actcctcgcc ctggcaagtc 360

tacgggttcg tccgcgcctg cctgcgccgc ctggtgccgc ctgggctctg gggttcccgg 420

cataacgagc gccgcttcct gagaaatact aagaagttta tctcacttgg aaaacatgcc 480

aagttgtcgc tgcaagaact cacgtggaag atgtcagtcc gcgattgcgc ctggctgcgc 540

cgctcgccgg gcgtcgggtg tgttccagct gcagaacacc gcctgagaga agaaattctg 600

gccaaatttc tgcattggct gatgtcagtg tacgtggtcg agctgctgcg ctccttttc 660

tacgtcactg agactacctt tcaaaagaac cgcctgttct tctaccgcaa atctgtgtgg 720

agcaagctgc agtcaatcgg cattcgccag catctgaaga gggtgcagct gcgggaactt 780

tccgaggcag aagtccgcca gcaccgggag gcccggccgg cgcttctcac gtcgcgtctg 840

agattcatcc caaagcccga cgggctgagg cctatcgtca acatggatta cgtcgtgggc 900

gctcgcacct ttcgccgtga aaagcgggcc gaacgcttga cctcacgggt gaaggccctc 960

ttctccgtgc tgaactacga gagagcaaga cggcctggcc tgctgggagc ttcggtgctg 1020

ggactggacg atatccaccg ggcttggcgg acctttgttc tccgggtgag agcccaagac 1080

cctccgccgg aactgtactt cgtgaaggtg gcgatcaccg gagcctatga tactattccg 1140

caagatcgac tcaccgaagt catcgcctcg atcatcaaac cgcagaacac ttactgcgtc 1200

aggcggtacg ccgtggtcca gaaggccgcg catggccacg tgagaaaggc gttcaagtcg 1260

cacgtgtcca ctctcaccga cctccagcct tacatgaggc aattcgttgc gcatttgcaa 1320

gagacttcgc ccctgagaga tgcggtggtc atcgagcaga gctccagcct gaacgaagcg 1380

agcagcggtc tgtttgacgt gttcctccgc ttcatgtgtc atcacgcggt gcgaatcagg 1440

ggaaaatcat acgtgcagtg ccagggaatc ccacaaggca gcattctgtc gactctcttg 1500

tgttcccttt gctacggcga tatggaaaac aagctgttcg ctgggatcag acgggacggg 1560

ttgctgctca gactggtgga cgacttcctg ctggtgactc cgcacctcac tcacgccaaa 1620

acctttctcc gcactctggt gaggggagtg ccagaatacg gctgtgtggt caatctccgg 1680

aaaactgtgg tgaatttccc tgtcgaggat gaggcactcg gaggaaccgc atttgtccaa 1740

atgccagcac atggcctgtt cccatggtgc ggtctgctgc tggacacccg aactcttgaa 1800

gtgcagtccg actactccag ctatgcccgg acgagcatcc gcgccagcct cactttcaat 1860

cgcggcttta aggccggacg aaacatgcgc agaaagcttt tcggagtcct ccggcttaaa 1920

tgccattcgc tctttctcga tctccaagtc aattcgctgc agaccgtgtg cacgaacatc 1980

tacaagatcc tgctgctcca agcctaccgg ttccacgctt gcgtgcttca gctgccgttt 2040

caccaacagg tgtggaagaa cccgaccttc tttctgcggg tcattagcga tactgcctcc 2100

ctgtgttact caatcctcaa ggcaaagaac gccggaatgt cgctgggtgc gaaaggagcc 2160

gcgggacctc ttcctagcga agcggtgcag tggctctgcc accaggcttt cctcctgaag 2220

ctgaccaggc acagagtgac ctacgtcccg ctgctgggct cgctgcgcac tgcacagacc 2280

cagctgtcta gaaaactccc cggcaccacc ctgaccgctc tggaagccgc cgccaaccca 2340

gcattgccgt cagatttcaa gaccatcttg gac 2373

<210> 14
<211> 791
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 14

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

Arg Arg Leu Val Glu Thr Ile Phe Leu Gly Ser Arg Pro Trp Met Pro
            20   25   30

Gly Thr Pro Arg Arg Leu Pro Arg Leu Pro Gln Arg Tyr Trp Gln Met
        35   40   45

Arg Pro Leu Phe Leu Glu Leu Leu Gly Asn His Ala Gln Cys Pro Tyr
    50   55   60

Gly Val Leu Leu Lys Thr His Cys Pro Leu Arg Ala Ala Val Thr Pro
65   70   75   80

Ala Ala Gly Val Cys Ala Arg Glu Lys Pro Gln Gly Ser Val Ala Ala
                85   90   95

Pro Glu Glu Glu Asp Thr Asp Pro Arg Arg Leu Val Gln Leu Leu Arg
            100   105   110

Gln His Ser Ser Pro Trp Gln Val Tyr Gly Phe Val Arg Ala Cys Leu
        115   120   125

Arg Arg Leu Val Pro Pro Gly Leu Trp Gly Ser Arg His Asn Glu Arg
    130   135   140

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

Lys Leu Ser Leu Gln Glu Leu Thr Trp Lys Met Ser Val Arg Asp Cys
                165   170   175

Ala Trp Leu Arg Arg Ser Pro Gly Val Gly Cys Val Pro Ala Ala Glu
            180   185   190

His Arg Leu Arg Glu Glu Ile Leu Ala Lys Phe Leu His Trp Leu Met

```
        195                 200                 205

Ser Val Tyr Val Val Glu Leu Leu Arg Ser Phe Phe Tyr Val Thr Glu
    210                 215                 220

Thr Thr Phe Gln Lys Asn Arg Leu Phe Phe Tyr Arg Lys Ser Val Trp
225                 230                 235                 240

Ser Lys Leu Gln Ser Ile Gly Ile Arg Gln His Leu Lys Arg Val Gln
                245                 250                 255

Leu Arg Glu Leu Ser Glu Ala Glu Val Arg Gln His Arg Glu Ala Arg
            260                 265                 270

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

Leu Arg Pro Ile Val Asn Met Asp Tyr Val Val Gly Ala Arg Thr Phe
    290                 295                 300

Arg Arg Glu Lys Arg Ala Glu Arg Leu Thr Ser Arg Val Lys Ala Leu
305                 310                 315                 320

Phe Ser Val Leu Asn Tyr Glu Arg Ala Arg Arg Pro Gly Leu Leu Gly
                325                 330                 335

Ala Ser Val Leu Gly Leu Asp Asp Ile His Arg Ala Trp Arg Thr Phe
            340                 345                 350

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

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

Thr Glu Val Ile Ala Ser Ile Ile Lys Pro Gln Asn Thr Tyr Cys Val
385                 390                 395                 400

Arg Arg Tyr Ala Val Val Gln Lys Ala Ala His Gly His Val Arg Lys
                405                 410                 415
```

```
Ala Phe Lys Ser His Val Ser Thr Leu Thr Asp Leu Gln Pro Tyr Met
            420                 425                 430

Arg Gln Phe Val Ala His Leu Gln Glu Thr Ser Pro Leu Arg Asp Ala
        435                 440                 445

Val Val Ile Glu Gln Ser Ser Ser Leu Asn Glu Ala Ser Ser Gly Leu
    450                 455                 460

Phe Asp Val Phe Leu Arg Phe Met Cys His His Ala Val Arg Ile Arg
465                 470                 475                 480

Gly Lys Ser Tyr Val Gln Cys Gln Gly Ile Pro Gln Gly Ser Ile Leu
                485                 490                 495

Ser Thr Leu Leu Cys Ser Leu Cys Tyr Gly Asp Met Glu Asn Lys Leu
            500                 505                 510

Phe Ala Gly Ile Arg Arg Asp Gly Leu Leu Leu Arg Leu Val Asp Asp
        515                 520                 525

Phe Leu Leu Val Thr Pro His Leu Thr His Ala Lys Thr Phe Leu Arg
    530                 535                 540

Thr Leu Val Arg Gly Val Pro Glu Tyr Gly Cys Val Val Asn Leu Arg
545                 550                 555                 560

Lys Thr Val Val Asn Phe Pro Val Glu Asp Glu Ala Leu Gly Gly Thr
                565                 570                 575

Ala Phe Val Gln Met Pro Ala His Gly Leu Phe Pro Trp Cys Gly Leu
            580                 585                 590

Leu Leu Asp Thr Arg Thr Leu Glu Val Gln Ser Asp Tyr Ser Ser Tyr
        595                 600                 605

Ala Arg Thr Ser Ile Arg Ala Ser Leu Thr Phe Asn Arg Gly Phe Lys
    610                 615                 620

Ala Gly Arg Asn Met Arg Arg Lys Leu Phe Gly Val Leu Arg Leu Lys
```

625 630 635 640

Cys His Ser Leu Phe Leu Asp Leu Gln Val Asn Ser Leu Gln Thr Val
645 650 655

Cys Thr Asn Ile Tyr Lys Ile Leu Leu Leu Gln Ala Tyr Arg Phe His
660 665 670

Ala Cys Val Leu Gln Leu Pro Phe His Gln Gln Val Trp Lys Asn Pro
675 680 685

Thr Phe Phe Leu Arg Val Ile Ser Asp Thr Ala Ser Leu Cys Tyr Ser
690 695 700

Ile Leu Lys Ala Lys Asn Ala Gly Met Ser Leu Gly Ala Lys Gly Ala
705 710 715 720

Ala Gly Pro Leu Pro Ser Glu Ala Val Gln Trp Leu Cys His Gln Ala
725 730 735

Phe Leu Leu Lys Leu Thr Arg His Arg Val Thr Tyr Val Pro Leu Leu
740 745 750

Gly Ser Leu Arg Thr Ala Gln Thr Gln Leu Ser Arg Lys Leu Pro Gly
755 760 765

Thr Thr Leu Thr Ala Leu Glu Ala Ala Ala Asn Pro Ala Leu Pro Ser
770 775 780

Asp Phe Lys Thr Ile Leu Asp
785 790

<210> 15
<211> 1551
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 15
atggctagca caggctctgg ccacgccagc tctacacctg gcggcgagaa agagacaagc 60

gccacccaga gaagcagcgt gccaagcagc accgagaaga acgccgtgtc catgaccagc 120

tccgtgctga gcagccactc tcctggcagc ggcagcagca caacacaggg ccaggatgtg 180

acactggccc ctgccacaga acctgcctct ggatctgccg ccacctgggg acaggacgtg 240

acaagcgtgc cagtgaccag acctgccctg ggctctacaa cacccctgc ccacgatgtg 300

accagcgccc ctgataacaa gcctgcccct ggaagcacag cccctccagc tcatggcgtg 360

acctctgccc cagataccag accagcccca ggatctacag ccccacccgc acacggcgtg 420

acaagtgccc ctgacacaag acccgctcca ggctctactg ctcctcctgc ccatggcgtg 480

acaagcgctc ccgatacaag gccagctcct ggctccacag caccaccagc acatggcgtg 540

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agcgacaccc ctaccacact ggccagccac tccaccaaga ccgatgcctc tagcacccac 840

cactccagcg tgccccctct gaccagcagc aaccacagca caagccccca gctgtctacc 900

ggcgtctcat tcttctttct gtccttccac atcagcaacc tgcagttcaa cagcagcctg 960

gaagatccca gcaccgacta ctaccaggaa ctgcagcggg atatcagcga gatgttcctg 1020

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gtggtggtgc agctgaccct ggctttccgg gaaggcacca tcaacgtgca cgacgtggaa 1140

acccagttca accagtacaa gaccgaggcc gccagccggt acaacctgac catctccgat 1200

gtgtccgtgt ccgacgtgcc cttcccattc tctgcccagt ctggcgcagg cgtgccagga 1260

tggggaattg ctctgctggt gctcgtgtgc gtgctggtgg ccctggccat cgtgtatctg 1320

attgccctgg ccgtgtgcca gtgccggcgg aagaattacg gccagctgga catcttcccc 1380

gccagagaca cctaccaccc catgagcgag taccccacat accacaccca cggcagatac 1440

gtgccaccca gctccaccga cagatccccc tacgagaaag tgtctgccgg caacggcggc 1500

agctccctga gctacacaaa tcctgccgtg gccgctgcct ccgccaacct g 1551

<210> 16
<211> 517
<212> PRT

<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 16

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Met Ala Ser Thr Gly Ser Gly His Ala Ser Ser Thr Pro Gly Gly Glu
1               5                  10                  15


Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro Ser Ser Thr Glu
            20                  25                  30


Lys Asn Ala Val Ser Met Thr Ser Ser Val Leu Ser Ser His Ser Pro
        35                  40                  45


Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val Thr Leu Ala Pro
    50                  55                  60


Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp Gly Gln Asp Val
65                  70                  75                  80


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


Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro Ala Pro Gly Ser
            100                 105                 110


Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro
        115                 120                 125


Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    130                 135                 140


Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val
145                 150                 155                 160


Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro
                165                 170                 175


Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser
            180                 185                 190
```

```
Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro
        195                 200                 205

Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val Thr Ser Ala Ser
    210                 215                 220

Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His Asn Gly Thr Ser
225                 230                 235                 240

Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr Pro Phe Ser Ile
                245                 250                 255

Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala Ser His Ser Thr
            260                 265                 270

Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val Pro Pro Leu Thr
        275                 280                 285

Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr Gly Val Ser Phe
    290                 295                 300

Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln Phe Asn Ser Ser Leu
305                 310                 315                 320

Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln Arg Asp Ile Ser
                325                 330                 335

Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe Leu Gly Leu Ser
            340                 345                 350

Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln Leu Thr Leu Ala
        355                 360                 365

Phe Arg Glu Gly Thr Ile Asn Val His Asp Val Glu Thr Gln Phe Asn
    370                 375                 380

Gln Tyr Lys Thr Glu Ala Ala Ser Arg Tyr Asn Leu Thr Ile Ser Asp
385                 390                 395                 400

Val Ser Val Ser Asp Val Pro Phe Pro Phe Ser Ala Gln Ser Gly Ala
```

405 410 415

Gly Val Pro Gly Trp Gly Ile Ala Leu Leu Val Leu Val Cys Val Leu
420 425 430

Val Ala Leu Ala Ile Val Tyr Leu Ile Ala Leu Ala Val Cys Gln Cys
435 440 445

Arg Arg Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro Ala Arg Asp Thr
450 455 460

Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr His Thr His Gly Arg Tyr
465 470 475 480

Val Pro Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu Lys Val Ser Ala
485 490 495

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

Ala Ser Ala Asn Leu
515

<210> 17
<211> 3378
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 17
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tatggacctc ctagcacttg gagcgtgtcc accatggatg ccctgagggg cctgctgcca 660

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gatgtgctgt atcccaaggc ccggctggcc ttccagaaca tgaacggcag cgagtacttc 1380

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gaacggcaca gacccgtgcg cgactggatc ctgaggcaga gacaggatga cctggacaca 1620

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caggaagccc tgggatccgg cagaatcttc aacgcccact acgccggcta cttcgccgac 1740

ctgctgatcc acgacatcga gacaaaccct ggccccaccc ctggaaccca gagccccttc 1800

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acacctggcg gcgagaaaga gacaagcgcc acccagagaa gcagcgtgcc aagcagcacc 1920

gagaagaacg ccgtgtccat gaccagctcc gtgctgagca gccactctcc tggcagcggc 1980

agcagcacaa cacagggcca ggatgtgaca ctggcccctg ccacagaacc tgcctctgga 2040

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tctacaacac cccctgccca cgatgtgacc agcgcccctg ataacaagcc tgcccctgga 2160

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tctacagccc cacccgcaca cggcgtgaca agtgcccctg acacaagacc cgctccaggc 2280

tctactgctc ctcctgccca tggcgtgaca agcgctcccg atacaaggcc agctcctggc 2340

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agcaccgccc ctcccgtgca caatgtgaca tctgcttccg gcagcgccag cggctctgcc 2520

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aattacggcc agctggacat cttccccgcc agagacacct accaccccat gagcgagtac 3240

cccacatacc acacccacgg cagatacgtg ccacccagct ccaccgacag atccccctac 3300

gagaaagtgt ctgccggcaa cggcggcagc tccctgagct acacaaatcc tgccgtggcc 3360

gctgcctccg ccaacctg 3378

<210> 18
<211> 1126
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 18

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Met Ala Ser Leu Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro Leu Asp
1               5                  10                  15

Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro Arg Gln
            20                  25                  30

Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu Arg
        35                  40                  45

Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu Ser
    50                  55                  60

Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro Glu
65                  70                  75                  80

Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro Asp
                85                  90                  95

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

Lys Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln Arg
        115                 120                 125

Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu Leu
    130                 135                 140

Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu Pro
145                 150                 155                 160

Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg Leu Val
                165                 170                 175

Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala Arg Ala
            180                 185                 190

Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr Trp Ser
        195                 200                 205
```

```
Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu Gly Gln
    210                 215                 220

Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp Arg Gln
225                 230                 235                 240

Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr Ile Leu
                245                 250                 255

Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro Ser Gly
            260                 265                 270

Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp
        275                 280                 285

Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln Met Asp
    290                 295                 300

Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys
305                 310                 315                 320

His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile
                325                 330                 335

Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp Ile Arg
            340                 345                 350

Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu Val
        355                 360                 365

Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile Asp Arg
    370                 375                 380

Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp Thr Leu
385                 390                 395                 400

Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu Glu Leu
                405                 410                 415

Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln Asp Leu
```

```
            420                 425                 430

Asp Thr Cys Asp Pro Arg Gln Leu Asp Val Leu Tyr Pro Lys Ala Arg
        435                 440                 445

Leu Ala Phe Gln Asn Met Asn Gly Ser Glu Tyr Phe Val Lys Ile Gln
    450                 455                 460

Ser Phe Leu Gly Gly Ala Pro Thr Glu Asp Leu Lys Ala Leu Ser Gln
465                 470                 475                 480

Gln Asn Val Ser Met Asp Leu Ala Thr Phe Met Lys Leu Arg Thr Asp
                485                 490                 495

Ala Val Leu Pro Leu Thr Val Ala Glu Val Gln Lys Leu Leu Gly Pro
            500                 505                 510

His Val Glu Gly Leu Lys Ala Glu Glu Arg His Arg Pro Val Arg Asp
        515                 520                 525

Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly Leu Gly
    530                 535                 540

Leu Gln Gly Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp Leu Ser Met
545                 550                 555                 560

Gln Glu Ala Leu Gly Ser Gly Arg Ile Phe Asn Ala His Tyr Ala Gly
                565                 570                 575

Tyr Phe Ala Asp Leu Leu Ile His Asp Ile Glu Thr Asn Pro Gly Pro
            580                 585                 590

Thr Pro Gly Thr Gln Ser Pro Phe Phe Leu Leu Leu Leu Leu Thr Val
        595                 600                 605

Leu Thr Val Val Thr Gly Ser Gly His Ala Ser Ser Thr Pro Gly Gly
    610                 615                 620

Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro Ser Ser Thr
625                 630                 635                 640
```

```
Glu Lys Asn Ala Val Ser Met Thr Ser Ser Val Leu Ser Ser His Ser
                645                 650                 655

Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val Thr Leu Ala
            660                 665                 670

Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp Gly Gln Asp
        675                 680                 685

Val Thr Ser Val Pro Val Thr Arg Pro Ala Leu Gly Ser Thr Thr Pro
    690                 695                 700

Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro Ala Pro Gly
705                 710                 715                 720

Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg
                725                 730                 735

Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala
            740                 745                 750

Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly
        755                 760                 765

Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro
    770                 775                 780

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

Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg
                805                 810                 815

Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val Thr Ser Ala
            820                 825                 830

Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His Asn Gly Thr
        835                 840                 845

Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr Pro Phe Ser
```

```
    850                 855                 860

Ile Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala Ser His Ser
865                 870                 875                 880

Thr Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val Pro Pro Leu
                885                 890                 895

Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr Gly Val Ser
            900                 905                 910

Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln Phe Asn Ser Ser
        915                 920                 925

Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln Arg Asp Ile
    930                 935                 940

Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe Leu Gly Leu
945                 950                 955                 960

Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln Leu Thr Leu
                965                 970                 975

Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp Val Glu Thr Gln Phe
            980                 985                 990

Asn Gln Tyr Lys Thr Glu Ala Ala  Ser Arg Tyr Asn Leu  Thr Ile Ser
        995                 1000                1005

Asp Val  Ser Val Ser Asp Val  Pro Phe Pro Phe Ser  Ala Gln Ser
    1010                1015                1020

Gly Ala  Gly Val Pro Gly Trp  Gly Ile Ala Leu Leu  Val Leu Val
    1025                1030                1035

Cys Val  Leu Val Ala Leu Ala  Ile Val Tyr Leu Ile  Ala Leu Ala
    1040                1045                1050

Val Cys  Gln Cys Arg Arg Lys  Asn Tyr Gly Gln Leu  Asp Ile Phe
    1055                1060                1065
```

Pro Ala Arg Asp Thr Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr
    1070   1075   1080

His Thr His Gly Arg Tyr Val Pro Pro Ser Ser Thr Asp Arg Ser
    1085   1090   1095

Pro Tyr Glu Lys Val Ser Ala Gly Asn Gly Gly Ser Ser Leu Ser
    1100   1105   1110

Tyr Thr Asn Pro Ala Val Ala Ala Ala Ser Ala Asn Leu
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<210> 19
<211> 3378
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 19
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gccacccaga gaagcagcgt gccaagcagc accgagaaga acgccgtgtc catgaccagc 180

tccgtgctga gcagccactc tcctggcagc ggcagcagca caacacaggg ccaggatgtg 240

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acaagcgtgc cagtgaccag acctgccctg ggctctacaa caccccctgc ccacgatgtg 360

accagcgccc ctgataacaa gcctgcccct ggaagcacag cccctccagc tcatggcgtg 420

acctctgccc cagataccag accagcccca ggatctacag ccccacccgc acacggcgtg 480

acaagtgccc ctgacacaag acccgctcca ggctctactg ctcctcctgc ccatggcgtg 540

acaagcgctc ccgatacaag gccagctcct ggctccacag caccaccagc acatggcgtg 600

acatcagctc ccgacactag acctgctccc ggatcaaccg ctccaccagc tcacggcgtg 660

accagcgcac ctgataccag acctgctctg ggaagcaccg cccctcccgt gcacaatgtg 720

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gaagatccca gcaccgacta ctaccaggaa ctgcagcggg atatcagcga gatgttcctg 1080

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gtgccaccca gctccaccga cagatccccc tacgagaaag tgtctgccgg caacggcggc 1560

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acactgaccg ccttctaccc cggctatctg tgcagcctgt cccccgagga actgagcagc 2940

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gccgaagaac ggcacagacc cgtgcgcgac tggatcctga ggcagagaca ggatgacctg 3300

gacacactgg gcctgggact gcagggggggc atccctaatg gctacctggt gctggacctg 3360

agcatgcagg aagccctg 3378

<210> 20
<211> 1126
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 20

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

Leu Thr Val Leu Thr Val Val Thr Gly Ser Gly His Ala Ser Ser Thr
20 25 30

Pro Gly Gly Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro
35 40 45

```
Ser Ser Thr Glu Lys Asn Ala Val Ser Met Thr Ser Ser Val Leu Ser
    50                  55                  60

Ser His Ser Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val
65                  70                  75                  80

Thr Leu Ala Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp
                85                  90                  95

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

Thr Thr Pro Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro
        115                 120                 125

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    130                 135                 140

Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val
145                 150                 155                 160

Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro
                165                 170                 175

Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser
            180                 185                 190

Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro
        195                 200                 205

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    210                 215                 220

Asp Thr Arg Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val
225                 230                 235                 240

Thr Ser Ala Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His
                245                 250                 255

Asn Gly Thr Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr
```

```
            260                 265                 270

Pro Phe Ser Ile Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala
        275                 280                 285

Ser His Ser Thr Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val
    290                 295                 300

Pro Pro Leu Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr
305                 310                 315                 320

Gly Val Ser Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln Phe
                325                 330                 335

Asn Ser Ser Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln
            340                 345                 350

Arg Asp Ile Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe
        355                 360                 365

Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln
    370                 375                 380

Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp Val Glu
385                 390                 395                 400

Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala Ala Ser Arg Tyr Asn Leu
                405                 410                 415

Thr Ile Ser Asp Val Ser Val Ser Asp Val Pro Phe Pro Phe Ser Ala
            420                 425                 430

Gln Ser Gly Ala Gly Val Pro Gly Trp Gly Ile Ala Leu Leu Val Leu
        435                 440                 445

Val Cys Val Leu Val Ala Leu Ala Ile Val Tyr Leu Ile Ala Leu Ala
    450                 455                 460

Val Cys Gln Cys Arg Arg Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro
465                 470                 475                 480
```

```
Ala Arg Asp Thr Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr His Thr
                485                 490                 495

His Gly Arg Tyr Val Pro Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu
            500                 505                 510

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

Ala Val Ala Ala Ala Ser Ala Asn Leu Gly Ser Gly Arg Ile Phe Asn
    530                 535                 540

Ala His Tyr Ala Gly Tyr Phe Ala Asp Leu Leu Ile His Asp Ile Glu
545                 550                 555                 560

Thr Asn Pro Gly Pro Leu Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro
                565                 570                 575

Leu Asp Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro
            580                 585                 590

Arg Gln Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr
        595                 600                 605

Glu Arg Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys
    610                 615                 620

Leu Ser Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro
625                 630                 635                 640

Pro Glu Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn
                645                 650                 655

Pro Asp Ala Phe Ser Gly Pro Gln Ala Cys Thr Arg Phe Phe Ser Arg
            660                 665                 670

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

Gln Arg Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser
```

```
    690                 695                 700

Leu Leu Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp
705                 710                 715                 720

Leu Pro Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg
                725                 730                 735

Leu Val Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala
            740                 745                 750

Arg Ala Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr
        755                 760                 765

Trp Ser Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu
    770                 775                 780

Gly Gln Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp
785                 790                 795                 800

Arg Gln Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr
                805                 810                 815

Ile Leu Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro
            820                 825                 830

Ser Gly Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys
        835                 840                 845

Lys Trp Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln
    850                 855                 860

Met Asp Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val
865                 870                 875                 880

Leu Lys His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser
                885                 890                 895

Val Ile Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp
            900                 905                 910
```

```
Ile Arg Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu
        915                 920                 925


Glu Val Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile
    930                 935                 940


Asp Arg Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp
945                 950                 955                 960


Thr Leu Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu
                965                 970                 975


Glu Leu Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln
            980                 985                 990


Asp Leu Asp Thr Cys Asp Pro Arg  Gln Leu Asp Val Leu  Tyr Pro Lys
        995                 1000                1005


Ala Arg  Leu Ala Phe Gln Asn  Met Asn Gly Ser Glu  Tyr Phe Val
    1010                1015                1020


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


Ala Leu  Ser Gln Gln Asn Val  Ser Met Asp Leu Ala  Thr Phe Met
    1040                1045                1050


Lys Leu  Arg Thr Asp Ala Val  Leu Pro Leu Thr Val  Ala Glu Val
    1055                1060                1065


Gln Lys  Leu Leu Gly Pro His  Val Glu Gly Leu Lys  Ala Glu Glu
    1070                1075                1080


Arg His  Arg Pro Val Arg Asp  Trp Ile Leu Arg Gln  Arg Gln Asp
    1085                1090                1095


Asp Leu  Asp Thr Leu Gly Leu  Gly Leu Gln Gly Gly  Ile Pro Asn
    1100                1105                1110


Gly Tyr  Leu Val Leu Asp Leu  Ser Met Gln Glu Ala  Leu
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1115 1120 1125

<210> 21
<211> 3360
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 21
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gccacccaga gaagcagcgt gccaagcagc accgagaaga acgccgtgtc catgaccagc 180

tccgtgctga gcagccactc tcctggcagc ggcagcagca caacacaggg ccaggatgtg 240

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acaagcgtgc cagtgaccag acctgccctg ggctctacaa caccccctgc ccacgatgtg 360

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agcgacaccc ctaccacact ggccagccac tccaccaaga ccgatgcctc tagcacccac 900

cactccagcg tgccccctct gaccagcagc aaccacagca caagccccca gctgtctacc 960

ggcgtctcat tcttctttct gtccttccac atcagcaacc tgcagttcaa cagcagcctg 1020

gaagatccca gcaccgacta ctaccaggaa ctgcagcggg atatcagcga gatgttcctg 1080

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gtggtggtgc agctgaccct ggctttccgg gaaggcacca tcaacgtgca cgacgtggaa 1200

acccagttca accagtacaa gaccgaggcc gccagccggt acaacctgac catctccgat 1260

gtgtccgtgt ccgacgtgcc cttcccattc tctgcccagt ctggcgcagg cgtgccagga 1320

tggggaattg ctctgctggt gctcgtgtgc gtgctggtgg ccctggccat cgtgtatctg 1380

attgccctgg ccgtgtgcca gtgccggcgg aagaattacg gccagctgga catcttcccc 1440

gccagagaca cctaccaccc catgagcgag taccccacat accacaccca cggcagatac 1500

gtgccaccca gctccaccga cagatccccc tacgagaaag tgtctgccgg caacggcggc 1560

agctccctga gctacacaaa tcctgccgtg gccgctgcct ccgccaacct gggatccggc 1620

gccaccaatt tcagcctgct gaaacaggcc ggcgacgtgg aagagaaccc tggccctctg 1680

gctggcgaga caggacagga agccgctcct ctggacggcg tgctggccaa ccctcccaat 1740

atcagcagcc tgagccccag acagctgctg ggattccctt gtgccgaggt gtccggcctg 1800

agcacagaga gagtgcggga actggctgtg gccctggccc agaaaaacgt gaagctgagc 1860

accgagcagc tgcggtgcct ggcccacaga ctgtctgagc ctcccgagga tctggacgcc 1920

ctgcctctgg atctgctgct gttcctgaac cccgacgcct tcagcggacc tcaggcctgc 1980

acccggttct tcagcagaat caccaaggcc aacgtggacc tgctgcccag aggcgccccc 2040

gagagacaga gactgctgcc tgctgctctg gcctgttggg gagtgcgggg ctctctgctg 2100

tctgaagctg atgtgcgggc cctgggaggc ctggcttgtg atctgcctgg aagattcgtg 2160

gccgagagcg ccgaagtgct gctgcctaga ctggtgtcct gtcccggccc tctggaccag 2220

gatcagcagg aagctgccag agctgctctg cagggcggag gccctcctta tggacctcct 2280

agcacttgga gcgtgtccac catggatgcc ctgaggggcc tgctgccagt gctgggccag 2340

cctatcatca gatccatccc acagggcatc gtggccgcct ggcggcagag aagctctaga 2400

gatccctctt ggcggcagcc cgagcggaca atcctgcggc ccaggtttcg gagagaggtg 2460

gaaaagaccg cctgcccctc tggcaagaag gccagagaga tcgacgagag cctgatcttc 2520

tacaagaagt gggagctgga agcctgcgtg gacgccgctc tgctggccac ccagatggac 2580

agagtgaacg ccatcccctt cacctatgag cagctggacg tgctgaagca caagctggat 2640

gagctgtacc cccagggcta ccccgagagc gtgatccagc acctgggcta cctgtttctg 2700

aagatgagcc ccgaggacat ccggaagtgg aacgtgacca gcctggaaac cctgaaggcc 2760

ctgctggaag tgaacaaggg ccacgagatg tccccccagg tggccacact gatcgacaga 2820

ttcgtgaagg gcagaggcca gctggacaag gacaccctgg atacactgac cgccttctac 2880

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tgggctgtgc ggccccagga cctggatacc tgcgatccta gacagctgga tgtgctgtat 3000

cccaaggccc ggctggcctt ccagaacatg aacggcagcg agtacttcgt gaagatccag 3060

tccttcctgg gcggagcccc taccgaggac ctgaaagctc tgagccagca gaacgtgtcc 3120

atggatctgg ccacctttat gaagctgcgg accgacgccg tgctgcctct gacagtggct 3180

gaggtgcaga aactgctggg cccccatgtg gaagggctga aggccgaaga acggcacaga 3240

cccgtgcgcg actggatcct gaggcagaga caggatgacc tggacacact gggcctggga 3300

ctgcaggggg gcatccctaa tggctacctg gtgctggacc tgagcatgca ggaagccctg 3360

<210> 22
<211> 1120
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 22

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

Leu Thr Val Leu Thr Val Val Thr Gly Ser Gly His Ala Ser Ser Thr
20 25 30

Pro Gly Gly Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro
35 40 45

Ser Ser Thr Glu Lys Asn Ala Val Ser Met Thr Ser Ser Val Leu Ser
50 55 60

Ser His Ser Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val
65 70 75 80

Thr Leu Ala Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp
85 90 95

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

```
Thr Thr Pro Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro
        115                 120                 125

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    130                 135                 140

Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val
145                 150                 155                 160

Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro
                165                 170                 175

Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser
            180                 185                 190

Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro
        195                 200                 205

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    210                 215                 220

Asp Thr Arg Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val
225                 230                 235                 240

Thr Ser Ala Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His
                245                 250                 255

Asn Gly Thr Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr
            260                 265                 270

Pro Phe Ser Ile Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala
        275                 280                 285

Ser His Ser Thr Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val
    290                 295                 300

Pro Pro Leu Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr
305                 310                 315                 320

Gly Val Ser Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln Phe
```

```
                325                 330                 335

Asn Ser Ser Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln
            340                 345                 350

Arg Asp Ile Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe
        355                 360                 365

Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln
    370                 375                 380

Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp Val Glu
385                 390                 395                 400

Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala Ala Ser Arg Tyr Asn Leu
                405                 410                 415

Thr Ile Ser Asp Val Ser Val Ser Asp Val Pro Phe Pro Phe Ser Ala
            420                 425                 430

Gln Ser Gly Ala Gly Val Pro Gly Trp Gly Ile Ala Leu Leu Val Leu
        435                 440                 445

Val Cys Val Leu Val Ala Leu Ala Ile Val Tyr Leu Ile Ala Leu Ala
    450                 455                 460

Val Cys Gln Cys Arg Arg Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro
465                 470                 475                 480

Ala Arg Asp Thr Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr His Thr
                485                 490                 495

His Gly Arg Tyr Val Pro Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu
            500                 505                 510

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

Ala Val Ala Ala Ala Ser Ala Asn Leu Gly Ser Gly Ala Thr Asn Phe
    530                 535                 540
```

```
Ser Leu Leu Lys Gln Ala Gly Asp Val Glu Glu Asn Pro Gly Pro Leu
545                 550                 555                 560

Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro Leu Asp Gly Val Leu Ala
                565                 570                 575

Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro Arg Gln Leu Leu Gly Phe
            580                 585                 590

Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu Arg Val Arg Glu Leu
        595                 600                 605

Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu Ser Thr Glu Gln Leu
    610                 615                 620

Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro Glu Asp Leu Asp Ala
625                 630                 635                 640

Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro Asp Ala Phe Ser Gly
                645                 650                 655

Pro Gln Ala Cys Thr Arg Phe Phe Ser Arg Ile Thr Lys Ala Asn Val
            660                 665                 670

Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln Arg Leu Leu Pro Ala
        675                 680                 685

Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu Leu Ser Glu Ala Asp
    690                 695                 700

Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu Pro Gly Arg Phe Val
705                 710                 715                 720

Ala Glu Ser Ala Glu Val Leu Leu Pro Arg Leu Val Ser Cys Pro Gly
                725                 730                 735

Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala Arg Ala Ala Leu Gln Gly
            740                 745                 750

Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr Trp Ser Val Ser Thr Met
```

```
        755                 760                 765

Asp Ala Leu Arg Gly Leu Leu Pro Val Leu Gly Gln Pro Ile Ile Arg
    770                 775                 780

Ser Ile Pro Gln Gly Ile Val Ala Ala Trp Arg Gln Arg Ser Ser Arg
785                 790                 795                 800

Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr Ile Leu Arg Pro Arg Phe
                805                 810                 815

Arg Arg Glu Val Glu Lys Thr Ala Cys Pro Ser Gly Lys Lys Ala Arg
            820                 825                 830

Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp Glu Leu Glu Ala
        835                 840                 845

Cys Val Asp Ala Ala Leu Leu Ala Thr Gln Met Asp Arg Val Asn Ala
    850                 855                 860

Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys His Lys Leu Asp
865                 870                 875                 880

Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile Gln His Leu Gly
                885                 890                 895

Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp Ile Arg Lys Trp Asn Val
            900                 905                 910

Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu Val Asn Lys Gly His
        915                 920                 925

Glu Met Ser Pro Gln Val Ala Thr Leu Ile Asp Arg Phe Val Lys Gly
    930                 935                 940

Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp Thr Leu Thr Ala Phe Tyr
945                 950                 955                 960

Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu Glu Leu Ser Ser Val Pro
                965                 970                 975
```

Pro Ser Ser Ile Trp Ala Val Arg Pro Gln Asp Leu Asp Thr Cys Asp
980 985 990

Pro Arg Gln Leu Asp Val Leu Tyr Pro Lys Ala Arg Leu Ala Phe Gln
995 1000 1005

Asn Met Asn Gly Ser Glu Tyr Phe Val Lys Ile Gln Ser Phe Leu
1010 1015 1020

Gly Gly Ala Pro Thr Glu Asp Leu Lys Ala Leu Ser Gln Gln Asn
1025 1030 1035

Val Ser Met Asp Leu Ala Thr Phe Met Lys Leu Arg Thr Asp Ala
1040 1045 1050

Val Leu Pro Leu Thr Val Ala Glu Val Gln Lys Leu Leu Gly Pro
1055 1060 1065

His Val Glu Gly Leu Lys Ala Glu Glu Arg His Arg Pro Val Arg
1070 1075 1080

Asp Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly
1085 1090 1095

Leu Gly Leu Gln Gly Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp
1100 1105 1110

Leu Ser Met Gln Glu Ala Leu
1115 1120

<210> 23
<211> 3360
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 23
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aaccctccca atatcagcag cctgagcccc agacagctgc tgggattccc ttgtgccgag 120

gtgtccggcc tgagcacaga gagagtgcgg gaactggctg tggccctggc ccagaaaaac 180

gtgaagctga gcaccgagca gctgcggtgc ctggcccaca gactgtctga gcctcccgag 240

gatctggacg ccctgcctct ggatctgctg ctgttcctga accccgacgc cttcagcgga 300

cctcaggcct gcacccggtt cttcagcaga atcaccaagg ccaacgtgga cctgctgccc 360

agaggcgccc ctgagagaca gagactgctg cctgctgctc tggcctgttg gggagtgcgg 420

ggctctctgc tgtctgaagc tgatgtgcgg gccctgggag gcctggcttg tgatctgcct 480

ggaagattcg tggccgagag cgccgaagtg ctgctgccta gactggtgtc ctgtcccggc 540

cctctggacc aggatcagca ggaagctgcc agagctgctc tgcagggcgg aggccctcct 600

tatggacctc ctagcacttg gagcgtgtcc accatggatg ccctgagggg cctgctgcca 660

gtgctgggcc agcctatcat cagatccatc ccacagggca tcgtggccgc ctggcggcag 720

agaagctcta gagatccctc ttggcggcag cccgagcgga caatcctgcg gcccaggttt 780

cggagagagg tggaaaagac cgcctgcccc tctggcaaga aggccagaga gatcgacgag 840

agcctgatct tctacaagaa gtgggagctg gaagcctgcg tggacgccgc tctgctggcc 900

acccagatgg acagagtgaa cgccatcccc ttcacctatg agcagctgga cgtgctgaag 960

cacaagctgg atgagctgta cccccagggc taccccgaga gcgtgatcca gcacctgggc 1020

tacctgtttc tgaagatgag ccccgaggac atccggaagt ggaacgtgac cagcctggaa 1080

accctgaagg ccctgctgga agtgaacaag ggccacgaga tgtcccccca ggtggccaca 1140

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accgccttct accccggcta tctgtgcagc ctgtcccccg aggaactgag cagcgtgcca 1260

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gaacggcaca gacccgtgcg cgactggatc ctgaggcaga gacaggatga cctggacaca 1620

ctgggcctgg gactgcaggg gggcatccct aatggctacc tggtgctgga cctgagcatg 1680

caggaagccc tgggatccgg cgccaccaat ttcagcctgc tgaaacaggc cggcgacgtg 1740

gaagagaacc ctggccctac ccctggaacc cagagcccct tcttccttct gctgctgctg 1800

accgtgctga ctgtcgtgac aggctctggc cacgccagct ctacacctgg cggcgagaaa 1860

gagacaagcg ccacccagag aagcagcgtg ccaagcagca ccgagaagaa cgccgtgtcc 1920

atgaccagct ccgtgctgag cagccactct cctggcagcg gcagcagcac aacacagggc 1980

caggatgtga cactggcccc tgccacagaa cctgcctctg gatctgccgc cacctgggga 2040

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cacaatgtga catctgcttc cggcagcgcc agcggctctg cctctacact ggtgcacaac 2520

ggcaccagcg ccagagccac aacaacccca gccagcaaga gcacccccttt cagcatccct 2580

agccaccaca gcgacacccc taccacactg gccagccact ccaccaagac cgatgcctct 2640

agcacccacc actccagcgt gccccctctg accagcagca accacagcac aagcccccag 2700

ctgtctaccg gcgtctcatt cttctttctg tccttccaca tcagcaacct gcagttcaac 2760

agcagcctgg aagatcccag caccgactac taccaggaac tgcagcggga tatcagcgag 2820

atgttcctgc aaatctacaa gcagggcggc ttcctgggcc tgagcaacat caagttcaga 2880

cccggcagcg tggtggtgca gctgaccctg gctttccggg aaggcaccat caacgtgcac 2940

gacgtggaaa cccagttcaa ccagtacaag accgaggccg ccagccggta caacctgacc 3000

atctccgatg tgtccgtgtc cgacgtgccc ttcccattct ctgcccagtc tggcgcaggc 3060

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ggcagatacg tgccacccag ctccaccgac agatcccccct acgagaaagt gtctgccggc 3300

aacggcggca gctccctgag ctacacaaat cctgccgtgg ccgctgcctc cgccaacctg 3360

<210> 24
<211> 1120
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 24

Met Ala Ser Leu Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro Leu Asp
1 5 10 15

Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro Arg Gln
20 25 30

Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu Arg
35 40 45

Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu Ser
50 55 60

Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro Glu
65 70 75 80

Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro Asp
85 90 95

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

Lys Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln Arg
115 120 125

Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu Leu
130 135 140

Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu Pro
145 150 155 160

Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg Leu Val
165 170 175

```
Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala Arg Ala
            180                 185                 190

Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr Trp Ser
        195                 200                 205

Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu Gly Gln
    210                 215                 220

Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp Arg Gln
225                 230                 235                 240

Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr Ile Leu
                245                 250                 255

Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro Ser Gly
            260                 265                 270

Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp
        275                 280                 285

Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln Met Asp
    290                 295                 300

Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys
305                 310                 315                 320

His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile
                325                 330                 335

Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp Ile Arg
            340                 345                 350

Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu Val
        355                 360                 365

Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile Asp Arg
    370                 375                 380

Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp Thr Leu
```

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385                 390                 395                 400

Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu Glu Leu
                405                 410                 415

Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln Asp Leu
            420                 425                 430

Asp Thr Cys Asp Pro Arg Gln Leu Asp Val Leu Tyr Pro Lys Ala Arg
        435                 440                 445

Leu Ala Phe Gln Asn Met Asn Gly Ser Glu Tyr Phe Val Lys Ile Gln
    450                 455                 460

Ser Phe Leu Gly Gly Ala Pro Thr Glu Asp Leu Lys Ala Leu Ser Gln
465                 470                 475                 480

Gln Asn Val Ser Met Asp Leu Ala Thr Phe Met Lys Leu Arg Thr Asp
                485                 490                 495

Ala Val Leu Pro Leu Thr Val Ala Glu Val Gln Lys Leu Leu Gly Pro
            500                 505                 510

His Val Glu Gly Leu Lys Ala Glu Glu Arg His Arg Pro Val Arg Asp
        515                 520                 525

Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly Leu Gly
    530                 535                 540

Leu Gln Gly Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp Leu Ser Met
545                 550                 555                 560

Gln Glu Ala Leu Gly Ser Gly Ala Thr Asn Phe Ser Leu Leu Lys Gln
                565                 570                 575

Ala Gly Asp Val Glu Glu Asn Pro Gly Pro Thr Pro Gly Thr Gln Ser
            580                 585                 590

Pro Phe Phe Leu Leu Leu Leu Leu Thr Val Leu Thr Val Val Thr Gly
        595                 600                 605
```

```
Ser Gly His Ala Ser Ser Thr Pro Gly Gly Glu Lys Glu Thr Ser Ala
    610                 615                 620

Thr Gln Arg Ser Ser Val Pro Ser Ser Thr Glu Lys Asn Ala Val Ser
625                 630                 635                 640

Met Thr Ser Ser Val Leu Ser Ser His Ser Pro Gly Ser Gly Ser Ser
                645                 650                 655

Thr Thr Gln Gly Gln Asp Val Thr Leu Ala Pro Ala Thr Glu Pro Ala
            660                 665                 670

Ser Gly Ser Ala Ala Thr Trp Gly Gln Asp Val Thr Ser Val Pro Val
        675                 680                 685

Thr Arg Pro Ala Leu Gly Ser Thr Thr Pro Pro Ala His Asp Val Thr
    690                 695                 700

Ser Ala Pro Asp Asn Lys Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala
705                 710                 715                 720

His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr
                725                 730                 735

Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala
            740                 745                 750

Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp
        755                 760                 765

Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr
    770                 775                 780

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

His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Leu Gly Ser Thr
                805                 810                 815

Ala Pro Pro Val His Asn Val Thr Ser Ala Ser Gly Ser Ala Ser Gly
```

```
            820                 825                 830

Ser Ala Ser Thr Leu Val His Asn Gly Thr Ser Ala Arg Ala Thr Thr
        835                 840                 845

Thr Pro Ala Ser Lys Ser Thr Pro Phe Ser Ile Pro Ser His His Ser
    850                 855                 860

Asp Thr Pro Thr Thr Leu Ala Ser His Ser Thr Lys Thr Asp Ala Ser
865                 870                 875                 880

Ser Thr His His Ser Ser Val Pro Pro Leu Thr Ser Ser Asn His Ser
                885                 890                 895

Thr Ser Pro Gln Leu Ser Thr Gly Val Ser Phe Phe Phe Leu Ser Phe
            900                 905                 910

His Ile Ser Asn Leu Gln Phe Asn Ser Ser Leu Glu Asp Pro Ser Thr
        915                 920                 925

Asp Tyr Tyr Gln Glu Leu Gln Arg Asp Ile Ser Glu Met Phe Leu Gln
    930                 935                 940

Ile Tyr Lys Gln Gly Gly Phe Leu Gly Leu Ser Asn Ile Lys Phe Arg
945                 950                 955                 960

Pro Gly Ser Val Val Val Gln Leu Thr Leu Ala Phe Arg Glu Gly Thr
                965                 970                 975

Ile Asn Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr Lys Thr Glu
            980                 985                 990

Ala Ala Ser Arg Tyr Asn Leu Thr  Ile Ser Asp Val Ser  Val Ser Asp
        995                 1000                1005

Val Pro  Phe Pro Phe Ser Ala  Gln Ser Gly Ala Gly  Val Pro Gly
    1010                1015                1020

Trp Gly  Ile Ala Leu Leu Val  Leu Val Cys Val Leu  Val Ala Leu
    1025                1030                1035
```

Ala Ile Val Tyr Leu Ile Ala Leu Ala Val Cys Gln Cys Arg Arg
1040 1045 1050

Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro Ala Arg Asp Thr Tyr
1055 1060 1065

His Pro Met Ser Glu Tyr Pro Thr Tyr His Thr His Gly Arg Tyr
1070 1075 1080

Val Pro Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu Lys Val Ser
1085 1090 1095

Ala Gly Asn Gly Gly Ser Ser Leu Ser Tyr Thr Asn Pro Ala Val
1100 1105 1110

Ala Ala Ala Ser Ala Asn Leu
1115 1120

<210> 25
<211> 4302
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 25
atggctagca cccctggaac ccagagcccc ttcttccttc tgctgctgct gaccgtgctg 60

actgtcgtga caggctctgg ccacgccagc tctacacctg gcggcgagaa agagacaagc 120

gccacccaga gaagcagcgt gccaagcagc accgagaaga acgccgtgtc catgaccagc 180

tccgtgctga gcagccactc tcctggcagc ggcagcagca caacacaggg ccaggatgtg 240

acactggccc ctgccacaga acctgcctct ggatctgccg ccacctgggg acaggacgtg 300

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Pro Gly Gly Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro
35 40 45

Ser Ser Thr Glu Lys Asn Ala Val Ser Met Thr Ser Ser Val Leu Ser
50 55 60

Ser His Ser Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val
65 70 75 80

Thr Leu Ala Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp
85 90 95

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

```
Thr Thr Pro Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro
        115                 120                 125

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    130                 135                 140

Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val
145                 150                 155                 160

Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro
                165                 170                 175

Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser
            180                 185                 190

Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro
        195                 200                 205

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    210                 215                 220

Asp Thr Arg Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val
225                 230                 235                 240

Thr Ser Ala Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His
                245                 250                 255

Asn Gly Thr Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr
            260                 265                 270

Pro Phe Ser Ile Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala
        275                 280                 285

Ser His Ser Thr Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val
    290                 295                 300

Pro Pro Leu Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr
305                 310                 315                 320

Gly Val Ser Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln Phe
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Asn Ser Ser Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln
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Arg Asp Ile Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe
        355                 360                 365

Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln
    370                 375                 380

Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp Val Glu
385                 390                 395                 400

Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala Ala Ser Arg Tyr Asn Leu
                405                 410                 415

Thr Ile Ser Asp Val Ser Val Ser Asp Val Pro Phe Pro Phe Ser Ala
            420                 425                 430

Gln Ser Gly Ala Gly Val Pro Gly Trp Gly Ile Ala Leu Leu Val Leu
        435                 440                 445

Val Cys Val Leu Val Ala Leu Ala Ile Val Tyr Leu Ile Ala Leu Ala
    450                 455                 460

Val Cys Gln Cys Arg Arg Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro
465                 470                 475                 480

Ala Arg Asp Thr Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr His Thr
                485                 490                 495

His Gly Arg Tyr Val Pro Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu
            500                 505                 510

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

Ala Val Ala Ala Ala Ser Ala Asn Leu Gly Gly Ser Gly Gly Gly Ala
    530                 535                 540
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Ala Pro Glu Pro Glu Arg Thr Pro Val Gly Gln Gly Ser Trp Ala His
545                 550                 555                 560

Pro Gly Arg Thr Arg Gly Pro Ser Asp Arg Gly Phe Cys Val Val Ser
                565                 570                 575

Pro Ala Arg Pro Ala Glu Glu Ala Thr Ser Leu Glu Gly Ala Leu Ser
            580                 585                 590

Gly Thr Arg His Ser His Pro Ser Val Gly Arg Gln His His Ala Gly
        595                 600                 605

Pro Pro Ser Thr Ser Arg Pro Pro Arg Pro Trp Asp Thr Pro Cys Pro
    610                 615                 620

Pro Val Tyr Ala Glu Thr Lys His Phe Leu Tyr Ser Ser Gly Asp Lys
625                 630                 635                 640

Glu Gln Leu Arg Pro Ser Phe Leu Leu Ser Ser Leu Arg Pro Ser Leu
                645                 650                 655

Thr Gly Ala Arg Arg Leu Val Glu Thr Ile Phe Leu Gly Ser Arg Pro
            660                 665                 670

Trp Met Pro Gly Thr Pro Arg Arg Leu Pro Arg Leu Pro Gln Arg Tyr
        675                 680                 685

Trp Gln Met Arg Pro Leu Phe Leu Glu Leu Leu Gly Asn His Ala Gln
    690                 695                 700

Cys Pro Tyr Gly Val Leu Leu Lys Thr His Cys Pro Leu Arg Ala Ala
705                 710                 715                 720

Val Thr Pro Ala Ala Gly Val Cys Ala Arg Glu Lys Pro Gln Gly Ser
                725                 730                 735

Val Ala Ala Pro Glu Glu Glu Asp Thr Asp Pro Arg Arg Leu Val Gln
            740                 745                 750

Leu Leu Arg Gln His Ser Ser Pro Trp Gln Val Tyr Gly Phe Val Arg
```

```
        755                 760                 765

Ala Cys Leu Arg Arg Leu Val Pro Pro Gly Leu Trp Gly Ser Arg His
    770                 775                 780

Asn Glu Arg Arg Phe Leu Arg Asn Thr Lys Lys Phe Ile Ser Leu Gly
785                 790                 795                 800

Lys His Ala Lys Leu Ser Leu Gln Glu Leu Thr Trp Lys Met Ser Val
                805                 810                 815

Arg Asp Cys Ala Trp Leu Arg Arg Ser Pro Gly Val Gly Cys Val Pro
            820                 825                 830

Ala Ala Glu His Arg Leu Arg Glu Glu Ile Leu Ala Lys Phe Leu His
        835                 840                 845

Trp Leu Met Ser Val Tyr Val Val Glu Leu Leu Arg Ser Phe Phe Tyr
    850                 855                 860

Val Thr Glu Thr Thr Phe Gln Lys Asn Arg Leu Phe Phe Tyr Arg Lys
865                 870                 875                 880

Ser Val Trp Ser Lys Leu Gln Ser Ile Gly Ile Arg Gln His Leu Lys
                885                 890                 895

Arg Val Gln Leu Arg Glu Leu Ser Glu Ala Glu Val Arg Gln His Arg
            900                 905                 910

Glu Ala Arg Pro Ala Leu Leu Thr Ser Arg Leu Arg Phe Ile Pro Lys
        915                 920                 925

Pro Asp Gly Leu Arg Pro Ile Val Asn Met Asp Tyr Val Val Gly Ala
    930                 935                 940

Arg Thr Phe Arg Arg Glu Lys Arg Ala Glu Arg Leu Thr Ser Arg Val
945                 950                 955                 960

Lys Ala Leu Phe Ser Val Leu Asn Tyr Glu Arg Ala Arg Arg Pro Gly
                965                 970                 975
```

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Leu Leu Gly Ala Ser Val Leu Gly Leu Asp Asp Ile His Arg Ala Trp
            980                 985                 990

Arg Thr Phe Val Leu Arg Val Arg  Ala Gln Asp Pro Pro  Pro Glu Leu
        995                 1000                1005

Tyr Phe  Val Lys Val Ala Ile  Thr Gly Ala Tyr Asp  Thr Ile Pro
    1010                1015                1020

Gln Asp  Arg Leu Thr Glu Val  Ile Ala Ser Ile Ile  Lys Pro Gln
    1025                1030                1035

Asn Thr  Tyr Cys Val Arg Arg  Tyr Ala Val Val Gln  Lys Ala Ala
    1040                1045                1050

His Gly  His Val Arg Lys Ala  Phe Lys Ser His Val  Ser Thr Leu
    1055                1060                1065

Thr Asp  Leu Gln Pro Tyr Met  Arg Gln Phe Val Ala  His Leu Gln
    1070                1075                1080

Glu Thr  Ser Pro Leu Arg Asp  Ala Val Val Ile Glu  Gln Ser Ser
    1085                1090                1095

Ser Leu  Asn Glu Ala Ser Ser  Gly Leu Phe Asp Val  Phe Leu Arg
    1100                1105                1110

Phe Met  Cys His His Ala Val  Arg Ile Arg Gly Lys  Ser Tyr Val
    1115                1120                1125

Gln Cys  Gln Gly Ile Pro Gln  Gly Ser Ile Leu Ser  Thr Leu Leu
    1130                1135                1140

Cys Ser  Leu Cys Tyr Gly Asp  Met Glu Asn Lys Leu  Phe Ala Gly
    1145                1150                1155

Ile Arg  Arg Asp Gly Leu Leu  Leu Arg Leu Val Asp  Asp Phe Leu
    1160                1165                1170

Leu Val  Thr Pro His Leu Thr  His Ala Lys Thr Phe  Leu Arg Thr
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Leu Val  Arg Gly Val Pro Glu  Tyr Gly Cys Val Val  Asn Leu Arg
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Lys Thr  Val Val Asn Phe Pro  Val Glu Asp Glu Ala  Leu Gly Gly
    1205                1210                1215

Thr Ala  Phe Val Gln Met Pro  Ala His Gly Leu Phe  Pro Trp Cys
    1220                1225                1230

Gly Leu  Leu Leu Asp Thr Arg  Thr Leu Glu Val Gln  Ser Asp Tyr
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Ser Ser  Tyr Ala Arg Thr Ser  Ile Arg Ala Ser Leu  Thr Phe Asn
    1250                1255                1260

Arg Gly  Phe Lys Ala Gly Arg  Asn Met Arg Arg Lys  Leu Phe Gly
    1265                1270                1275

Val Leu  Arg Leu Lys Cys His  Ser Leu Phe Leu Asp  Leu Gln Val
    1280                1285                1290

Asn Ser  Leu Gln Thr Val Cys  Thr Asn Ile Tyr Lys  Ile Leu Leu
    1295                1300                1305

Leu Gln  Ala Tyr Arg Phe His  Ala Cys Val Leu Gln  Leu Pro Phe
    1310                1315                1320

His Gln  Gln Val Trp Lys Asn  Pro Thr Phe Phe Leu  Arg Val Ile
    1325                1330                1335

Ser Asp  Thr Ala Ser Leu Cys  Tyr Ser Ile Leu Lys  Ala Lys Asn
    1340                1345                1350

Ala Gly  Met Ser Leu Gly Ala  Lys Gly Ala Ala Gly  Pro Leu Pro
    1355                1360                1365

Ser Glu  Ala Val Gln Trp Leu  Cys His Gln Ala Phe  Leu Leu Lys
    1370                1375                1380
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Leu Thr Arg His Arg Val Thr Tyr Val Pro Leu Leu Gly Ser Leu
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Arg Thr Ala Gln Thr Gln Leu Ser Arg Lys Leu Pro Gly Thr Thr
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Phe Lys Thr Ile Leu Asp
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35 40 45

Ser Ser Thr Glu Lys Asn Ala Val Ser Met Thr Ser Ser Val Leu Ser
50 55 60

Ser His Ser Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val
65 70 75 80

Thr Leu Ala Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp
85 90 95

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

Thr Thr Pro Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro
115 120 125

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro

```
    130                 135                 140

Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val
145                 150                 155                 160

Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro
                165                 170                 175

Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser
            180                 185                 190

Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro
        195                 200                 205

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    210                 215                 220

Asp Thr Arg Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val
225                 230                 235                 240

Thr Ser Ala Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His
                245                 250                 255

Asn Gly Thr Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr
            260                 265                 270

Pro Phe Ser Ile Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala
        275                 280                 285

Ser His Ser Thr Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val
    290                 295                 300

Pro Pro Leu Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr
305                 310                 315                 320

Gly Val Ser Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln Phe
                325                 330                 335

Asn Ser Ser Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln
            340                 345                 350
```

```
Arg Asp Ile Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe
        355                 360                 365

Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln
    370                 375                 380

Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp Val Glu
385                 390                 395                 400

Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala Ala Ser Arg Tyr Asn Leu
                405                 410                 415

Thr Ile Ser Asp Val Ser Val Ser Asp Val Pro Phe Pro Phe Ser Ala
            420                 425                 430

Gln Ser Gly Ala Gly Val Pro Gly Trp Gly Ile Ala Leu Leu Val Leu
        435                 440                 445

Val Cys Val Leu Val Ala Leu Ala Ile Val Tyr Leu Ile Ala Leu Ala
    450                 455                 460

Val Cys Gln Cys Arg Arg Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro
465                 470                 475                 480

Ala Arg Asp Thr Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr His Thr
                485                 490                 495

His Gly Arg Tyr Val Pro Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu
            500                 505                 510

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

Ala Val Ala Ala Ala Ser Ala Asn Leu Gly Ser Gly Thr Ile Leu Ser
    530                 535                 540

Glu Gly Ala Thr Asn Phe Ser Leu Leu Lys Leu Ala Gly Asp Val Glu
545                 550                 555                 560

Leu Asn Pro Gly Pro Gly Ala Ala Pro Glu Pro Glu Arg Thr Pro Val
```

```
               565                 570                 575

Gly Gln Gly Ser Trp Ala His Pro Gly Arg Thr Arg Gly Pro Ser Asp
            580                 585                 590

Arg Gly Phe Cys Val Val Ser Pro Ala Arg Pro Ala Glu Glu Ala Thr
        595                 600                 605

Ser Leu Glu Gly Ala Leu Ser Gly Thr Arg His Ser His Pro Ser Val
    610                 615                 620

Gly Arg Gln His His Ala Gly Pro Pro Ser Thr Ser Arg Pro Pro Arg
625                 630                 635                 640

Pro Trp Asp Thr Pro Cys Pro Pro Val Tyr Ala Glu Thr Lys His Phe
                645                 650                 655

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

Ser Ser Leu Arg Pro Ser Leu Thr Gly Ala Arg Arg Leu Val Glu Thr
        675                 680                 685

Ile Phe Leu Gly Ser Arg Pro Trp Met Pro Gly Thr Pro Arg Arg Leu
    690                 695                 700

Pro Arg Leu Pro Gln Arg Tyr Trp Gln Met Arg Pro Leu Phe Leu Glu
705                 710                 715                 720

Leu Leu Gly Asn His Ala Gln Cys Pro Tyr Gly Val Leu Leu Lys Thr
                725                 730                 735

His Cys Pro Leu Arg Ala Ala Val Thr Pro Ala Ala Gly Val Cys Ala
            740                 745                 750

Arg Glu Lys Pro Gln Gly Ser Val Ala Ala Pro Glu Glu Glu Asp Thr
        755                 760                 765

Asp Pro Arg Arg Leu Val Gln Leu Leu Arg Gln His Ser Ser Pro Trp
    770                 775                 780
```

```
Gln Val Tyr Gly Phe Val Arg Ala Cys Leu Arg Arg Leu Val Pro Pro
785                 790                 795                 800


Gly Leu Trp Gly Ser Arg His Asn Glu Arg Arg Phe Leu Arg Asn Thr
                805                 810                 815


Lys Lys Phe Ile Ser Leu Gly Lys His Ala Lys Leu Ser Leu Gln Glu
            820                 825                 830


Leu Thr Trp Lys Met Ser Val Arg Asp Cys Ala Trp Leu Arg Arg Ser
        835                 840                 845


Pro Gly Val Gly Cys Val Pro Ala Ala Glu His Arg Leu Arg Glu Glu
    850                 855                 860


Ile Leu Ala Lys Phe Leu His Trp Leu Met Ser Val Tyr Val Val Glu
865                 870                 875                 880


Leu Leu Arg Ser Phe Phe Tyr Val Thr Glu Thr Thr Phe Gln Lys Asn
                885                 890                 895


Arg Leu Phe Phe Tyr Arg Lys Ser Val Trp Ser Lys Leu Gln Ser Ile
            900                 905                 910


Gly Ile Arg Gln His Leu Lys Arg Val Gln Leu Arg Glu Leu Ser Glu
        915                 920                 925


Ala Glu Val Arg Gln His Arg Glu Ala Arg Pro Ala Leu Leu Thr Ser
    930                 935                 940


Arg Leu Arg Phe Ile Pro Lys Pro Asp Gly Leu Arg Pro Ile Val Asn
945                 950                 955                 960


Met Asp Tyr Val Val Gly Ala Arg Thr Phe Arg Arg Glu Lys Arg Ala
                965                 970                 975


Glu Arg Leu Thr Ser Arg Val Lys Ala Leu Phe Ser Val Leu Asn Tyr
            980                 985                 990


Glu Arg Ala Arg Arg Pro Gly Leu  Leu Gly Ala Ser Val  Leu Gly Leu
```

```
        995                 1000                1005

Asp Asp  Ile His Arg Ala Trp  Arg Thr Phe Val Leu  Arg Val Arg
    1010                1015                1020

Ala Gln  Asp Pro Pro Pro Glu  Leu Tyr Phe Val Lys  Val Ala Ile
    1025                1030                1035

Thr Gly  Ala Tyr Asp Thr Ile  Pro Gln Asp Arg Leu  Thr Glu Val
    1040                1045                1050

Ile Ala  Ser Ile Ile Lys Pro  Gln Asn Thr Tyr Cys  Val Arg Arg
    1055                1060                1065

Tyr Ala  Val Val Gln Lys Ala  Ala His Gly His Val  Arg Lys Ala
    1070                1075                1080

Phe Lys  Ser His Val Ser Thr  Leu Thr Asp Leu Gln  Pro Tyr Met
    1085                1090                1095

Arg Gln  Phe Val Ala His Leu  Gln Glu Thr Ser Pro  Leu Arg Asp
    1100                1105                1110

Ala Val  Val Ile Glu Gln Ser  Ser Ser Leu Asn Glu  Ala Ser Ser
    1115                1120                1125

Gly Leu  Phe Asp Val Phe Leu  Arg Phe Met Cys His  His Ala Val
    1130                1135                1140

Arg Ile  Arg Gly Lys Ser Tyr  Val Gln Cys Gln Gly  Ile Pro Gln
    1145                1150                1155

Gly Ser  Ile Leu Ser Thr Leu  Leu Cys Ser Leu Cys  Tyr Gly Asp
    1160                1165                1170

Met Glu  Asn Lys Leu Phe Ala  Gly Ile Arg Arg Asp  Gly Leu Leu
    1175                1180                1185

Leu Arg  Leu Val Asp Asp Phe  Leu Leu Val Thr Pro  His Leu Thr
    1190                1195                1200
```

```
His Ala  Lys Thr Phe Leu Arg  Thr Leu Val Arg Gly  Val Pro Glu
    1205                 1210                 1215

Tyr Gly  Cys Val Val Asn Leu  Arg Lys Thr Val Val  Asn Phe Pro
    1220                 1225                 1230

Val Glu  Asp Glu Ala Leu Gly  Gly Thr Ala Phe Val  Gln Met Pro
    1235                 1240                 1245

Ala His  Gly Leu Phe Pro Trp  Cys Gly Leu Leu Leu  Asp Thr Arg
    1250                 1255                 1260

Thr Leu  Glu Val Gln Ser Asp  Tyr Ser Ser Tyr Ala  Arg Thr Ser
    1265                 1270                 1275

Ile Arg  Ala Ser Leu Thr Phe  Asn Arg Gly Phe Lys  Ala Gly Arg
    1280                 1285                 1290

Asn Met  Arg Arg Lys Leu Phe  Gly Val Leu Arg Leu  Lys Cys His
    1295                 1300                 1305

Ser Leu  Phe Leu Asp Leu Gln  Val Asn Ser Leu Gln  Thr Val Cys
    1310                 1315                 1320

Thr Asn  Ile Tyr Lys Ile Leu  Leu Leu Gln Ala Tyr  Arg Phe His
    1325                 1330                 1335

Ala Cys  Val Leu Gln Leu Pro  Phe His Gln Gln Val  Trp Lys Asn
    1340                 1345                 1350

Pro Thr  Phe Phe Leu Arg Val  Ile Ser Asp Thr Ala  Ser Leu Cys
    1355                 1360                 1365

Tyr Ser  Ile Leu Lys Ala Lys  Asn Ala Gly Met Ser  Leu Gly Ala
    1370                 1375                 1380

Lys Gly  Ala Ala Gly Pro Leu  Pro Ser Glu Ala Val  Gln Trp Leu
    1385                 1390                 1395

Cys His  Gln Ala Phe Leu Leu  Lys Leu Thr Arg His  Arg Val Thr
```

1400 1405 1410

Tyr Val Pro Leu Leu Gly Ser Leu Arg Thr Ala Gln Thr Gln Leu
1415 1420 1425

Ser Arg Lys Leu Pro Gly Thr Thr Leu Thr Ala Leu Glu Ala Ala
1430 1435 1440

Ala Asn Pro Ala Leu Pro Ser Asp Phe Lys Thr Ile Leu Asp
1445 1450 1455

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<211> 4371
<212> DNA
<213> Artificial Sequence

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ccagcagaag aggcaaccag cctcgaggga gcgttgtctg gaaccagaca ttcccacccg 180

tcggtgggcc ggcagcacca cgcgggacca ccgtccactt ccagaccgcc acggccatgg 240

gacacccctt gcccgcctgt gtatgccgag actaaacact tcctgtactc atccggagac 300

aaggaacagc ttcggccgtc cttcctcctg tcgtcgctca gaccgagcct gaccggagca 360

cgcagattgg tggaaactat cttccttggg tcacgtccgt ggatgccagg taccccacgg 420

cgcctcccgc gcctcccaca gagatactgg cagatgcggc ctctgttcct ggaattgctg 480

ggaaaccacg ctcagtgccc gtacggagtc ctgctcaaga ctcactgccc tctgagggcg 540

gcggtcactc cggcggccgg agtgtgcgca cgggagaagc cccagggaag cgtggcagct 600

ccggaagagg aggacaccga tccgcgccgc ctcgtgcaac ttctgcgcca gcactcctcg 660

ccctggcaag tctacgggtt cgtccgcgcc tgcctgcgcc gcctggtgcc gcctgggctc 720

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gaagaaattc tggccaaatt tctgcattgg ctgatgtcag tgtacgtggt cgagctgctg 960

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gtcaatctcc ggaaaactgt ggtgaatttc cctgtcgagg atgaggcact cggaggaacc 2040

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gccagagaca cctaccaccc catgagcgag taccccacat accacaccca cggcagatac 4260

gtgccaccca gctccaccga cagatccccc tacgagaaag tgtctgccgg caacggcggc 4320

agctccctga gctacacaaa tcctgccgtg gccgctgcct ccgccaacct g 4371

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<211> 1457
<212> PRT
<213> Artificial Sequence

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<400> 30

Met Ala Ser Gly Ala Ala Pro Glu Pro Glu Arg Thr Pro Val Gly Gln
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Gly Ser Trp Ala His Pro Gly Arg Thr Arg Gly Pro Ser Asp Arg Gly
20 25 30

Phe Cys Val Val Ser Pro Ala Arg Pro Ala Glu Glu Ala Thr Ser Leu
35 40 45

Glu Gly Ala Leu Ser Gly Thr Arg His Ser His Pro Ser Val Gly Arg
50 55 60

Gln His His Ala Gly Pro Pro Ser Thr Ser Arg Pro Pro Arg Pro Trp
65 70 75 80

Asp Thr Pro Cys Pro Pro Val Tyr Ala Glu Thr Lys His Phe Leu Tyr
85 90 95

Ser Ser Gly Asp Lys Glu Gln Leu Arg Pro Ser Phe Leu Leu Ser Ser
100 105 110

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

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

```
Leu Pro Gln Arg Tyr Trp Gln Met Arg Pro Leu Phe Leu Glu Leu Leu
145                 150                 155                 160

Gly Asn His Ala Gln Cys Pro Tyr Gly Val Leu Leu Lys Thr His Cys
                165                 170                 175

Pro Leu Arg Ala Ala Val Thr Pro Ala Ala Gly Val Cys Ala Arg Glu
            180                 185                 190

Lys Pro Gln Gly Ser Val Ala Ala Pro Glu Glu Glu Asp Thr Asp Pro
        195                 200                 205

Arg Arg Leu Val Gln Leu Leu Arg Gln His Ser Ser Pro Trp Gln Val
    210                 215                 220

Tyr Gly Phe Val Arg Ala Cys Leu Arg Arg Leu Val Pro Pro Gly Leu
225                 230                 235                 240

Trp Gly Ser Arg His Asn Glu Arg Arg Phe Leu Arg Asn Thr Lys Lys
                245                 250                 255

Phe Ile Ser Leu Gly Lys His Ala Lys Leu Ser Leu Gln Glu Leu Thr
            260                 265                 270

Trp Lys Met Ser Val Arg Asp Cys Ala Trp Leu Arg Arg Ser Pro Gly
        275                 280                 285

Val Gly Cys Val Pro Ala Ala Glu His Arg Leu Arg Glu Glu Ile Leu
    290                 295                 300

Ala Lys Phe Leu His Trp Leu Met Ser Val Tyr Val Val Glu Leu Leu
305                 310                 315                 320

Arg Ser Phe Phe Tyr Val Thr Glu Thr Thr Phe Gln Lys Asn Arg Leu
                325                 330                 335

Phe Phe Tyr Arg Lys Ser Val Trp Ser Lys Leu Gln Ser Ile Gly Ile
            340                 345                 350

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

```
        355                 360                 365

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

Arg Phe Ile Pro Lys Pro Asp Gly Leu Arg Pro Ile Val Asn Met Asp
385                 390                 395                 400

Tyr Val Val Gly Ala Arg Thr Phe Arg Arg Glu Lys Arg Ala Glu Arg
                405                 410                 415

Leu Thr Ser Arg Val Lys Ala Leu Phe Ser Val Leu Asn Tyr Glu Arg
            420                 425                 430

Ala Arg Arg Pro Gly Leu Leu Gly Ala Ser Val Leu Gly Leu Asp Asp
        435                 440                 445

Ile His Arg Ala Trp Arg Thr Phe Val Leu Arg Val Arg Ala Gln Asp
    450                 455                 460

Pro Pro Pro Glu Leu Tyr Phe Val Lys Val Ala Ile Thr Gly Ala Tyr
465                 470                 475                 480

Asp Thr Ile Pro Gln Asp Arg Leu Thr Glu Val Ile Ala Ser Ile Ile
                485                 490                 495

Lys Pro Gln Asn Thr Tyr Cys Val Arg Arg Tyr Ala Val Val Gln Lys
            500                 505                 510

Ala Ala His Gly His Val Arg Lys Ala Phe Lys Ser His Val Ser Thr
        515                 520                 525

Leu Thr Asp Leu Gln Pro Tyr Met Arg Gln Phe Val Ala His Leu Gln
    530                 535                 540

Glu Thr Ser Pro Leu Arg Asp Ala Val Val Ile Glu Gln Ser Ser Ser
545                 550                 555                 560

Leu Asn Glu Ala Ser Ser Gly Leu Phe Asp Val Phe Leu Arg Phe Met
                565                 570                 575
```

```
Cys His His Ala Val Arg Ile Arg Gly Lys Ser Tyr Val Gln Cys Gln
            580                 585                 590

Gly Ile Pro Gln Gly Ser Ile Leu Ser Thr Leu Leu Cys Ser Leu Cys
        595                 600                 605

Tyr Gly Asp Met Glu Asn Lys Leu Phe Ala Gly Ile Arg Arg Asp Gly
    610                 615                 620

Leu Leu Leu Arg Leu Val Asp Asp Phe Leu Leu Val Thr Pro His Leu
625                 630                 635                 640

Thr His Ala Lys Thr Phe Leu Arg Thr Leu Val Arg Gly Val Pro Glu
                645                 650                 655

Tyr Gly Cys Val Val Asn Leu Arg Lys Thr Val Val Asn Phe Pro Val
            660                 665                 670

Glu Asp Glu Ala Leu Gly Gly Thr Ala Phe Val Gln Met Pro Ala His
        675                 680                 685

Gly Leu Phe Pro Trp Cys Gly Leu Leu Leu Asp Thr Arg Thr Leu Glu
    690                 695                 700

Val Gln Ser Asp Tyr Ser Ser Tyr Ala Arg Thr Ser Ile Arg Ala Ser
705                 710                 715                 720

Leu Thr Phe Asn Arg Gly Phe Lys Ala Gly Arg Asn Met Arg Arg Lys
                725                 730                 735

Leu Phe Gly Val Leu Arg Leu Lys Cys His Ser Leu Phe Leu Asp Leu
            740                 745                 750

Gln Val Asn Ser Leu Gln Thr Val Cys Thr Asn Ile Tyr Lys Ile Leu
        755                 760                 765

Leu Leu Gln Ala Tyr Arg Phe His Ala Cys Val Leu Gln Leu Pro Phe
    770                 775                 780

His Gln Gln Val Trp Lys Asn Pro Thr Phe Phe Leu Arg Val Ile Ser
```

```
785                 790                 795                 800

Asp Thr Ala Ser Leu Cys Tyr Ser Ile Leu Lys Ala Lys Asn Ala Gly
                805                 810                 815

Met Ser Leu Gly Ala Lys Gly Ala Ala Gly Pro Leu Pro Ser Glu Ala
            820                 825                 830

Val Gln Trp Leu Cys His Gln Ala Phe Leu Leu Lys Leu Thr Arg His
        835                 840                 845

Arg Val Thr Tyr Val Pro Leu Leu Gly Ser Leu Arg Thr Ala Gln Thr
    850                 855                 860

Gln Leu Ser Arg Lys Leu Pro Gly Thr Thr Leu Thr Ala Leu Glu Ala
865                 870                 875                 880

Ala Ala Asn Pro Ala Leu Pro Ser Asp Phe Lys Thr Ile Leu Asp Gly
                885                 890                 895

Ser Gly Thr Ile Leu Ser Glu Gly Ala Thr Asn Phe Ser Leu Leu Lys
            900                 905                 910

Leu Ala Gly Asp Val Glu Leu Asn Pro Gly Pro Thr Pro Gly Thr Gln
        915                 920                 925

Ser Pro Phe Phe Leu Leu Leu Leu Leu Thr Val Leu Thr Val Val Thr
    930                 935                 940

Gly Ser Gly His Ala Ser Ser Thr Pro Gly Gly Glu Lys Glu Thr Ser
945                 950                 955                 960

Ala Thr Gln Arg Ser Ser Val Pro Ser Ser Thr Glu Lys Asn Ala Val
                965                 970                 975

Ser Met Thr Ser Ser Val Leu Ser Ser His Ser Pro Gly Ser Gly Ser
            980                 985                 990

Ser Thr Thr Gln Gly Gln Asp Val  Thr Leu Ala Pro Ala  Thr Glu Pro
        995                 1000                1005
```

```
Ala Ser  Gly Ser Ala Ala Thr  Trp Gly Gln Asp Val  Thr Ser Val
    1010                1015                1020

Pro Val  Thr Arg Pro Ala Leu  Gly Ser Thr Thr Pro  Pro Ala His
    1025                1030                1035

Asp Val  Thr Ser Ala Pro Asp  Asn Lys Pro Ala Pro  Gly Ser Thr
    1040                1045                1050

Ala Pro  Pro Ala His Gly Val  Thr Ser Ala Pro Asp  Thr Arg Pro
    1055                1060                1065

Ala Pro  Gly Ser Thr Ala Pro  Pro Ala His Gly Val  Thr Ser Ala
    1070                1075                1080

Pro Asp  Thr Arg Pro Ala Pro  Gly Ser Thr Ala Pro  Pro Ala His
    1085                1090                1095

Gly Val  Thr Ser Ala Pro Asp  Thr Arg Pro Ala Pro  Gly Ser Thr
    1100                1105                1110

Ala Pro  Pro Ala His Gly Val  Thr Ser Ala Pro Asp  Thr Arg Pro
    1115                1120                1125

Ala Pro  Gly Ser Thr Ala Pro  Pro Ala His Gly Val  Thr Ser Ala
    1130                1135                1140

Pro Asp  Thr Arg Pro Ala Leu  Gly Ser Thr Ala Pro  Pro Val His
    1145                1150                1155

Asn Val  Thr Ser Ala Ser Gly  Ser Ala Ser Gly Ser  Ala Ser Thr
    1160                1165                1170

Leu Val  His Asn Gly Thr Ser  Ala Arg Ala Thr Thr  Thr Pro Ala
    1175                1180                1185

Ser Lys  Ser Thr Pro Phe Ser  Ile Pro Ser His His  Ser Asp Thr
    1190                1195                1200

Pro Thr  Thr Leu Ala Ser His  Ser Thr Lys Thr Asp  Ala Ser Ser
```

```
    1205                1210                1215

Thr His  His Ser Ser Val Pro  Pro Leu Thr Ser Ser  Asn His Ser
    1220                1225                1230

Thr Ser  Pro Gln Leu Ser Thr  Gly Val Ser Phe Phe  Phe Leu Ser
    1235                1240                1245

Phe His  Ile Ser Asn Leu Gln  Phe Asn Ser Ser Leu  Glu Asp Pro
    1250                1255                1260

Ser Thr  Asp Tyr Tyr Gln Glu  Leu Gln Arg Asp Ile  Ser Glu Met
    1265                1270                1275

Phe Leu  Gln Ile Tyr Lys Gln  Gly Gly Phe Leu Gly  Leu Ser Asn
    1280                1285                1290

Ile Lys  Phe Arg Pro Gly Ser  Val Val Val Gln Leu  Thr Leu Ala
    1295                1300                1305

Phe Arg  Glu Gly Thr Ile Asn  Val His Asp Val Glu  Thr Gln Phe
    1310                1315                1320

Asn Gln  Tyr Lys Thr Glu Ala  Ala Ser Arg Tyr Asn  Leu Thr Ile
    1325                1330                1335

Ser Asp  Val Ser Val Ser Asp  Val Pro Phe Pro Phe  Ser Ala Gln
    1340                1345                1350

Ser Gly  Ala Gly Val Pro Gly  Trp Gly Ile Ala Leu  Leu Val Leu
    1355                1360                1365

Val Cys  Val Leu Val Ala Leu  Ala Ile Val Tyr Leu  Ile Ala Leu
    1370                1375                1380

Ala Val  Cys Gln Cys Arg Arg  Lys Asn Tyr Gly Gln  Leu Asp Ile
    1385                1390                1395

Phe Pro  Ala Arg Asp Thr Tyr  His Pro Met Ser Glu  Tyr Pro Thr
    1400                1405                1410
```

Tyr His Thr His Gly Arg Tyr Val Pro Pro Ser Ser Thr Asp Arg
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Ser Pro Tyr Glu Lys Val Ser Ala Gly Asn Gly Gly Ser Ser Leu
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Ser Tyr Thr Asn Pro Ala Val Ala Ala Ala Ser Ala Asn Leu
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Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro Ser Ser Thr Glu
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Lys Asn Ala Val Ser Met Thr Ser Ser Val Leu Ser Ser His Ser Pro
35 40 45

Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val Thr Leu Ala Pro
50 55 60

Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp Gly Gln Asp Val
65 70 75 80

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

Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro Ala Pro Gly Ser
100 105 110

Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro
115 120 125

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
130 135 140

Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val
145 150 155 160

```
Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro
                165                 170                 175

Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser
            180                 185                 190

Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro
        195                 200                 205

Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val Thr Ser Ala Ser
    210                 215                 220

Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His Asn Gly Thr Ser
225                 230                 235                 240

Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr Pro Phe Ser Ile
                245                 250                 255

Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala Ser His Ser Thr
            260                 265                 270

Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val Pro Pro Leu Thr
        275                 280                 285

Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr Gly Val Ser Phe
    290                 295                 300

Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln Phe Asn Ser Ser Leu
305                 310                 315                 320

Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln Arg Asp Ile Ser
                325                 330                 335

Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe Leu Gly Leu Ser
            340                 345                 350

Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln Leu Thr Leu Ala
        355                 360                 365

Phe Arg Glu Gly Thr Ile Asn Val His Asp Val Glu Thr Gln Phe Asn
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    370                 375                 380

Gln Tyr Lys Thr Glu Ala Ala Ser Arg Tyr Asn Leu Thr Ile Ser Asp
385                 390                 395                 400

Val Ser Val Ser Asp Val Pro Phe Pro Phe Ser Ala Gln Ser Gly Ala
                405                 410                 415

Gly Val Pro Gly Trp Gly Ile Ala Leu Leu Val Leu Val Cys Val Leu
            420                 425                 430

Val Ala Leu Ala Ile Val Tyr Leu Ile Ala Leu Ala Val Cys Gln Cys
        435                 440                 445

Arg Arg Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro Ala Arg Asp Thr
    450                 455                 460

Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr His Thr His Gly Arg Tyr
465                 470                 475                 480

Val Pro Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu Lys Val Ser Ala
                485                 490                 495

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

Ala Ser Ala Asn Leu Gly Ser Gly Thr Ile Leu Ser Glu Gly Ala Thr
        515                 520                 525

Asn Phe Ser Leu Leu Lys Leu Ala Gly Asp Val Glu Leu Asn Pro Gly
    530                 535                 540

Pro Gly Ala Ala Pro Glu Pro Glu Arg Thr Pro Val Gly Gln Gly Ser
545                 550                 555                 560

Trp Ala His Pro Gly Arg Thr Arg Gly Pro Ser Asp Arg Gly Phe Cys
                565                 570                 575

Val Val Ser Pro Ala Arg Pro Ala Glu Glu Ala Thr Ser Leu Glu Gly
            580                 585                 590
```

```
Ala Leu Ser Gly Thr Arg His Ser His Pro Ser Val Gly Arg Gln His
        595                 600                 605

His Ala Gly Pro Pro Ser Thr Ser Arg Pro Pro Arg Pro Trp Asp Thr
    610                 615                 620

Pro Cys Pro Pro Val Tyr Ala Glu Thr Lys His Phe Leu Tyr Ser Ser
625                 630                 635                 640

Gly Asp Lys Glu Gln Leu Arg Pro Ser Phe Leu Leu Ser Ser Leu Arg
                645                 650                 655

Pro Ser Leu Thr Gly Ala Arg Arg Leu Val Glu Thr Ile Phe Leu Gly
            660                 665                 670

Ser Arg Pro Trp Met Pro Gly Thr Pro Arg Arg Leu Pro Arg Leu Pro
        675                 680                 685

Gln Arg Tyr Trp Gln Met Arg Pro Leu Phe Leu Glu Leu Leu Gly Asn
    690                 695                 700

His Ala Gln Cys Pro Tyr Gly Val Leu Leu Lys Thr His Cys Pro Leu
705                 710                 715                 720

Arg Ala Ala Val Thr Pro Ala Ala Gly Val Cys Ala Arg Glu Lys Pro
                725                 730                 735

Gln Gly Ser Val Ala Ala Pro Glu Glu Glu Asp Thr Asp Pro Arg Arg
            740                 745                 750

Leu Val Gln Leu Leu Arg Gln His Ser Ser Pro Trp Gln Val Tyr Gly
        755                 760                 765

Phe Val Arg Ala Cys Leu Arg Arg Leu Val Pro Pro Gly Leu Trp Gly
    770                 775                 780

Ser Arg His Asn Glu Arg Arg Phe Leu Arg Asn Thr Lys Lys Phe Ile
785                 790                 795                 800

Ser Leu Gly Lys His Ala Lys Leu Ser Leu Gln Glu Leu Thr Trp Lys
```

```
               805                 810                 815

Met Ser Val Arg Asp Cys Ala Trp Leu Arg Arg Ser Pro Gly Val Gly
            820                 825                 830

Cys Val Pro Ala Ala Glu His Arg Leu Arg Glu Glu Ile Leu Ala Lys
        835                 840                 845

Phe Leu His Trp Leu Met Ser Val Tyr Val Val Glu Leu Leu Arg Ser
    850                 855                 860

Phe Phe Tyr Val Thr Glu Thr Thr Phe Gln Lys Asn Arg Leu Phe Phe
865                 870                 875                 880

Tyr Arg Lys Ser Val Trp Ser Lys Leu Gln Ser Ile Gly Ile Arg Gln
               885                 890                 895

His Leu Lys Arg Val Gln Leu Arg Glu Leu Ser Glu Ala Glu Val Arg
            900                 905                 910

Gln His Arg Glu Ala Arg Pro Ala Leu Leu Thr Ser Arg Leu Arg Phe
        915                 920                 925

Ile Pro Lys Pro Asp Gly Leu Arg Pro Ile Val Asn Met Asp Tyr Val
    930                 935                 940

Val Gly Ala Arg Thr Phe Arg Arg Glu Lys Arg Ala Glu Arg Leu Thr
945                 950                 955                 960

Ser Arg Val Lys Ala Leu Phe Ser Val Leu Asn Tyr Glu Arg Ala Arg
               965                 970                 975

Arg Pro Gly Leu Leu Gly Ala Ser Val Leu Gly Leu Asp Asp Ile His
            980                 985                 990

Arg Ala Trp Arg Thr Phe Val Leu  Arg Val Arg Ala Gln  Asp Pro Pro
        995                 1000                1005

Pro Glu  Leu Tyr Phe Val Lys  Val Ala Ile Thr Gly  Ala Tyr Asp
    1010                1015                1020
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Thr Ile  Pro Gln Asp Arg Leu  Thr Glu Val Ile Ala  Ser Ile Ile
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Lys Pro  Gln Asn Thr Tyr Cys  Val Arg Arg Tyr Ala  Val Val Gln
    1040                1045                1050

Lys Ala  Ala His Gly His Val  Arg Lys Ala Phe Lys  Ser His Val
    1055                1060                1065

Ser Thr  Leu Thr Asp Leu Gln  Pro Tyr Met Arg Gln  Phe Val Ala
    1070                1075                1080

His Leu  Gln Glu Thr Ser Pro  Leu Arg Asp Ala Val  Val Ile Glu
    1085                1090                1095

Gln Ser  Ser Ser Leu Asn Glu  Ala Ser Ser Gly Leu  Phe Asp Val
    1100                1105                1110

Phe Leu  Arg Phe Met Cys His  His Ala Val Arg Ile  Arg Gly Lys
    1115                1120                1125

Ser Tyr  Val Gln Cys Gln Gly  Ile Pro Gln Gly Ser  Ile Leu Ser
    1130                1135                1140

Thr Leu  Leu Cys Ser Leu Cys  Tyr Gly Asp Met Glu  Asn Lys Leu
    1145                1150                1155

Phe Ala  Gly Ile Arg Arg Asp  Gly Leu Leu Leu Arg  Leu Val Asp
    1160                1165                1170

Asp Phe  Leu Leu Val Thr Pro  His Leu Thr His Ala  Lys Thr Phe
    1175                1180                1185

Leu Arg  Thr Leu Val Arg Gly  Val Pro Glu Tyr Gly  Cys Val Val
    1190                1195                1200

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

Leu Gly  Gly Thr Ala Phe Val  Gln Met Pro Ala His  Gly Leu Phe
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```
    1220                1225                1230

Pro Trp  Cys Gly Leu Leu Leu  Asp Thr Arg Thr Leu  Glu Val Gln
    1235                1240                1245

Ser Asp  Tyr Ser Ser Tyr Ala  Arg Thr Ser Ile Arg  Ala Ser Leu
    1250                1255                1260

Thr Phe  Asn Arg Gly Phe Lys  Ala Gly Arg Asn Met  Arg Arg Lys
    1265                1270                1275

Leu Phe  Gly Val Leu Arg Leu  Lys Cys His Ser Leu  Phe Leu Asp
    1280                1285                1290

Leu Gln  Val Asn Ser Leu Gln  Thr Val Cys Thr Asn  Ile Tyr Lys
    1295                1300                1305

Ile Leu  Leu Leu Gln Ala Tyr  Arg Phe His Ala Cys  Val Leu Gln
    1310                1315                1320

Leu Pro  Phe His Gln Gln Val  Trp Lys Asn Pro Thr  Phe Phe Leu
    1325                1330                1335

Arg Val  Ile Ser Asp Thr Ala  Ser Leu Cys Tyr Ser  Ile Leu Lys
    1340                1345                1350

Ala Lys  Asn Ala Gly Met Ser  Leu Gly Ala Lys Gly  Ala Ala Gly
    1355                1360                1365

Pro Leu  Pro Ser Glu Ala Val  Gln Trp Leu Cys His  Gln Ala Phe
    1370                1375                1380

Leu Leu  Lys Leu Thr Arg His  Arg Val Thr Tyr Val  Pro Leu Leu
    1385                1390                1395

Gly Ser  Leu Arg Thr Ala Gln  Thr Gln Leu Ser Arg  Lys Leu Pro
    1400                1405                1410

Gly Thr  Thr Leu Thr Ala Leu  Glu Ala Ala Ala Asn  Pro Ala Leu
    1415                1420                1425
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Pro Ser Asp Phe Lys Thr Ile Leu Asp
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tggggaattg ctctgctggt gctcgtgtgc gtgctggtgg ccctggccat cgtgtatctg 4080

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gtgccaccca gctccaccga cagatccccc tacgagaaag tgtctgccgg caacggcggc 4260

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<211> 1437
<212> PRT

<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 34

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1               5                   10                  15


Gly Ser Trp Ala His Pro Gly Arg Thr Arg Gly Pro Ser Asp Arg Gly
            20                  25                  30


Phe Cys Val Val Ser Pro Ala Arg Pro Ala Glu Glu Ala Thr Ser Leu
        35                  40                  45


Glu Gly Ala Leu Ser Gly Thr Arg His Ser His Pro Ser Val Gly Arg
    50                  55                  60


Gln His His Ala Gly Pro Pro Ser Thr Ser Arg Pro Pro Arg Pro Trp
65                  70                  75                  80


Asp Thr Pro Cys Pro Pro Val Tyr Ala Glu Thr Lys His Phe Leu Tyr
                85                  90                  95


Ser Ser Gly Asp Lys Glu Gln Leu Arg Pro Ser Phe Leu Leu Ser Ser
            100                 105                 110


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


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


Leu Pro Gln Arg Tyr Trp Gln Met Arg Pro Leu Phe Leu Glu Leu Leu
145                 150                 155                 160


Gly Asn His Ala Gln Cys Pro Tyr Gly Val Leu Leu Lys Thr His Cys
                165                 170                 175


Pro Leu Arg Ala Ala Val Thr Pro Ala Ala Gly Val Cys Ala Arg Glu
            180                 185                 190
```

```
Lys Pro Gln Gly Ser Val Ala Ala Pro Glu Glu Glu Asp Thr Asp Pro
        195                 200                 205

Arg Arg Leu Val Gln Leu Leu Arg Gln His Ser Ser Pro Trp Gln Val
    210                 215                 220

Tyr Gly Phe Val Arg Ala Cys Leu Arg Arg Leu Val Pro Pro Gly Leu
225                 230                 235                 240

Trp Gly Ser Arg His Asn Glu Arg Arg Phe Leu Arg Asn Thr Lys Lys
                245                 250                 255

Phe Ile Ser Leu Gly Lys His Ala Lys Leu Ser Leu Gln Glu Leu Thr
            260                 265                 270

Trp Lys Met Ser Val Arg Asp Cys Ala Trp Leu Arg Arg Ser Pro Gly
        275                 280                 285

Val Gly Cys Val Pro Ala Ala Glu His Arg Leu Arg Glu Glu Ile Leu
    290                 295                 300

Ala Lys Phe Leu His Trp Leu Met Ser Val Tyr Val Val Glu Leu Leu
305                 310                 315                 320

Arg Ser Phe Phe Tyr Val Thr Glu Thr Thr Phe Gln Lys Asn Arg Leu
                325                 330                 335

Phe Phe Tyr Arg Lys Ser Val Trp Ser Lys Leu Gln Ser Ile Gly Ile
            340                 345                 350

Arg Gln His Leu Lys Arg Val Gln Leu Arg Glu Leu Ser Glu Ala Glu
        355                 360                 365

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

Arg Phe Ile Pro Lys Pro Asp Gly Leu Arg Pro Ile Val Asn Met Asp
385                 390                 395                 400

Tyr Val Val Gly Ala Arg Thr Phe Arg Arg Glu Lys Arg Ala Glu Arg
```

```
                405                 410                 415

Leu Thr Ser Arg Val Lys Ala Leu Phe Ser Val Leu Asn Tyr Glu Arg
            420                 425                 430

Ala Arg Arg Pro Gly Leu Leu Gly Ala Ser Val Leu Gly Leu Asp Asp
        435                 440                 445

Ile His Arg Ala Trp Arg Thr Phe Val Leu Arg Val Arg Ala Gln Asp
    450                 455                 460

Pro Pro Pro Glu Leu Tyr Phe Val Lys Val Ala Ile Thr Gly Ala Tyr
465                 470                 475                 480

Asp Thr Ile Pro Gln Asp Arg Leu Thr Glu Val Ile Ala Ser Ile Ile
                485                 490                 495

Lys Pro Gln Asn Thr Tyr Cys Val Arg Arg Tyr Ala Val Val Gln Lys
            500                 505                 510

Ala Ala His Gly His Val Arg Lys Ala Phe Lys Ser His Val Ser Thr
        515                 520                 525

Leu Thr Asp Leu Gln Pro Tyr Met Arg Gln Phe Val Ala His Leu Gln
    530                 535                 540

Glu Thr Ser Pro Leu Arg Asp Ala Val Val Ile Glu Gln Ser Ser Ser
545                 550                 555                 560

Leu Asn Glu Ala Ser Ser Gly Leu Phe Asp Val Phe Leu Arg Phe Met
                565                 570                 575

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

Gly Ile Pro Gln Gly Ser Ile Leu Ser Thr Leu Leu Cys Ser Leu Cys
        595                 600                 605

Tyr Gly Asp Met Glu Asn Lys Leu Phe Ala Gly Ile Arg Arg Asp Gly
    610                 615                 620
```

```
Leu Leu Leu Arg Leu Val Asp Asp Phe Leu Leu Val Thr Pro His Leu
625                 630                 635                 640

Thr His Ala Lys Thr Phe Leu Arg Thr Leu Val Arg Gly Val Pro Glu
                645                 650                 655

Tyr Gly Cys Val Val Asn Leu Arg Lys Thr Val Val Asn Phe Pro Val
            660                 665                 670

Glu Asp Glu Ala Leu Gly Gly Thr Ala Phe Val Gln Met Pro Ala His
        675                 680                 685

Gly Leu Phe Pro Trp Cys Gly Leu Leu Leu Asp Thr Arg Thr Leu Glu
    690                 695                 700

Val Gln Ser Asp Tyr Ser Ser Tyr Ala Arg Thr Ser Ile Arg Ala Ser
705                 710                 715                 720

Leu Thr Phe Asn Arg Gly Phe Lys Ala Gly Arg Asn Met Arg Arg Lys
                725                 730                 735

Leu Phe Gly Val Leu Arg Leu Lys Cys His Ser Leu Phe Leu Asp Leu
            740                 745                 750

Gln Val Asn Ser Leu Gln Thr Val Cys Thr Asn Ile Tyr Lys Ile Leu
        755                 760                 765

Leu Leu Gln Ala Tyr Arg Phe His Ala Cys Val Leu Gln Leu Pro Phe
    770                 775                 780

His Gln Gln Val Trp Lys Asn Pro Thr Phe Phe Leu Arg Val Ile Ser
785                 790                 795                 800

Asp Thr Ala Ser Leu Cys Tyr Ser Ile Leu Lys Ala Lys Asn Ala Gly
                805                 810                 815

Met Ser Leu Gly Ala Lys Gly Ala Ala Gly Pro Leu Pro Ser Glu Ala
            820                 825                 830

Val Gln Trp Leu Cys His Gln Ala Phe Leu Leu Lys Leu Thr Arg His
```

```
        835                 840                 845

Arg Val Thr Tyr Val Pro Leu Leu Gly Ser Leu Arg Thr Ala Gln Thr
    850                 855                 860

Gln Leu Ser Arg Lys Leu Pro Gly Thr Thr Leu Thr Ala Leu Glu Ala
865                 870                 875                 880

Ala Ala Asn Pro Ala Leu Pro Ser Asp Phe Lys Thr Ile Leu Asp Gly
                885                 890                 895

Ser Gly Thr Ile Leu Ser Glu Gly Ala Thr Asn Phe Ser Leu Leu Lys
            900                 905                 910

Leu Ala Gly Asp Val Glu Leu Asn Pro Gly Pro Thr Gly Ser Gly His
        915                 920                 925

Ala Ser Ser Thr Pro Gly Gly Glu Lys Glu Thr Ser Ala Thr Gln Arg
    930                 935                 940

Ser Ser Val Pro Ser Ser Thr Glu Lys Asn Ala Val Ser Met Thr Ser
945                 950                 955                 960

Ser Val Leu Ser Ser His Ser Pro Gly Ser Gly Ser Ser Thr Thr Gln
                965                 970                 975

Gly Gln Asp Val Thr Leu Ala Pro Ala Thr Glu Pro Ala Ser Gly Ser
            980                 985                 990

Ala Ala Thr Trp Gly Gln Asp Val  Thr Ser Val Pro Val  Thr Arg Pro
        995                 1000                1005

Ala Leu  Gly Ser Thr Thr Pro  Pro Ala His Asp Val  Thr Ser Ala
    1010                1015                1020

Pro Asp  Asn Lys Pro Ala Pro  Gly Ser Thr Ala Pro  Pro Ala His
    1025                1030                1035

Gly Val  Thr Ser Ala Pro Asp  Thr Arg Pro Ala Pro  Gly Ser Thr
    1040                1045                1050
```

```
Ala Pro  Pro Ala His Gly Val  Thr Ser Ala Pro Asp  Thr Arg Pro
    1055                1060                1065

Ala Pro  Gly Ser Thr Ala Pro  Pro Ala His Gly Val  Thr Ser Ala
    1070                1075                1080

Pro Asp  Thr Arg Pro Ala Pro  Gly Ser Thr Ala Pro  Pro Ala His
    1085                1090                1095

Gly Val  Thr Ser Ala Pro Asp  Thr Arg Pro Ala Pro  Gly Ser Thr
    1100                1105                1110

Ala Pro  Pro Ala His Gly Val  Thr Ser Ala Pro Asp  Thr Arg Pro
    1115                1120                1125

Ala Leu  Gly Ser Thr Ala Pro  Pro Val His Asn Val  Thr Ser Ala
    1130                1135                1140

Ser Gly  Ser Ala Ser Gly Ser  Ala Ser Thr Leu Val  His Asn Gly
    1145                1150                1155

Thr Ser  Ala Arg Ala Thr Thr  Thr Pro Ala Ser Lys  Ser Thr Pro
    1160                1165                1170

Phe Ser  Ile Pro Ser His His  Ser Asp Thr Pro Thr  Thr Leu Ala
    1175                1180                1185

Ser His  Ser Thr Lys Thr Asp  Ala Ser Ser Thr His  His Ser Ser
    1190                1195                1200

Val Pro  Pro Leu Thr Ser Ser  Asn His Ser Thr Ser  Pro Gln Leu
    1205                1210                1215

Ser Thr  Gly Val Ser Phe Phe  Phe Leu Ser Phe His  Ile Ser Asn
    1220                1225                1230

Leu Gln  Phe Asn Ser Ser Leu  Glu Asp Pro Ser Thr  Asp Tyr Tyr
    1235                1240                1245

Gln Glu  Leu Gln Arg Asp Ile  Ser Glu Met Phe Leu  Gln Ile Tyr
```

```
    1250                1255                1260

Lys Gln  Gly Gly Phe Leu Gly  Leu Ser Asn Ile Lys  Phe Arg Pro
    1265                1270                1275

Gly Ser  Val Val Val Gln Leu  Thr Leu Ala Phe Arg  Glu Gly Thr
    1280                1285                1290

Ile Asn  Val His Asp Val Glu  Thr Gln Phe Asn Gln  Tyr Lys Thr
    1295                1300                1305

Glu Ala  Ala Ser Arg Tyr Asn  Leu Thr Ile Ser Asp  Val Ser Val
    1310                1315                1320

Ser Asp  Val Pro Phe Pro Phe  Ser Ala Gln Ser Gly  Ala Gly Val
    1325                1330                1335

Pro Gly  Trp Gly Ile Ala Leu  Leu Val Leu Val Cys  Val Leu Val
    1340                1345                1350

Ala Leu  Ala Ile Val Tyr Leu  Ile Ala Leu Ala Val  Cys Gln Cys
    1355                1360                1365

Arg Arg  Lys Asn Tyr Gly Gln  Leu Asp Ile Phe Pro  Ala Arg Asp
    1370                1375                1380

Thr Tyr  His Pro Met Ser Glu  Tyr Pro Thr Tyr His  Thr His Gly
    1385                1390                1395

Arg Tyr  Val Pro Pro Ser Ser  Thr Asp Arg Ser Pro  Tyr Glu Lys
    1400                1405                1410

Val Ser  Ala Gly Asn Gly Gly  Ser Ser Leu Ser Tyr  Thr Asn Pro
    1415                1420                1425

Ala Val  Ala Ala Ala Ser Ala  Asn Leu
    1430                1435


<210>  35
<211>  4431
<212>  DNA
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<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 35
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ccagcagaag aggcaaccag cctcgaggga gcgttgtctg gaaccagaca ttcccacccg 180

tcggtgggcc ggcagcacca cgcgggacca ccgtccactt ccagaccgcc acggccatgg 240

gacacccctt gcccgcctgt gtatgccgag actaaacact tcctgtactc atccggagac 300

aaggaacagc ttcggccgtc cttcctcctg tcgtcgctca gaccgagcct gaccggagca 360

cgcagattgg tggaaactat cttccttggg tcacgtccgt ggatgccagg taccccacgg 420

cgcctcccgc gcctcccaca gagatactgg cagatgcggc ctctgttcct ggaattgctg 480

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<210> 36
<211> 1477
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 36

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Met Ala Ser Gly Ala Ala Pro Glu Pro Glu Arg Thr Pro Val Gly Gln
1               5                  10                  15

Gly Ser Trp Ala His Pro Gly Arg Thr Arg Gly Pro Ser Asp Arg Gly
            20                  25                  30

Phe Cys Val Val Ser Pro Ala Arg Pro Ala Glu Glu Ala Thr Ser Leu
        35                  40                  45

Glu Gly Ala Leu Ser Gly Thr Arg His Ser His Pro Ser Val Gly Arg
    50                  55                  60

Gln His His Ala Gly Pro Pro Ser Thr Ser Arg Pro Pro Arg Pro Trp
65                  70                  75                  80

Asp Thr Pro Cys Pro Pro Val Tyr Ala Glu Thr Lys His Phe Leu Tyr
                85                  90                  95

Ser Ser Gly Asp Lys Glu Gln Leu Arg Pro Ser Phe Leu Leu Ser Ser
            100                 105                 110

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

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

Leu Pro Gln Arg Tyr Trp Gln Met Arg Pro Leu Phe Leu Glu Leu Leu
145                 150                 155                 160

Gly Asn His Ala Gln Cys Pro Tyr Gly Val Leu Leu Lys Thr His Cys
                165                 170                 175

Pro Leu Arg Ala Ala Val Thr Pro Ala Ala Gly Val Cys Ala Arg Glu
            180                 185                 190

Lys Pro Gln Gly Ser Val Ala Ala Pro Glu Glu Glu Asp Thr Asp Pro
        195                 200                 205
```

```
Arg Arg Leu Val Gln Leu Leu Arg Gln His Ser Ser Pro Trp Gln Val
    210                 215                 220

Tyr Gly Phe Val Arg Ala Cys Leu Arg Arg Leu Val Pro Pro Gly Leu
225                 230                 235                 240

Trp Gly Ser Arg His Asn Glu Arg Arg Phe Leu Arg Asn Thr Lys Lys
                245                 250                 255

Phe Ile Ser Leu Gly Lys His Ala Lys Leu Ser Leu Gln Glu Leu Thr
            260                 265                 270

Trp Lys Met Ser Val Arg Asp Cys Ala Trp Leu Arg Arg Ser Pro Gly
        275                 280                 285

Val Gly Cys Val Pro Ala Ala Glu His Arg Leu Arg Glu Glu Ile Leu
    290                 295                 300

Ala Lys Phe Leu His Trp Leu Met Ser Val Tyr Val Val Glu Leu Leu
305                 310                 315                 320

Arg Ser Phe Phe Tyr Val Thr Glu Thr Thr Phe Gln Lys Asn Arg Leu
                325                 330                 335

Phe Phe Tyr Arg Lys Ser Val Trp Ser Lys Leu Gln Ser Ile Gly Ile
            340                 345                 350

Arg Gln His Leu Lys Arg Val Gln Leu Arg Glu Leu Ser Glu Ala Glu
        355                 360                 365

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

Arg Phe Ile Pro Lys Pro Asp Gly Leu Arg Pro Ile Val Asn Met Asp
385                 390                 395                 400

Tyr Val Val Gly Ala Arg Thr Phe Arg Arg Glu Lys Arg Ala Glu Arg
                405                 410                 415

Leu Thr Ser Arg Val Lys Ala Leu Phe Ser Val Leu Asn Tyr Glu Arg
```

```
            420                 425                 430

Ala Arg Arg Pro Gly Leu Leu Gly Ala Ser Val Leu Gly Leu Asp Asp
        435                 440                 445

Ile His Arg Ala Trp Arg Thr Phe Val Leu Arg Val Arg Ala Gln Asp
    450                 455                 460

Pro Pro Pro Glu Leu Tyr Phe Val Lys Val Ala Ile Thr Gly Ala Tyr
465                 470                 475                 480

Asp Thr Ile Pro Gln Asp Arg Leu Thr Glu Val Ile Ala Ser Ile Ile
                485                 490                 495

Lys Pro Gln Asn Thr Tyr Cys Val Arg Arg Tyr Ala Val Val Gln Lys
            500                 505                 510

Ala Ala His Gly His Val Arg Lys Ala Phe Lys Ser His Val Ser Thr
        515                 520                 525

Leu Thr Asp Leu Gln Pro Tyr Met Arg Gln Phe Val Ala His Leu Gln
    530                 535                 540

Glu Thr Ser Pro Leu Arg Asp Ala Val Val Ile Glu Gln Ser Ser Ser
545                 550                 555                 560

Leu Asn Glu Ala Ser Ser Gly Leu Phe Asp Val Phe Leu Arg Phe Met
                565                 570                 575

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

Gly Ile Pro Gln Gly Ser Ile Leu Ser Thr Leu Leu Cys Ser Leu Cys
        595                 600                 605

Tyr Gly Asp Met Glu Asn Lys Leu Phe Ala Gly Ile Arg Arg Asp Gly
    610                 615                 620

Leu Leu Leu Arg Leu Val Asp Asp Phe Leu Leu Val Thr Pro His Leu
625                 630                 635                 640
```

```
Thr His Ala Lys Thr Phe Leu Arg Thr Leu Val Arg Gly Val Pro Glu
                645                 650                 655

Tyr Gly Cys Val Val Asn Leu Arg Lys Thr Val Val Asn Phe Pro Val
            660                 665                 670

Glu Asp Glu Ala Leu Gly Gly Thr Ala Phe Val Gln Met Pro Ala His
        675                 680                 685

Gly Leu Phe Pro Trp Cys Gly Leu Leu Leu Asp Thr Arg Thr Leu Glu
    690                 695                 700

Val Gln Ser Asp Tyr Ser Ser Tyr Ala Arg Thr Ser Ile Arg Ala Ser
705                 710                 715                 720

Leu Thr Phe Asn Arg Gly Phe Lys Ala Gly Arg Asn Met Arg Arg Lys
                725                 730                 735

Leu Phe Gly Val Leu Arg Leu Lys Cys His Ser Leu Phe Leu Asp Leu
            740                 745                 750

Gln Val Asn Ser Leu Gln Thr Val Cys Thr Asn Ile Tyr Lys Ile Leu
        755                 760                 765

Leu Leu Gln Ala Tyr Arg Phe His Ala Cys Val Leu Gln Leu Pro Phe
    770                 775                 780

His Gln Gln Val Trp Lys Asn Pro Thr Phe Phe Leu Arg Val Ile Ser
785                 790                 795                 800

Asp Thr Ala Ser Leu Cys Tyr Ser Ile Leu Lys Ala Lys Asn Ala Gly
                805                 810                 815

Met Ser Leu Gly Ala Lys Gly Ala Ala Gly Pro Leu Pro Ser Glu Ala
            820                 825                 830

Val Gln Trp Leu Cys His Gln Ala Phe Leu Leu Lys Leu Thr Arg His
        835                 840                 845

Arg Val Thr Tyr Val Pro Leu Leu Gly Ser Leu Arg Thr Ala Gln Thr
```

```
    850                 855                 860

Gln Leu Ser Arg Lys Leu Pro Gly Thr Thr Leu Thr Ala Leu Glu Ala
865                 870                 875                 880

Ala Ala Asn Pro Ala Leu Pro Ser Asp Phe Lys Thr Ile Leu Asp Gly
                885                 890                 895

Ser Gly Glu Gly Arg Gly Ser Leu Leu Thr Cys Gly Asp Val Glu Glu
            900                 905                 910

Asn Pro Gly Pro Leu Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro Leu
        915                 920                 925

Asp Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro Arg
    930                 935                 940

Gln Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu
945                 950                 955                 960

Arg Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu
                965                 970                 975

Ser Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro
            980                 985                 990

Glu Asp Leu Asp Ala Leu Pro Leu  Asp Leu Leu Leu Phe  Leu Asn Pro
        995                 1000                1005

Asp Ala  Phe Ser Gly Pro Gln  Ala Cys Thr Arg Phe  Phe Ser Arg
    1010                1015                1020

Ile Thr  Lys Ala Asn Val Asp  Leu Leu Pro Arg Gly  Ala Pro Glu
    1025                1030                1035

Arg Gln  Arg Leu Leu Pro Ala  Ala Leu Ala Cys Trp  Gly Val Arg
    1040                1045                1050

Gly Ser  Leu Leu Ser Glu Ala  Asp Val Arg Ala Leu  Gly Gly Leu
    1055                1060                1065
```

```
Ala Cys  Asp Leu Pro Gly Arg  Phe Val Ala Glu Ser  Ala Glu Val
    1070                1075                1080

Leu Leu  Pro Arg Leu Val Ser  Cys Pro Gly Pro Leu  Asp Gln Asp
    1085                1090                1095

Gln Gln  Glu Ala Ala Arg Ala  Ala Leu Gln Gly Gly  Gly Pro Pro
    1100                1105                1110

Tyr Gly  Pro Pro Ser Thr Trp  Ser Val Ser Thr Met  Asp Ala Leu
    1115                1120                1125

Arg Gly  Leu Leu Pro Val Leu  Gly Gln Pro Ile Ile  Arg Ser Ile
    1130                1135                1140

Pro Gln  Gly Ile Val Ala Ala  Trp Arg Gln Arg Ser  Ser Arg Asp
    1145                1150                1155

Pro Ser  Trp Arg Gln Pro Glu  Arg Thr Ile Leu Arg  Pro Arg Phe
    1160                1165                1170

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

Arg Glu  Ile Asp Glu Ser Leu  Ile Phe Tyr Lys Lys  Trp Glu Leu
    1190                1195                1200

Glu Ala  Cys Val Asp Ala Ala  Leu Leu Ala Thr Gln  Met Asp Arg
    1205                1210                1215

Val Asn  Ala Ile Pro Phe Thr  Tyr Glu Gln Leu Asp  Val Leu Lys
    1220                1225                1230

His Lys  Leu Asp Glu Leu Tyr  Pro Gln Gly Tyr Pro  Glu Ser Val
    1235                1240                1245

Ile Gln  His Leu Gly Tyr Leu  Phe Leu Lys Met Ser  Pro Glu Asp
    1250                1255                1260

Ile Arg  Lys Trp Asn Val Thr  Ser Leu Glu Thr Leu  Lys Ala Leu
```

```
    1265                1270                1275

Leu Glu  Val Asn Lys Gly His  Glu Met Ser Pro Gln  Val Ala Thr
    1280                1285                1290

Leu Ile  Asp Arg Phe Val Lys  Gly Arg Gly Gln Leu  Asp Lys Asp
    1295                1300                1305

Thr Leu  Asp Thr Leu Thr Ala  Phe Tyr Pro Gly Tyr  Leu Cys Ser
    1310                1315                1320

Leu Ser  Pro Glu Glu Leu Ser  Ser Val Pro Pro Ser  Ser Ile Trp
    1325                1330                1335

Ala Val  Arg Pro Gln Asp Leu  Asp Thr Cys Asp Pro  Arg Gln Leu
    1340                1345                1350

Asp Val  Leu Tyr Pro Lys Ala  Arg Leu Ala Phe Gln  Asn Met Asn
    1355                1360                1365

Gly Ser  Glu Tyr Phe Val Lys  Ile Gln Ser Phe Leu  Gly Gly Ala
    1370                1375                1380

Pro Thr  Glu Asp Leu Lys Ala  Leu Ser Gln Gln Asn  Val Ser Met
    1385                1390                1395

Asp Leu  Ala Thr Phe Met Lys  Leu Arg Thr Asp Ala  Val Leu Pro
    1400                1405                1410

Leu Thr  Val Ala Glu Val Gln  Lys Leu Leu Gly Pro  His Val Glu
    1415                1420                1425

Gly Leu  Lys Ala Glu Glu Arg  His Arg Pro Val Arg  Asp Trp Ile
    1430                1435                1440

Leu Arg  Gln Arg Gln Asp Asp  Leu Asp Thr Leu Gly  Leu Gly Leu
    1445                1450                1455

Gln Gly  Gly Ile Pro Asn Gly  Tyr Leu Val Leu Asp  Leu Ser Met
    1460                1465                1470
```

Gln Glu Ala Leu
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<210> 37
<211> 4383
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<213> Artificial Sequence

<220>
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<400> 37
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ccagcagaag aggcaaccag cctcgaggga gcgttgtctg gaaccagaca ttcccacccg 180

tcggtgggcc ggcagcacca cgcgggacca ccgtccactt ccagaccgcc acggccatgg 240

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aaggaacagc ttcggccgtc cttcctcctg tcgtcgctca gaccgagcct gaccggagca 360

cgcagattgg tggaaactat cttccttggg tcacgtccgt ggatgccagg taccccacgg 420

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ctg 4383

<210> 38
<211> 1461
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 38

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Gly Ser Trp Ala His Pro Gly Arg Thr Arg Gly Pro Ser Asp Arg Gly
            20                  25                  30


Phe Cys Val Val Ser Pro Ala Arg Pro Ala Glu Glu Ala Thr Ser Leu
        35                  40                  45


Glu Gly Ala Leu Ser Gly Thr Arg His Ser His Pro Ser Val Gly Arg
    50                  55                  60


Gln His His Ala Gly Pro Pro Ser Thr Ser Arg Pro Pro Arg Pro Trp
65                  70                  75                  80


Asp Thr Pro Cys Pro Pro Val Tyr Ala Glu Thr Lys His Phe Leu Tyr
                85                  90                  95


Ser Ser Gly Asp Lys Glu Gln Leu Arg Pro Ser Phe Leu Leu Ser Ser
            100                 105                 110


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


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


Leu Pro Gln Arg Tyr Trp Gln Met Arg Pro Leu Phe Leu Glu Leu Leu
145                 150                 155                 160


Gly Asn His Ala Gln Cys Pro Tyr Gly Val Leu Leu Lys Thr His Cys
                165                 170                 175
```

```
Pro Leu Arg Ala Ala Val Thr Pro Ala Ala Gly Val Cys Ala Arg Glu
            180                 185                 190

Lys Pro Gln Gly Ser Val Ala Ala Pro Glu Glu Glu Asp Thr Asp Pro
        195                 200                 205

Arg Arg Leu Val Gln Leu Leu Arg Gln His Ser Ser Pro Trp Gln Val
    210                 215                 220

Tyr Gly Phe Val Arg Ala Cys Leu Arg Arg Leu Val Pro Pro Gly Leu
225                 230                 235                 240

Trp Gly Ser Arg His Asn Glu Arg Arg Phe Leu Arg Asn Thr Lys Lys
                245                 250                 255

Phe Ile Ser Leu Gly Lys His Ala Lys Leu Ser Leu Gln Glu Leu Thr
            260                 265                 270

Trp Lys Met Ser Val Arg Asp Cys Ala Trp Leu Arg Arg Ser Pro Gly
        275                 280                 285

Val Gly Cys Val Pro Ala Ala Glu His Arg Leu Arg Glu Glu Ile Leu
    290                 295                 300

Ala Lys Phe Leu His Trp Leu Met Ser Val Tyr Val Val Glu Leu Leu
305                 310                 315                 320

Arg Ser Phe Phe Tyr Val Thr Glu Thr Thr Phe Gln Lys Asn Arg Leu
                325                 330                 335

Phe Phe Tyr Arg Lys Ser Val Trp Ser Lys Leu Gln Ser Ile Gly Ile
            340                 345                 350

Arg Gln His Leu Lys Arg Val Gln Leu Arg Glu Leu Ser Glu Ala Glu
        355                 360                 365

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

Arg Phe Ile Pro Lys Pro Asp Gly Leu Arg Pro Ile Val Asn Met Asp
```

```
385                 390                 395                 400

Tyr Val Val Gly Ala Arg Thr Phe Arg Arg Glu Lys Arg Ala Glu Arg
                405                 410                 415

Leu Thr Ser Arg Val Lys Ala Leu Phe Ser Val Leu Asn Tyr Glu Arg
            420                 425                 430

Ala Arg Arg Pro Gly Leu Leu Gly Ala Ser Val Leu Gly Leu Asp Asp
        435                 440                 445

Ile His Arg Ala Trp Arg Thr Phe Val Leu Arg Val Arg Ala Gln Asp
    450                 455                 460

Pro Pro Pro Glu Leu Tyr Phe Val Lys Val Ala Ile Thr Gly Ala Tyr
465                 470                 475                 480

Asp Thr Ile Pro Gln Asp Arg Leu Thr Glu Val Ile Ala Ser Ile Ile
                485                 490                 495

Lys Pro Gln Asn Thr Tyr Cys Val Arg Arg Tyr Ala Val Val Gln Lys
            500                 505                 510

Ala Ala His Gly His Val Arg Lys Ala Phe Lys Ser His Val Ser Thr
        515                 520                 525

Leu Thr Asp Leu Gln Pro Tyr Met Arg Gln Phe Val Ala His Leu Gln
    530                 535                 540

Glu Thr Ser Pro Leu Arg Asp Ala Val Val Ile Glu Gln Ser Ser Ser
545                 550                 555                 560

Leu Asn Glu Ala Ser Ser Gly Leu Phe Asp Val Phe Leu Arg Phe Met
                565                 570                 575

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

Gly Ile Pro Gln Gly Ser Ile Leu Ser Thr Leu Leu Cys Ser Leu Cys
        595                 600                 605
```

```
Tyr Gly Asp Met Glu Asn Lys Leu Phe Ala Gly Ile Arg Arg Asp Gly
    610                 615                 620

Leu Leu Leu Arg Leu Val Asp Asp Phe Leu Leu Val Thr Pro His Leu
625                 630                 635                 640

Thr His Ala Lys Thr Phe Leu Arg Thr Leu Val Arg Gly Val Pro Glu
                645                 650                 655

Tyr Gly Cys Val Val Asn Leu Arg Lys Thr Val Val Asn Phe Pro Val
            660                 665                 670

Glu Asp Glu Ala Leu Gly Gly Thr Ala Phe Val Gln Met Pro Ala His
        675                 680                 685

Gly Leu Phe Pro Trp Cys Gly Leu Leu Leu Asp Thr Arg Thr Leu Glu
    690                 695                 700

Val Gln Ser Asp Tyr Ser Ser Tyr Ala Arg Thr Ser Ile Arg Ala Ser
705                 710                 715                 720

Leu Thr Phe Asn Arg Gly Phe Lys Ala Gly Arg Asn Met Arg Arg Lys
                725                 730                 735

Leu Phe Gly Val Leu Arg Leu Lys Cys His Ser Leu Phe Leu Asp Leu
            740                 745                 750

Gln Val Asn Ser Leu Gln Thr Val Cys Thr Asn Ile Tyr Lys Ile Leu
        755                 760                 765

Leu Leu Gln Ala Tyr Arg Phe His Ala Cys Val Leu Gln Leu Pro Phe
    770                 775                 780

His Gln Gln Val Trp Lys Asn Pro Thr Phe Phe Leu Arg Val Ile Ser
785                 790                 795                 800

Asp Thr Ala Ser Leu Cys Tyr Ser Ile Leu Lys Ala Lys Asn Ala Gly
                805                 810                 815

Met Ser Leu Gly Ala Lys Gly Ala Ala Gly Pro Leu Pro Ser Glu Ala
```

```
            820                 825                 830

Val Gln Trp Leu Cys His Gln Ala Phe Leu Leu Lys Leu Thr Arg His
        835                 840                 845

Arg Val Thr Tyr Val Pro Leu Leu Gly Ser Leu Arg Thr Ala Gln Thr
    850                 855                 860

Gln Leu Ser Arg Lys Leu Pro Gly Thr Thr Leu Thr Ala Leu Glu Ala
865                 870                 875                 880

Ala Ala Asn Pro Ala Leu Pro Ser Asp Phe Lys Thr Ile Leu Asp Gly
                885                 890                 895

Gly Ser Gly Gly Leu Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro Leu
            900                 905                 910

Asp Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro Arg
        915                 920                 925

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

Arg Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu
945                 950                 955                 960

Ser Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro
                965                 970                 975

Glu Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro
            980                 985                 990

Asp Ala Phe Ser Gly Pro Gln Ala  Cys Thr Arg Phe Phe  Ser Arg Ile
        995                 1000                1005

Thr Lys  Ala Asn Val Asp Leu  Leu Pro Arg Gly Ala  Pro Glu Arg
    1010                1015                1020

Gln Arg  Leu Leu Pro Ala Ala  Leu Ala Cys Trp Gly  Val Arg Gly
    1025                1030                1035
```

```
Ser Leu  Leu Ser Glu Ala Asp  Val Arg Ala Leu Gly  Gly Leu Ala
    1040                1045                1050

Cys Asp  Leu Pro Gly Arg Phe  Val Ala Glu Ser Ala  Glu Val Leu
    1055                1060                1065

Leu Pro  Arg Leu Val Ser Cys  Pro Gly Pro Leu Asp  Gln Asp Gln
    1070                1075                1080

Gln Glu  Ala Ala Arg Ala Ala  Leu Gln Gly Gly Gly  Pro Pro Tyr
    1085                1090                1095

Gly Pro  Pro Ser Thr Trp Ser  Val Ser Thr Met Asp  Ala Leu Arg
    1100                1105                1110

Gly Leu  Leu Pro Val Leu Gly  Gln Pro Ile Ile Arg  Ser Ile Pro
    1115                1120                1125

Gln Gly  Ile Val Ala Ala Trp  Arg Gln Arg Ser Ser  Arg Asp Pro
    1130                1135                1140

Ser Trp  Arg Gln Pro Glu Arg  Thr Ile Leu Arg Pro  Arg Phe Arg
    1145                1150                1155

Arg Glu  Val Glu Lys Thr Ala  Cys Pro Ser Gly Lys  Lys Ala Arg
    1160                1165                1170

Glu Ile  Asp Glu Ser Leu Ile  Phe Tyr Lys Lys Trp  Glu Leu Glu
    1175                1180                1185

Ala Cys  Val Asp Ala Ala Leu  Leu Ala Thr Gln Met  Asp Arg Val
    1190                1195                1200

Asn Ala  Ile Pro Phe Thr Tyr  Glu Gln Leu Asp Val  Leu Lys His
    1205                1210                1215

Lys Leu  Asp Glu Leu Tyr Pro  Gln Gly Tyr Pro Glu  Ser Val Ile
    1220                1225                1230

Gln His  Leu Gly Tyr Leu Phe  Leu Lys Met Ser Pro  Glu Asp Ile
```

```
    1235                1240                1245

Arg Lys  Trp Asn Val Thr Ser  Leu Glu Thr Leu Lys  Ala Leu Leu
    1250                1255                1260

Glu Val  Asn Lys Gly His Glu  Met Ser Pro Gln Val  Ala Thr Leu
    1265                1270                1275

Ile Asp  Arg Phe Val Lys Gly  Arg Gly Gln Leu Asp  Lys Asp Thr
    1280                1285                1290

Leu Asp  Thr Leu Thr Ala Phe  Tyr Pro Gly Tyr Leu  Cys Ser Leu
    1295                1300                1305

Ser Pro  Glu Glu Leu Ser Ser  Val Pro Pro Ser Ser  Ile Trp Ala
    1310                1315                1320

Val Arg  Pro Gln Asp Leu Asp  Thr Cys Asp Pro Arg  Gln Leu Asp
    1325                1330                1335

Val Leu  Tyr Pro Lys Ala Arg  Leu Ala Phe Gln Asn  Met Asn Gly
    1340                1345                1350

Ser Glu  Tyr Phe Val Lys Ile  Gln Ser Phe Leu Gly  Gly Ala Pro
    1355                1360                1365

Thr Glu  Asp Leu Lys Ala Leu  Ser Gln Gln Asn Val  Ser Met Asp
    1370                1375                1380

Leu Ala  Thr Phe Met Lys Leu  Arg Thr Asp Ala Val  Leu Pro Leu
    1385                1390                1395

Thr Val  Ala Glu Val Gln Lys  Leu Leu Gly Pro His  Val Glu Gly
    1400                1405                1410

Leu Lys  Ala Glu Glu Arg His  Arg Pro Val Arg Asp  Trp Ile Leu
    1415                1420                1425

Arg Gln  Arg Gln Asp Asp Leu  Asp Thr Leu Gly Leu  Gly Leu Gln
    1430                1435                1440
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Gly Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp Leu Ser Met Gln
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Glu Ala Leu
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<210> 39
<211> 4431
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

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<211> 1477
<212> PRT
<213> Artificial Sequence

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Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu Arg
35 40 45

Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu Ser
50 55 60

Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro Glu
65 70 75 80

Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro Asp
85 90 95

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

Lys Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln Arg
115 120 125

Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu Leu
130 135 140

Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu Pro
145 150 155 160

```
Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg Leu Val
                165                 170                 175

Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala Arg Ala
            180                 185                 190

Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr Trp Ser
        195                 200                 205

Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu Gly Gln
    210                 215                 220

Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp Arg Gln
225                 230                 235                 240

Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr Ile Leu
                245                 250                 255

Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro Ser Gly
            260                 265                 270

Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp
        275                 280                 285

Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln Met Asp
    290                 295                 300

Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys
305                 310                 315                 320

His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile
                325                 330                 335

Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp Ile Arg
            340                 345                 350

Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu Val
        355                 360                 365

Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile Asp Arg
```

```
    370                 375                 380

Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp Thr Leu
385                 390                 395                 400

Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu Glu Leu
                405                 410                 415

Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln Asp Leu
            420                 425                 430

Asp Thr Cys Asp Pro Arg Gln Leu Asp Val Leu Tyr Pro Lys Ala Arg
        435                 440                 445

Leu Ala Phe Gln Asn Met Asn Gly Ser Glu Tyr Phe Val Lys Ile Gln
    450                 455                 460

Ser Phe Leu Gly Gly Ala Pro Thr Glu Asp Leu Lys Ala Leu Ser Gln
465                 470                 475                 480

Gln Asn Val Ser Met Asp Leu Ala Thr Phe Met Lys Leu Arg Thr Asp
                485                 490                 495

Ala Val Leu Pro Leu Thr Val Ala Glu Val Gln Lys Leu Leu Gly Pro
            500                 505                 510

His Val Glu Gly Leu Lys Ala Glu Glu Arg His Arg Pro Val Arg Asp
        515                 520                 525

Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly Leu Gly
    530                 535                 540

Leu Gln Gly Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp Leu Ser Met
545                 550                 555                 560

Gln Glu Ala Leu Gly Ser Gly Glu Gly Arg Gly Ser Leu Leu Thr Cys
                565                 570                 575

Gly Asp Val Glu Glu Asn Pro Gly Pro Gly Ala Ala Pro Glu Pro Glu
            580                 585                 590
```

```
Arg Thr Pro Val Gly Gln Gly Ser Trp Ala His Pro Gly Arg Thr Arg
        595                 600                 605

Gly Pro Ser Asp Arg Gly Phe Cys Val Val Ser Pro Ala Arg Pro Ala
    610                 615                 620

Glu Glu Ala Thr Ser Leu Glu Gly Ala Leu Ser Gly Thr Arg His Ser
625                 630                 635                 640

His Pro Ser Val Gly Arg Gln His His Ala Gly Pro Pro Ser Thr Ser
                645                 650                 655

Arg Pro Pro Arg Pro Trp Asp Thr Pro Cys Pro Pro Val Tyr Ala Glu
            660                 665                 670

Thr Lys His Phe Leu Tyr Ser Ser Gly Asp Lys Glu Gln Leu Arg Pro
        675                 680                 685

Ser Phe Leu Leu Ser Ser Leu Arg Pro Ser Leu Thr Gly Ala Arg Arg
    690                 695                 700

Leu Val Glu Thr Ile Phe Leu Gly Ser Arg Pro Trp Met Pro Gly Thr
705                 710                 715                 720

Pro Arg Arg Leu Pro Arg Leu Pro Gln Arg Tyr Trp Gln Met Arg Pro
                725                 730                 735

Leu Phe Leu Glu Leu Leu Gly Asn His Ala Gln Cys Pro Tyr Gly Val
            740                 745                 750

Leu Leu Lys Thr His Cys Pro Leu Arg Ala Ala Val Thr Pro Ala Ala
        755                 760                 765

Gly Val Cys Ala Arg Glu Lys Pro Gln Gly Ser Val Ala Ala Pro Glu
    770                 775                 780

Glu Glu Asp Thr Asp Pro Arg Arg Leu Val Gln Leu Leu Arg Gln His
785                 790                 795                 800

Ser Ser Pro Trp Gln Val Tyr Gly Phe Val Arg Ala Cys Leu Arg Arg
```

```
                805                 810                 815

Leu Val Pro Pro Gly Leu Trp Gly Ser Arg His Asn Glu Arg Arg Phe
            820                 825                 830

Leu Arg Asn Thr Lys Lys Phe Ile Ser Leu Gly Lys His Ala Lys Leu
        835                 840                 845

Ser Leu Gln Glu Leu Thr Trp Lys Met Ser Val Arg Asp Cys Ala Trp
    850                 855                 860

Leu Arg Arg Ser Pro Gly Val Gly Cys Val Pro Ala Ala Glu His Arg
865                 870                 875                 880

Leu Arg Glu Glu Ile Leu Ala Lys Phe Leu His Trp Leu Met Ser Val
                885                 890                 895

Tyr Val Val Glu Leu Leu Arg Ser Phe Phe Tyr Val Thr Glu Thr Thr
            900                 905                 910

Phe Gln Lys Asn Arg Leu Phe Phe Tyr Arg Lys Ser Val Trp Ser Lys
        915                 920                 925

Leu Gln Ser Ile Gly Ile Arg Gln His Leu Lys Arg Val Gln Leu Arg
    930                 935                 940

Glu Leu Ser Glu Ala Glu Val Arg Gln His Arg Glu Ala Arg Pro Ala
945                 950                 955                 960

Leu Leu Thr Ser Arg Leu Arg Phe Ile Pro Lys Pro Asp Gly Leu Arg
                965                 970                 975

Pro Ile Val Asn Met Asp Tyr Val Val Gly Ala Arg Thr Phe Arg Arg
            980                 985                 990

Glu Lys Arg Ala Glu Arg Leu Thr  Ser Arg Val Lys Ala  Leu Phe Ser
        995                 1000                1005

Val Leu  Asn Tyr Glu Arg Ala  Arg Arg Pro Gly Leu  Leu Gly Ala
    1010                1015                1020
```

```
Ser Val  Leu Gly Leu Asp Asp  Ile His Arg Ala Trp  Arg Thr Phe
    1025                1030                1035

Val Leu  Arg Val Arg Ala Gln  Asp Pro Pro Pro Glu  Leu Tyr Phe
    1040                1045                1050

Val Lys  Val Ala Ile Thr Gly  Ala Tyr Asp Thr Ile  Pro Gln Asp
    1055                1060                1065

Arg Leu  Thr Glu Val Ile Ala  Ser Ile Ile Lys Pro  Gln Asn Thr
    1070                1075                1080

Tyr Cys  Val Arg Arg Tyr Ala  Val Val Gln Lys Ala  Ala His Gly
    1085                1090                1095

His Val  Arg Lys Ala Phe Lys  Ser His Val Ser Thr  Leu Thr Asp
    1100                1105                1110

Leu Gln  Pro Tyr Met Arg Gln  Phe Val Ala His Leu  Gln Glu Thr
    1115                1120                1125

Ser Pro  Leu Arg Asp Ala Val  Val Ile Glu Gln Ser  Ser Ser Leu
    1130                1135                1140

Asn Glu  Ala Ser Ser Gly Leu  Phe Asp Val Phe Leu  Arg Phe Met
    1145                1150                1155

Cys His  His Ala Val Arg Ile  Arg Gly Lys Ser Tyr  Val Gln Cys
    1160                1165                1170

Gln Gly  Ile Pro Gln Gly Ser  Ile Leu Ser Thr Leu  Leu Cys Ser
    1175                1180                1185

Leu Cys  Tyr Gly Asp Met Glu  Asn Lys Leu Phe Ala  Gly Ile Arg
    1190                1195                1200

Arg Asp  Gly Leu Leu Leu Arg  Leu Val Asp Asp Phe  Leu Leu Val
    1205                1210                1215

Thr Pro  His Leu Thr His Ala  Lys Thr Phe Leu Arg  Thr Leu Val
```

```
    1220                1225                1230

Arg Gly  Val Pro Glu Tyr Gly  Cys Val Val Asn Leu  Arg Lys Thr
    1235                1240                1245

Val Val  Asn Phe Pro Val Glu  Asp Glu Ala Leu Gly  Gly Thr Ala
    1250                1255                1260

Phe Val  Gln Met Pro Ala His  Gly Leu Phe Pro Trp  Cys Gly Leu
    1265                1270                1275

Leu Leu  Asp Thr Arg Thr Leu  Glu Val Gln Ser Asp  Tyr Ser Ser
    1280                1285                1290

Tyr Ala  Arg Thr Ser Ile Arg  Ala Ser Leu Thr Phe  Asn Arg Gly
    1295                1300                1305

Phe Lys  Ala Gly Arg Asn Met  Arg Arg Lys Leu Phe  Gly Val Leu
    1310                1315                1320

Arg Leu  Lys Cys His Ser Leu  Phe Leu Asp Leu Gln  Val Asn Ser
    1325                1330                1335

Leu Gln  Thr Val Cys Thr Asn  Ile Tyr Lys Ile Leu  Leu Leu Gln
    1340                1345                1350

Ala Tyr  Arg Phe His Ala Cys  Val Leu Gln Leu Pro  Phe His Gln
    1355                1360                1365

Gln Val  Trp Lys Asn Pro Thr  Phe Phe Leu Arg Val  Ile Ser Asp
    1370                1375                1380

Thr Ala  Ser Leu Cys Tyr Ser  Ile Leu Lys Ala Lys  Asn Ala Gly
    1385                1390                1395

Met Ser  Leu Gly Ala Lys Gly  Ala Ala Gly Pro Leu  Pro Ser Glu
    1400                1405                1410

Ala Val  Gln Trp Leu Cys His  Gln Ala Phe Leu Leu  Lys Leu Thr
    1415                1420                1425
```

```
Arg His  Arg Val Thr Tyr Val  Pro Leu Leu Gly Ser  Leu Arg Thr
    1430                1435                1440


Ala Gln  Thr Gln Leu Ser Arg  Lys Leu Pro Gly Thr  Thr Leu Thr
    1445                1450                1455


Ala Leu  Glu Ala Ala Ala Asn  Pro Ala Leu Pro Ser  Asp Phe Lys
    1460                1465                1470


Thr Ile  Leu Asp
    1475
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<210> 41
<211> 4383
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 41

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<211> 1461
<212> PRT
<213> Artificial Sequence

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<223> Synthetic Construct

<400> 42

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Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro Arg Gln
20 25 30

Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu Arg
35 40 45

Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu Ser
50 55 60

Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro Glu
65 70 75 80

Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro Asp
85 90 95

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

Lys Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln Arg
115 120 125

```
Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu Leu
    130                 135                 140

Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu Pro
145                 150                 155                 160

Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg Leu Val
                165                 170                 175

Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala Arg Ala
            180                 185                 190

Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr Trp Ser
        195                 200                 205

Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu Gly Gln
    210                 215                 220

Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp Arg Gln
225                 230                 235                 240

Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr Ile Leu
                245                 250                 255

Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro Ser Gly
            260                 265                 270

Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp
        275                 280                 285

Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln Met Asp
    290                 295                 300

Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys
305                 310                 315                 320

His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile
                325                 330                 335

Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp Ile Arg
```

```
            340                 345                 350

Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu Val
        355                 360                 365

Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile Asp Arg
    370                 375                 380

Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp Thr Leu
385                 390                 395                 400

Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu Glu Leu
                405                 410                 415

Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln Asp Leu
            420                 425                 430

Asp Thr Cys Asp Pro Arg Gln Leu Asp Val Leu Tyr Pro Lys Ala Arg
        435                 440                 445

Leu Ala Phe Gln Asn Met Asn Gly Ser Glu Tyr Phe Val Lys Ile Gln
    450                 455                 460

Ser Phe Leu Gly Gly Ala Pro Thr Glu Asp Leu Lys Ala Leu Ser Gln
465                 470                 475                 480

Gln Asn Val Ser Met Asp Leu Ala Thr Phe Met Lys Leu Arg Thr Asp
                485                 490                 495

Ala Val Leu Pro Leu Thr Val Ala Glu Val Gln Lys Leu Leu Gly Pro
            500                 505                 510

His Val Glu Gly Leu Lys Ala Glu Glu Arg His Arg Pro Val Arg Asp
        515                 520                 525

Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly Leu Gly
    530                 535                 540

Leu Gln Gly Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp Leu Ser Met
545                 550                 555                 560
```

```
Gln Glu Ala Leu Gly Gly Ser Gly Gly Gly Ala Ala Pro Glu Pro Glu
                565                 570                 575

Arg Thr Pro Val Gly Gln Gly Ser Trp Ala His Pro Gly Arg Thr Arg
            580                 585                 590

Gly Pro Ser Asp Arg Gly Phe Cys Val Val Ser Pro Ala Arg Pro Ala
        595                 600                 605

Glu Glu Ala Thr Ser Leu Glu Gly Ala Leu Ser Gly Thr Arg His Ser
    610                 615                 620

His Pro Ser Val Gly Arg Gln His His Ala Gly Pro Pro Ser Thr Ser
625                 630                 635                 640

Arg Pro Pro Arg Pro Trp Asp Thr Pro Cys Pro Pro Val Tyr Ala Glu
                645                 650                 655

Thr Lys His Phe Leu Tyr Ser Ser Gly Asp Lys Glu Gln Leu Arg Pro
            660                 665                 670

Ser Phe Leu Leu Ser Ser Leu Arg Pro Ser Leu Thr Gly Ala Arg Arg
        675                 680                 685

Leu Val Glu Thr Ile Phe Leu Gly Ser Arg Pro Trp Met Pro Gly Thr
    690                 695                 700

Pro Arg Arg Leu Pro Arg Leu Pro Gln Arg Tyr Trp Gln Met Arg Pro
705                 710                 715                 720

Leu Phe Leu Glu Leu Leu Gly Asn His Ala Gln Cys Pro Tyr Gly Val
                725                 730                 735

Leu Leu Lys Thr His Cys Pro Leu Arg Ala Ala Val Thr Pro Ala Ala
            740                 745                 750

Gly Val Cys Ala Arg Glu Lys Pro Gln Gly Ser Val Ala Ala Pro Glu
        755                 760                 765

Glu Glu Asp Thr Asp Pro Arg Arg Leu Val Gln Leu Leu Arg Gln His
```

```
    770                 775                 780

Ser Ser Pro Trp Gln Val Tyr Gly Phe Val Arg Ala Cys Leu Arg Arg
785                 790                 795                 800

Leu Val Pro Pro Gly Leu Trp Gly Ser Arg His Asn Glu Arg Arg Phe
                805                 810                 815

Leu Arg Asn Thr Lys Lys Phe Ile Ser Leu Gly Lys His Ala Lys Leu
            820                 825                 830

Ser Leu Gln Glu Leu Thr Trp Lys Met Ser Val Arg Asp Cys Ala Trp
        835                 840                 845

Leu Arg Arg Ser Pro Gly Val Gly Cys Val Pro Ala Ala Glu His Arg
    850                 855                 860

Leu Arg Glu Glu Ile Leu Ala Lys Phe Leu His Trp Leu Met Ser Val
865                 870                 875                 880

Tyr Val Val Glu Leu Leu Arg Ser Phe Phe Tyr Val Thr Glu Thr Thr
                885                 890                 895

Phe Gln Lys Asn Arg Leu Phe Phe Tyr Arg Lys Ser Val Trp Ser Lys
            900                 905                 910

Leu Gln Ser Ile Gly Ile Arg Gln His Leu Lys Arg Val Gln Leu Arg
        915                 920                 925

Glu Leu Ser Glu Ala Glu Val Arg Gln His Arg Glu Ala Arg Pro Ala
    930                 935                 940

Leu Leu Thr Ser Arg Leu Arg Phe Ile Pro Lys Pro Asp Gly Leu Arg
945                 950                 955                 960

Pro Ile Val Asn Met Asp Tyr Val Val Gly Ala Arg Thr Phe Arg Arg
                965                 970                 975

Glu Lys Arg Ala Glu Arg Leu Thr Ser Arg Val Lys Ala Leu Phe Ser
            980                 985                 990
```

```
Val Leu Asn Tyr Glu Arg Ala Arg  Arg Pro Gly Leu Leu  Gly Ala Ser
        995                 1000                1005


Val Leu  Gly Leu Asp Asp Ile  His Arg Ala Trp Arg  Thr Phe Val
    1010                1015                1020


Leu Arg  Val Arg Ala Gln Asp  Pro Pro Pro Glu Leu  Tyr Phe Val
    1025                1030                1035


Lys Val  Ala Ile Thr Gly Ala  Tyr Asp Thr Ile Pro  Gln Asp Arg
    1040                1045                1050


Leu Thr  Glu Val Ile Ala Ser  Ile Ile Lys Pro Gln  Asn Thr Tyr
    1055                1060                1065


Cys Val  Arg Arg Tyr Ala Val  Val Gln Lys Ala Ala  His Gly His
    1070                1075                1080


Val Arg  Lys Ala Phe Lys Ser  His Val Ser Thr Leu  Thr Asp Leu
    1085                1090                1095


Gln Pro  Tyr Met Arg Gln Phe  Val Ala His Leu Gln  Glu Thr Ser
    1100                1105                1110


Pro Leu  Arg Asp Ala Val Val  Ile Glu Gln Ser Ser  Ser Leu Asn
    1115                1120                1125


Glu Ala  Ser Ser Gly Leu Phe  Asp Val Phe Leu Arg  Phe Met Cys
    1130                1135                1140


His His  Ala Val Arg Ile Arg  Gly Lys Ser Tyr Val  Gln Cys Gln
    1145                1150                1155


Gly Ile  Pro Gln Gly Ser Ile  Leu Ser Thr Leu Leu  Cys Ser Leu
    1160                1165                1170


Cys Tyr  Gly Asp Met Glu Asn  Lys Leu Phe Ala Gly  Ile Arg Arg
    1175                1180                1185


Asp Gly  Leu Leu Leu Arg Leu  Val Asp Asp Phe Leu  Leu Val Thr
```

```
    1190                1195                1200

Pro His  Leu Thr His Ala Lys  Thr Phe Leu Arg Thr  Leu Val Arg
    1205                1210                1215

Gly Val  Pro Glu Tyr Gly Cys  Val Val Asn Leu Arg  Lys Thr Val
    1220                1225                1230

Val Asn  Phe Pro Val Glu Asp  Glu Ala Leu Gly Gly  Thr Ala Phe
    1235                1240                1245

Val Gln  Met Pro Ala His Gly  Leu Phe Pro Trp Cys  Gly Leu Leu
    1250                1255                1260

Leu Asp  Thr Arg Thr Leu Glu  Val Gln Ser Asp Tyr  Ser Ser Tyr
    1265                1270                1275

Ala Arg  Thr Ser Ile Arg Ala  Ser Leu Thr Phe Asn  Arg Gly Phe
    1280                1285                1290

Lys Ala  Gly Arg Asn Met Arg  Arg Lys Leu Phe Gly  Val Leu Arg
    1295                1300                1305

Leu Lys  Cys His Ser Leu Phe  Leu Asp Leu Gln Val  Asn Ser Leu
    1310                1315                1320

Gln Thr  Val Cys Thr Asn Ile  Tyr Lys Ile Leu Leu  Leu Gln Ala
    1325                1330                1335

Tyr Arg  Phe His Ala Cys Val  Leu Gln Leu Pro Phe  His Gln Gln
    1340                1345                1350

Val Trp  Lys Asn Pro Thr Phe  Phe Leu Arg Val Ile  Ser Asp Thr
    1355                1360                1365

Ala Ser  Leu Cys Tyr Ser Ile  Leu Lys Ala Lys Asn  Ala Gly Met
    1370                1375                1380

Ser Leu  Gly Ala Lys Gly Ala  Ala Gly Pro Leu Pro  Ser Glu Ala
    1385                1390                1395
```

Val Gln Trp Leu Cys His Gln Ala Phe Leu Leu Lys Leu Thr Arg
    1400   1405   1410

His Arg Val Thr Tyr Val Pro Leu Leu Gly Ser Leu Arg Thr Ala
    1415   1420   1425

Gln Thr Gln Leu Ser Arg Lys Leu Pro Gly Thr Thr Leu Thr Ala
    1430   1435   1440

Leu Glu Ala Ala Ala Asn Pro Ala Leu Pro Ser Asp Phe Lys Thr
    1445   1450   1455

Ile Leu Asp
    1460

<210> 43
<211> 6117
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 43
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gccacccaga gaagcagcgt gccaagcagc accgagaaga acgccgtgtc catgaccagc 180

tccgtgctga gcagccactc tcctggcagc ggcagcagca caacacaggg ccaggatgtg 240

acactggccc ctgccacaga acctgcctct ggatctgccg ccacctgggg acaggacgtg 300

acaagcgtgc cagtgaccag acctgccctg ggctctacaa caccccctgc ccacgatgtg 360

accagcgccc ctgataacaa gcctgcccct ggaagcacag cccctccagc tcatggcgtg 420

acctctgccc cagataccag accagcccca ggatctacag ccccacccgc acacggcgtg 480

acaagtgccc ctgacacaag acccgctcca ggctctactg ctcctcctgc ccatggcgtg 540

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acatcagctc ccgacactag acctgctccc ggatcaaccg ctccaccagc tcacggcgtg 660

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gccagagcca caacaacccc agccagcaag agcacccccт tcagcatccc tagccaccac 840

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ggcgtctcat tcttctttct gtccttccac atcagcaacc tgcagttcaa cagcagcctg 1020

gaagatccca gcaccgacta ctaccaggaa ctgcagcggg atatcagcga gatgttcctg 1080

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<210> 44
<211> 2039
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 44

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

Leu Thr Val Leu Thr Val Val Thr Gly Ser Gly His Ala Ser Ser Thr
20 25 30

Pro Gly Gly Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro
35 40 45

Ser Ser Thr Glu Lys Asn Ala Val Ser Met Thr Ser Ser Val Leu Ser
50 55 60

Ser His Ser Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val
65 70 75 80

Thr Leu Ala Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp
85 90 95

Gly Gln Asp Val Thr Ser Val Pro Val Thr Arg Pro Ala Leu Gly Ser

```
            100                 105                 110

Thr Thr Pro Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro
        115                 120                 125

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    130                 135                 140

Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val
145                 150                 155                 160

Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro
                165                 170                 175

Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser
            180                 185                 190

Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro
        195                 200                 205

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    210                 215                 220

Asp Thr Arg Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val
225                 230                 235                 240

Thr Ser Ala Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His
                245                 250                 255

Asn Gly Thr Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr
            260                 265                 270

Pro Phe Ser Ile Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala
        275                 280                 285

Ser His Ser Thr Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val
    290                 295                 300

Pro Pro Leu Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr
305                 310                 315                 320
```

```
Gly Val Ser Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln Phe
                325                 330                 335

Asn Ser Ser Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln
            340                 345                 350

Arg Asp Ile Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe
        355                 360                 365

Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln
    370                 375                 380

Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp Val Glu
385                 390                 395                 400

Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala Ala Ser Arg Tyr Asn Leu
                405                 410                 415

Thr Ile Ser Asp Val Ser Val Ser Asp Val Pro Phe Pro Phe Ser Ala
            420                 425                 430

Gln Ser Gly Ala Gly Val Pro Gly Trp Gly Ile Ala Leu Leu Val Leu
        435                 440                 445

Val Cys Val Leu Val Ala Leu Ala Ile Val Tyr Leu Ile Ala Leu Ala
    450                 455                 460

Val Cys Gln Cys Arg Arg Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro
465                 470                 475                 480

Ala Arg Asp Thr Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr His Thr
                485                 490                 495

His Gly Arg Tyr Val Pro Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu
            500                 505                 510

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

Ala Val Ala Ala Ala Ser Ala Asn Leu Gly Ser Gly Arg Ile Phe Asn
```

```
    530                 535                 540

Ala His Tyr Ala Gly Tyr Phe Ala Asp Leu Leu Ile His Asp Ile Glu
545                 550                 555                 560

Thr Asn Pro Gly Pro Leu Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro
                565                 570                 575

Leu Asp Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro
            580                 585                 590

Arg Gln Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr
        595                 600                 605

Glu Arg Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys
    610                 615                 620

Leu Ser Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro
625                 630                 635                 640

Pro Glu Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn
                645                 650                 655

Pro Asp Ala Phe Ser Gly Pro Gln Ala Cys Thr Arg Phe Phe Ser Arg
            660                 665                 670

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

Gln Arg Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser
    690                 695                 700

Leu Leu Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp
705                 710                 715                 720

Leu Pro Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg
                725                 730                 735

Leu Val Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala
            740                 745                 750
```

```
Arg Ala Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr
        755                 760                 765

Trp Ser Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu
    770                 775                 780

Gly Gln Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp
785                 790                 795                 800

Arg Gln Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr
                805                 810                 815

Ile Leu Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro
            820                 825                 830

Ser Gly Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys
        835                 840                 845

Lys Trp Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln
    850                 855                 860

Met Asp Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val
865                 870                 875                 880

Leu Lys His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser
                885                 890                 895

Val Ile Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp
            900                 905                 910

Ile Arg Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu
        915                 920                 925

Glu Val Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile
    930                 935                 940

Asp Arg Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp
945                 950                 955                 960

Thr Leu Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu
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```
               965                 970                 975

Glu Leu Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln
            980                 985                 990

Asp Leu Asp Thr Cys Asp Pro Arg  Gln Leu Asp Val Leu  Tyr Pro Lys
        995                 1000                1005

Ala Arg  Leu Ala Phe Gln Asn  Met Asn Gly Ser Glu  Tyr Phe Val
    1010                1015                1020

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

Ala Leu  Ser Gln Gln Asn Val  Ser Met Asp Leu Ala  Thr Phe Met
    1040                1045                1050

Lys Leu  Arg Thr Asp Ala Val  Leu Pro Leu Thr Val  Ala Glu Val
    1055                1060                1065

Gln Lys  Leu Leu Gly Pro His  Val Glu Gly Leu Lys  Ala Glu Glu
    1070                1075                1080

Arg His  Arg Pro Val Arg Asp  Trp Ile Leu Arg Gln  Arg Gln Asp
    1085                1090                1095

Asp Leu  Asp Thr Leu Gly Leu  Gly Leu Gln Gly Gly  Ile Pro Asn
    1100                1105                1110

Gly Tyr  Leu Val Leu Asp Leu  Ser Met Gln Glu Ala  Leu Gly Ser
    1115                1120                1125

Gly Glu  Gly Arg Gly Ser Leu  Leu Thr Cys Gly Asp  Val Glu Glu
    1130                1135                1140

Asn Pro  Gly Pro Gly Ala Ala  Pro Glu Pro Glu Arg  Thr Pro Val
    1145                1150                1155

Gly Gln  Gly Ser Trp Ala His  Pro Gly Arg Thr Arg  Gly Pro Ser
    1160                1165                1170
```

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

Ala Thr  Ser Leu Glu Gly Ala  Leu Ser Gly Thr Arg  His Ser His
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Pro Ser  Val Gly Arg Gln His  His Ala Gly Pro Pro  Ser Thr Ser
    1205                1210                1215

Arg Pro  Pro Arg Pro Trp Asp  Thr Pro Cys Pro Pro  Val Tyr Ala
    1220                1225                1230

Glu Thr  Lys His Phe Leu Tyr  Ser Ser Gly Asp Lys  Glu Gln Leu
    1235                1240                1245

Arg Pro  Ser Phe Leu Leu Ser  Ser Leu Arg Pro Ser  Leu Thr Gly
    1250                1255                1260

Ala Arg  Arg Leu Val Glu Thr  Ile Phe Leu Gly Ser  Arg Pro Trp
    1265                1270                1275

Met Pro  Gly Thr Pro Arg Arg  Leu Pro Arg Leu Pro  Gln Arg Tyr
    1280                1285                1290

Trp Gln  Met Arg Pro Leu Phe  Leu Glu Leu Leu Gly  Asn His Ala
    1295                1300                1305

Gln Cys  Pro Tyr Gly Val Leu  Leu Lys Thr His Cys  Pro Leu Arg
    1310                1315                1320

Ala Ala  Val Thr Pro Ala Ala  Gly Val Cys Ala Arg  Glu Lys Pro
    1325                1330                1335

Gln Gly  Ser Val Ala Ala Pro  Glu Glu Glu Asp Thr  Asp Pro Arg
    1340                1345                1350

Arg Leu  Val Gln Leu Leu Arg  Gln His Ser Ser Pro  Trp Gln Val
    1355                1360                1365

Tyr Gly  Phe Val Arg Ala Cys  Leu Arg Arg Leu Val  Pro Pro Gly
```

```
    1370                1375                1380

Leu Trp  Gly Ser Arg His Asn  Glu Arg Arg Phe Leu  Arg Asn Thr
    1385                1390                1395

Lys Lys  Phe Ile Ser Leu Gly  Lys His Ala Lys Leu  Ser Leu Gln
    1400                1405                1410

Glu Leu  Thr Trp Lys Met Ser  Val Arg Asp Cys Ala  Trp Leu Arg
    1415                1420                1425

Arg Ser  Pro Gly Val Gly Cys  Val Pro Ala Ala Glu  His Arg Leu
    1430                1435                1440

Arg Glu  Glu Ile Leu Ala Lys  Phe Leu His Trp Leu  Met Ser Val
    1445                1450                1455

Tyr Val  Val Glu Leu Leu Arg  Ser Phe Phe Tyr Val  Thr Glu Thr
    1460                1465                1470

Thr Phe  Gln Lys Asn Arg Leu  Phe Phe Tyr Arg Lys  Ser Val Trp
    1475                1480                1485

Ser Lys  Leu Gln Ser Ile Gly  Ile Arg Gln His Leu  Lys Arg Val
    1490                1495                1500

Gln Leu  Arg Glu Leu Ser Glu  Ala Glu Val Arg Gln  His Arg Glu
    1505                1510                1515

Ala Arg  Pro Ala Leu Leu Thr  Ser Arg Leu Arg Phe  Ile Pro Lys
    1520                1525                1530

Pro Asp  Gly Leu Arg Pro Ile  Val Asn Met Asp Tyr  Val Val Gly
    1535                1540                1545

Ala Arg  Thr Phe Arg Arg Glu  Lys Arg Ala Glu Arg  Leu Thr Ser
    1550                1555                1560

Arg Val  Lys Ala Leu Phe Ser  Val Leu Asn Tyr Glu  Arg Ala Arg
    1565                1570                1575
```

```
Arg Pro  Gly Leu Leu Gly Ala  Ser Val Leu Gly Leu  Asp Asp Ile
    1580                1585                1590

His Arg  Ala Trp Arg Thr Phe  Val Leu Arg Val Arg  Ala Gln Asp
    1595                1600                1605

Pro Pro  Pro Glu Leu Tyr Phe  Val Lys Val Ala Ile  Thr Gly Ala
    1610                1615                1620

Tyr Asp  Thr Ile Pro Gln Asp  Arg Leu Thr Glu Val  Ile Ala Ser
    1625                1630                1635

Ile Ile  Lys Pro Gln Asn Thr  Tyr Cys Val Arg Arg  Tyr Ala Val
    1640                1645                1650

Val Gln  Lys Ala Ala His Gly  His Val Arg Lys Ala  Phe Lys Ser
    1655                1660                1665

His Val  Ser Thr Leu Thr Asp  Leu Gln Pro Tyr Met  Arg Gln Phe
    1670                1675                1680

Val Ala  His Leu Gln Glu Thr  Ser Pro Leu Arg Asp  Ala Val Val
    1685                1690                1695

Ile Glu  Gln Ser Ser Ser Leu  Asn Glu Ala Ser Ser  Gly Leu Phe
    1700                1705                1710

Asp Val  Phe Leu Arg Phe Met  Cys His His Ala Val  Arg Ile Arg
    1715                1720                1725

Gly Lys  Ser Tyr Val Gln Cys  Gln Gly Ile Pro Gln  Gly Ser Ile
    1730                1735                1740

Leu Ser  Thr Leu Leu Cys Ser  Leu Cys Tyr Gly Asp  Met Glu Asn
    1745                1750                1755

Lys Leu  Phe Ala Gly Ile Arg  Arg Asp Gly Leu Leu  Leu Arg Leu
    1760                1765                1770

Val Asp  Asp Phe Leu Leu Val  Thr Pro His Leu Thr  His Ala Lys
```

```
    1775                1780                1785

Thr Phe  Leu Arg Thr Leu Val  Arg Gly Val Pro Glu  Tyr Gly Cys
    1790                1795                1800

Val Val  Asn Leu Arg Lys Thr  Val Val Asn Phe Pro  Val Glu Asp
    1805                1810                1815

Glu Ala  Leu Gly Gly Thr Ala  Phe Val Gln Met Pro  Ala His Gly
    1820                1825                1830

Leu Phe  Pro Trp Cys Gly Leu  Leu Leu Asp Thr Arg  Thr Leu Glu
    1835                1840                1845

Val Gln  Ser Asp Tyr Ser Ser  Tyr Ala Arg Thr Ser  Ile Arg Ala
    1850                1855                1860

Ser Leu  Thr Phe Asn Arg Gly  Phe Lys Ala Gly Arg  Asn Met Arg
    1865                1870                1875

Arg Lys  Leu Phe Gly Val Leu  Arg Leu Lys Cys His  Ser Leu Phe
    1880                1885                1890

Leu Asp  Leu Gln Val Asn Ser  Leu Gln Thr Val Cys  Thr Asn Ile
    1895                1900                1905

Tyr Lys  Ile Leu Leu Leu Gln  Ala Tyr Arg Phe His  Ala Cys Val
    1910                1915                1920

Leu Gln  Leu Pro Phe His Gln  Gln Val Trp Lys Asn  Pro Thr Phe
    1925                1930                1935

Phe Leu  Arg Val Ile Ser Asp  Thr Ala Ser Leu Cys  Tyr Ser Ile
    1940                1945                1950

Leu Lys  Ala Lys Asn Ala Gly  Met Ser Leu Gly Ala  Lys Gly Ala
    1955                1960                1965

Ala Gly  Pro Leu Pro Ser Glu  Ala Val Gln Trp Leu  Cys His Gln
    1970                1975                1980
```

Ala Phe Leu Leu Lys Leu Thr Arg His Arg Val Thr Tyr Val Pro
    1985   1990   1995

Leu Leu Gly Ser Leu Arg Thr Ala Gln Thr Gln Leu Ser Arg Lys
    2000   2005   2010

Leu Pro Gly Thr Thr Leu Thr Ala Leu Glu Ala Ala Ala Asn Pro
    2015   2020   2025

Ala Leu Pro Ser Asp Phe Lys Thr Ile Leu Asp
    2030   2035

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Pro Gly Gly Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro
35 40 45

Ser Ser Thr Glu Lys Asn Ala Val Ser Met Thr Ser Ser Val Leu Ser
50 55 60

Ser His Ser Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val
65 70 75 80

Thr Leu Ala Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp
85 90 95

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

Thr Thr Pro Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro

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        115                 120                 125

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    130                 135                 140

Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val
145                 150                 155                 160

Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro
                165                 170                 175

Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser
            180                 185                 190

Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro
        195                 200                 205

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    210                 215                 220

Asp Thr Arg Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val
225                 230                 235                 240

Thr Ser Ala Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His
                245                 250                 255

Asn Gly Thr Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr
            260                 265                 270

Pro Phe Ser Ile Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala
        275                 280                 285

Ser His Ser Thr Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val
    290                 295                 300

Pro Pro Leu Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr
305                 310                 315                 320

Gly Val Ser Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln Phe
                325                 330                 335
```

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Asn Ser Ser Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln
            340                 345                 350

Arg Asp Ile Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe
        355                 360                 365

Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln
    370                 375                 380

Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp Val Glu
385                 390                 395                 400

Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala Ala Ser Arg Tyr Asn Leu
                405                 410                 415

Thr Ile Ser Asp Val Ser Val Ser Asp Val Pro Phe Pro Phe Ser Ala
            420                 425                 430

Gln Ser Gly Ala Gly Val Pro Gly Trp Gly Ile Ala Leu Leu Val Leu
        435                 440                 445

Val Cys Val Leu Val Ala Leu Ala Ile Val Tyr Leu Ile Ala Leu Ala
    450                 455                 460

Val Cys Gln Cys Arg Arg Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro
465                 470                 475                 480

Ala Arg Asp Thr Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr His Thr
                485                 490                 495

His Gly Arg Tyr Val Pro Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu
            500                 505                 510

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

Ala Val Ala Ala Ala Ser Ala Asn Leu Gly Ser Gly Thr Ile Leu Ser
    530                 535                 540

Glu Gly Ala Thr Asn Phe Ser Leu Leu Lys Leu Ala Gly Asp Val Glu
```

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545                 550                 555                 560

Leu Asn Pro Gly Pro Gly Ala Ala Pro Glu Pro Glu Arg Thr Pro Val
                565                 570                 575

Gly Gln Gly Ser Trp Ala His Pro Gly Arg Thr Arg Gly Pro Ser Asp
            580                 585                 590

Arg Gly Phe Cys Val Val Ser Pro Ala Arg Pro Ala Glu Glu Ala Thr
        595                 600                 605

Ser Leu Glu Gly Ala Leu Ser Gly Thr Arg His Ser His Pro Ser Val
    610                 615                 620

Gly Arg Gln His His Ala Gly Pro Pro Ser Thr Ser Arg Pro Pro Arg
625                 630                 635                 640

Pro Trp Asp Thr Pro Cys Pro Pro Val Tyr Ala Glu Thr Lys His Phe
                645                 650                 655

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

Ser Ser Leu Arg Pro Ser Leu Thr Gly Ala Arg Arg Leu Val Glu Thr
        675                 680                 685

Ile Phe Leu Gly Ser Arg Pro Trp Met Pro Gly Thr Pro Arg Arg Leu
    690                 695                 700

Pro Arg Leu Pro Gln Arg Tyr Trp Gln Met Arg Pro Leu Phe Leu Glu
705                 710                 715                 720

Leu Leu Gly Asn His Ala Gln Cys Pro Tyr Gly Val Leu Leu Lys Thr
                725                 730                 735

His Cys Pro Leu Arg Ala Ala Val Thr Pro Ala Ala Gly Val Cys Ala
            740                 745                 750

Arg Glu Lys Pro Gln Gly Ser Val Ala Ala Pro Glu Glu Glu Asp Thr
        755                 760                 765
```

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Asp Pro Arg Arg Leu Val Gln Leu Leu Arg Gln His Ser Ser Pro Trp
    770                 775                 780

Gln Val Tyr Gly Phe Val Arg Ala Cys Leu Arg Arg Leu Val Pro Pro
785                 790                 795                 800

Gly Leu Trp Gly Ser Arg His Asn Glu Arg Arg Phe Leu Arg Asn Thr
                805                 810                 815

Lys Lys Phe Ile Ser Leu Gly Lys His Ala Lys Leu Ser Leu Gln Glu
            820                 825                 830

Leu Thr Trp Lys Met Ser Val Arg Asp Cys Ala Trp Leu Arg Arg Ser
        835                 840                 845

Pro Gly Val Gly Cys Val Pro Ala Ala Glu His Arg Leu Arg Glu Glu
    850                 855                 860

Ile Leu Ala Lys Phe Leu His Trp Leu Met Ser Val Tyr Val Val Glu
865                 870                 875                 880

Leu Leu Arg Ser Phe Phe Tyr Val Thr Glu Thr Thr Phe Gln Lys Asn
                885                 890                 895

Arg Leu Phe Phe Tyr Arg Lys Ser Val Trp Ser Lys Leu Gln Ser Ile
            900                 905                 910

Gly Ile Arg Gln His Leu Lys Arg Val Gln Leu Arg Glu Leu Ser Glu
        915                 920                 925

Ala Glu Val Arg Gln His Arg Glu Ala Arg Pro Ala Leu Leu Thr Ser
    930                 935                 940

Arg Leu Arg Phe Ile Pro Lys Pro Asp Gly Leu Arg Pro Ile Val Asn
945                 950                 955                 960

Met Asp Tyr Val Val Gly Ala Arg Thr Phe Arg Arg Glu Lys Arg Ala
                965                 970                 975

Glu Arg Leu Thr Ser Arg Val Lys Ala Leu Phe Ser Val Leu Asn Tyr
```

```
           980                 985                 990

Glu Arg Ala Arg Arg Pro Gly Leu  Leu Gly Ala Ser Val  Leu Gly Leu
        995                1000                1005

Asp Asp  Ile His Arg Ala Trp  Arg Thr Phe Val Leu  Arg Val Arg
    1010                1015                1020

Ala Gln  Asp Pro Pro Pro Glu  Leu Tyr Phe Val Lys  Val Ala Ile
    1025                1030                1035

Thr Gly  Ala Tyr Asp Thr Ile  Pro Gln Asp Arg Leu  Thr Glu Val
    1040                1045                1050

Ile Ala  Ser Ile Ile Lys Pro  Gln Asn Thr Tyr Cys  Val Arg Arg
    1055                1060                1065

Tyr Ala  Val Val Gln Lys Ala  Ala His Gly His Val  Arg Lys Ala
    1070                1075                1080

Phe Lys  Ser His Val Ser Thr  Leu Thr Asp Leu Gln  Pro Tyr Met
    1085                1090                1095

Arg Gln  Phe Val Ala His Leu  Gln Glu Thr Ser Pro  Leu Arg Asp
    1100                1105                1110

Ala Val  Val Ile Glu Gln Ser  Ser Ser Leu Asn Glu  Ala Ser Ser
    1115                1120                1125

Gly Leu  Phe Asp Val Phe Leu  Arg Phe Met Cys His  His Ala Val
    1130                1135                1140

Arg Ile  Arg Gly Lys Ser Tyr  Val Gln Cys Gln Gly  Ile Pro Gln
    1145                1150                1155

Gly Ser  Ile Leu Ser Thr Leu  Leu Cys Ser Leu Cys  Tyr Gly Asp
    1160                1165                1170

Met Glu  Asn Lys Leu Phe Ala  Gly Ile Arg Arg Asp  Gly Leu Leu
    1175                1180                1185
```

```
Leu Arg  Leu Val Asp Asp Phe  Leu Leu Val Thr Pro  His Leu Thr
    1190                1195                1200

His Ala  Lys Thr Phe Leu Arg  Thr Leu Val Arg Gly  Val Pro Glu
    1205                1210                1215

Tyr Gly  Cys Val Val Asn Leu  Arg Lys Thr Val Val  Asn Phe Pro
    1220                1225                1230

Val Glu  Asp Glu Ala Leu Gly  Gly Thr Ala Phe Val  Gln Met Pro
    1235                1240                1245

Ala His  Gly Leu Phe Pro Trp  Cys Gly Leu Leu Leu  Asp Thr Arg
    1250                1255                1260

Thr Leu  Glu Val Gln Ser Asp  Tyr Ser Ser Tyr Ala  Arg Thr Ser
    1265                1270                1275

Ile Arg  Ala Ser Leu Thr Phe  Asn Arg Gly Phe Lys  Ala Gly Arg
    1280                1285                1290

Asn Met  Arg Arg Lys Leu Phe  Gly Val Leu Arg Leu  Lys Cys His
    1295                1300                1305

Ser Leu  Phe Leu Asp Leu Gln  Val Asn Ser Leu Gln  Thr Val Cys
    1310                1315                1320

Thr Asn  Ile Tyr Lys Ile Leu  Leu Leu Gln Ala Tyr  Arg Phe His
    1325                1330                1335

Ala Cys  Val Leu Gln Leu Pro  Phe His Gln Gln Val  Trp Lys Asn
    1340                1345                1350

Pro Thr  Phe Phe Leu Arg Val  Ile Ser Asp Thr Ala  Ser Leu Cys
    1355                1360                1365

Tyr Ser  Ile Leu Lys Ala Lys  Asn Ala Gly Met Ser  Leu Gly Ala
    1370                1375                1380

Lys Gly  Ala Ala Gly Pro Leu  Pro Ser Glu Ala Val  Gln Trp Leu
```

```
    1385                1390                1395

Cys His  Gln Ala Phe Leu Leu  Lys Leu Thr Arg His  Arg Val Thr
    1400                1405                1410

Tyr Val  Pro Leu Leu Gly Ser  Leu Arg Thr Ala Gln  Thr Gln Leu
    1415                1420                1425

Ser Arg  Lys Leu Pro Gly Thr  Thr Leu Thr Ala Leu  Glu Ala Ala
    1430                1435                1440

Ala Asn  Pro Ala Leu Pro Ser  Asp Phe Lys Thr Ile  Leu Asp Gly
    1445                1450                1455

Ser Gly  Glu Gly Arg Gly Ser  Leu Leu Thr Cys Gly  Asp Val Glu
    1460                1465                1470

Glu Asn  Pro Gly Pro Leu Ala  Gly Glu Thr Gly Gln  Glu Ala Ala
    1475                1480                1485

Pro Leu  Asp Gly Val Leu Ala  Asn Pro Pro Asn Ile  Ser Ser Leu
    1490                1495                1500

Ser Pro  Arg Gln Leu Leu Gly  Phe Pro Cys Ala Glu  Val Ser Gly
    1505                1510                1515

Leu Ser  Thr Glu Arg Val Arg  Glu Leu Ala Val Ala  Leu Ala Gln
    1520                1525                1530

Lys Asn  Val Lys Leu Ser Thr  Glu Gln Leu Arg Cys  Leu Ala His
    1535                1540                1545

Arg Leu  Ser Glu Pro Pro Glu  Asp Leu Asp Ala Leu  Pro Leu Asp
    1550                1555                1560

Leu Leu  Leu Phe Leu Asn Pro  Asp Ala Phe Ser Gly  Pro Gln Ala
    1565                1570                1575

Cys Thr  Arg Phe Phe Ser Arg  Ile Thr Lys Ala Asn  Val Asp Leu
    1580                1585                1590
```

```
Leu Pro  Arg Gly Ala Pro Glu  Arg Gln Arg Leu Leu  Pro Ala Ala
    1595                1600                1605

Leu Ala  Cys Trp Gly Val Arg  Gly Ser Leu Leu Ser  Glu Ala Asp
    1610                1615                1620

Val Arg  Ala Leu Gly Gly Leu  Ala Cys Asp Leu Pro  Gly Arg Phe
    1625                1630                1635

Val Ala  Glu Ser Ala Glu Val  Leu Leu Pro Arg Leu  Val Ser Cys
    1640                1645                1650

Pro Gly  Pro Leu Asp Gln Asp  Gln Gln Glu Ala Ala  Arg Ala Ala
    1655                1660                1665

Leu Gln  Gly Gly Gly Pro Pro  Tyr Gly Pro Pro Ser  Thr Trp Ser
    1670                1675                1680

Val Ser  Thr Met Asp Ala Leu  Arg Gly Leu Leu Pro  Val Leu Gly
    1685                1690                1695

Gln Pro  Ile Ile Arg Ser Ile  Pro Gln Gly Ile Val  Ala Ala Trp
    1700                1705                1710

Arg Gln  Arg Ser Ser Arg Asp  Pro Ser Trp Arg Gln  Pro Glu Arg
    1715                1720                1725

Thr Ile  Leu Arg Pro Arg Phe  Arg Arg Glu Val Glu  Lys Thr Ala
    1730                1735                1740

Cys Pro  Ser Gly Lys Lys Ala  Arg Glu Ile Asp Glu  Ser Leu Ile
    1745                1750                1755

Phe Tyr  Lys Lys Trp Glu Leu  Glu Ala Cys Val Asp  Ala Ala Leu
    1760                1765                1770

Leu Ala  Thr Gln Met Asp Arg  Val Asn Ala Ile Pro  Phe Thr Tyr
    1775                1780                1785

Glu Gln  Leu Asp Val Leu Lys  His Lys Leu Asp Glu  Leu Tyr Pro
```

```
    1790                1795                1800

Gln Gly  Tyr Pro Glu Ser Val  Ile Gln His Leu Gly  Tyr Leu Phe
    1805                1810                1815

Leu Lys  Met Ser Pro Glu Asp  Ile Arg Lys Trp Asn  Val Thr Ser
    1820                1825                1830

Leu Glu  Thr Leu Lys Ala Leu  Leu Glu Val Asn Lys  Gly His Glu
    1835                1840                1845

Met Ser  Pro Gln Val Ala Thr  Leu Ile Asp Arg Phe  Val Lys Gly
    1850                1855                1860

Arg Gly  Gln Leu Asp Lys Asp  Thr Leu Asp Thr Leu  Thr Ala Phe
    1865                1870                1875

Tyr Pro  Gly Tyr Leu Cys Ser  Leu Ser Pro Glu Glu  Leu Ser Ser
    1880                1885                1890

Val Pro  Pro Ser Ser Ile Trp  Ala Val Arg Pro Gln  Asp Leu Asp
    1895                1900                1905

Thr Cys  Asp Pro Arg Gln Leu  Asp Val Leu Tyr Pro  Lys Ala Arg
    1910                1915                1920

Leu Ala  Phe Gln Asn Met Asn  Gly Ser Glu Tyr Phe  Val Lys Ile
    1925                1930                1935

Gln Ser  Phe Leu Gly Gly Ala  Pro Thr Glu Asp Leu  Lys Ala Leu
    1940                1945                1950

Ser Gln  Gln Asn Val Ser Met  Asp Leu Ala Thr Phe  Met Lys Leu
    1955                1960                1965

Arg Thr  Asp Ala Val Leu Pro  Leu Thr Val Ala Glu  Val Gln Lys
    1970                1975                1980

Leu Leu  Gly Pro His Val Glu  Gly Leu Lys Ala Glu  Glu Arg His
    1985                1990                1995
```

Arg Pro Val Arg Asp Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu
2000 2005 2010

Asp Thr Leu Gly Leu Gly Leu Gln Gly Gly Ile Pro Asn Gly Tyr
2015 2020 2025

Leu Val Leu Asp Leu Ser Met Gln Glu Ala Leu
2030 2035

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<211> 6138
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<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 47
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<211> 2046
<212> PRT
<213> Artificial Sequence

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<400> 48

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

Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu Ser
50 55 60

Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro Glu
65 70 75 80

Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro Asp
85 90 95

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

Lys Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln Arg
115 120 125

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Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu Leu
    130                 135                 140

Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu Pro
145                 150                 155                 160

Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg Leu Val
                165                 170                 175

Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala Arg Ala
            180                 185                 190

Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr Trp Ser
        195                 200                 205

Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu Gly Gln
    210                 215                 220

Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp Arg Gln
225                 230                 235                 240

Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr Ile Leu
                245                 250                 255

Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro Ser Gly
            260                 265                 270

Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp
        275                 280                 285

Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln Met Asp
    290                 295                 300

Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys
305                 310                 315                 320

His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile
                325                 330                 335

Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp Ile Arg
```

```
            340                 345                 350

Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu Val
        355                 360                 365

Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile Asp Arg
    370                 375                 380

Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp Thr Leu
385                 390                 395                 400

Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu Glu Leu
                405                 410                 415

Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln Asp Leu
            420                 425                 430

Asp Thr Cys Asp Pro Arg Gln Leu Asp Val Leu Tyr Pro Lys Ala Arg
        435                 440                 445

Leu Ala Phe Gln Asn Met Asn Gly Ser Glu Tyr Phe Val Lys Ile Gln
    450                 455                 460

Ser Phe Leu Gly Gly Ala Pro Thr Glu Asp Leu Lys Ala Leu Ser Gln
465                 470                 475                 480

Gln Asn Val Ser Met Asp Leu Ala Thr Phe Met Lys Leu Arg Thr Asp
                485                 490                 495

Ala Val Leu Pro Leu Thr Val Ala Glu Val Gln Lys Leu Leu Gly Pro
            500                 505                 510

His Val Glu Gly Leu Lys Ala Glu Glu Arg His Arg Pro Val Arg Asp
        515                 520                 525

Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly Leu Gly
    530                 535                 540

Leu Gln Gly Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp Leu Ser Met
545                 550                 555                 560
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```
Gln Glu Ala Leu Gly Ser Gly Arg Ile Phe Asn Ala His Tyr Ala Gly
                565                 570                 575

Tyr Phe Ala Asp Leu Leu Ile His Asp Ile Glu Thr Asn Pro Gly Pro
            580                 585                 590

Thr Pro Gly Thr Gln Ser Pro Phe Phe Leu Leu Leu Leu Leu Thr Val
        595                 600                 605

Leu Thr Val Val Thr Gly Ser Gly His Ala Ser Ser Thr Pro Gly Gly
    610                 615                 620

Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro Ser Ser Thr
625                 630                 635                 640

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

Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val Thr Leu Ala
            660                 665                 670

Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp Gly Gln Asp
        675                 680                 685

Val Thr Ser Val Pro Val Thr Arg Pro Ala Leu Gly Ser Thr Thr Pro
    690                 695                 700

Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro Ala Pro Gly
705                 710                 715                 720

Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg
                725                 730                 735

Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala
            740                 745                 750

Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly
        755                 760                 765

Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro
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    770                 775                 780

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

Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg
                805                 810                 815

Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val Thr Ser Ala
            820                 825                 830

Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His Asn Gly Thr
        835                 840                 845

Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr Pro Phe Ser
    850                 855                 860

Ile Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala Ser His Ser
865                 870                 875                 880

Thr Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val Pro Pro Leu
                885                 890                 895

Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr Gly Val Ser
            900                 905                 910

Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln Phe Asn Ser Ser
        915                 920                 925

Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln Arg Asp Ile
    930                 935                 940

Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe Leu Gly Leu
945                 950                 955                 960

Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln Leu Thr Leu
                965                 970                 975

Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp Val Glu Thr Gln Phe
            980                 985                 990
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```
Asn Gln Tyr Lys Thr Glu Ala Ala  Ser Arg Tyr Asn Leu  Thr Ile Ser
        995                 1000                1005


Asp Val  Ser Val Ser Asp Val  Pro Phe Pro Phe Ser  Ala Gln Ser
    1010                1015                1020


Gly Ala  Gly Val Pro Gly Trp  Gly Ile Ala Leu Leu  Val Leu Val
    1025                1030                1035


Cys Val  Leu Val Ala Leu Ala  Ile Val Tyr Leu Ile  Ala Leu Ala
    1040                1045                1050


Val Cys  Gln Cys Arg Arg Lys  Asn Tyr Gly Gln Leu  Asp Ile Phe
    1055                1060                1065


Pro Ala  Arg Asp Thr Tyr His  Pro Met Ser Glu Tyr  Pro Thr Tyr
    1070                1075                1080


His Thr  His Gly Arg Tyr Val  Pro Pro Ser Ser Thr  Asp Arg Ser
    1085                1090                1095


Pro Tyr  Glu Lys Val Ser Ala  Gly Asn Gly Gly Ser  Ser Leu Ser
    1100                1105                1110


Tyr Thr  Asn Pro Ala Val Ala  Ala Ala Ser Ala Asn  Leu Gly Ser
    1115                1120                1125


Gly Thr  Ile Leu Ser Glu Gly  Ala Thr Asn Phe Ser  Leu Leu Lys
    1130                1135                1140


Leu Ala  Gly Asp Val Glu Leu  Asn Pro Gly Pro Gly  Ala Ala Pro
    1145                1150                1155


Glu Pro  Glu Arg Thr Pro Val  Gly Gln Gly Ser Trp  Ala His Pro
    1160                1165                1170


Gly Arg  Thr Arg Gly Pro Ser  Asp Arg Gly Phe Cys  Val Val Ser
    1175                1180                1185


Pro Ala  Arg Pro Ala Glu Glu  Ala Thr Ser Leu Glu  Gly Ala Leu
```

```
    1190                1195                1200

Ser Gly  Thr Arg His Ser His  Pro Ser Val Gly Arg  Gln His His
    1205                1210                1215

Ala Gly  Pro Pro Ser Thr Ser  Arg Pro Pro Arg Pro  Trp Asp Thr
    1220                1225                1230

Pro Cys  Pro Pro Val Tyr Ala  Glu Thr Lys His Phe  Leu Tyr Ser
    1235                1240                1245

Ser Gly  Asp Lys Glu Gln Leu  Arg Pro Ser Phe Leu  Leu Ser Ser
    1250                1255                1260

Leu Arg  Pro Ser Leu Thr Gly  Ala Arg Arg Leu Val  Glu Thr Ile
    1265                1270                1275

Phe Leu  Gly Ser Arg Pro Trp  Met Pro Gly Thr Pro  Arg Arg Leu
    1280                1285                1290

Pro Arg  Leu Pro Gln Arg Tyr  Trp Gln Met Arg Pro  Leu Phe Leu
    1295                1300                1305

Glu Leu  Leu Gly Asn His Ala  Gln Cys Pro Tyr Gly  Val Leu Leu
    1310                1315                1320

Lys Thr  His Cys Pro Leu Arg  Ala Ala Val Thr Pro  Ala Ala Gly
    1325                1330                1335

Val Cys  Ala Arg Glu Lys Pro  Gln Gly Ser Val Ala  Ala Pro Glu
    1340                1345                1350

Glu Glu  Asp Thr Asp Pro Arg  Arg Leu Val Gln Leu  Leu Arg Gln
    1355                1360                1365

His Ser  Ser Pro Trp Gln Val  Tyr Gly Phe Val Arg  Ala Cys Leu
    1370                1375                1380

Arg Arg  Leu Val Pro Pro Gly  Leu Trp Gly Ser Arg  His Asn Glu
    1385                1390                1395
```

```
Arg Arg  Phe Leu Arg Asn Thr  Lys Lys Phe Ile Ser  Leu Gly Lys
    1400                1405                1410

His Ala  Lys Leu Ser Leu Gln  Glu Leu Thr Trp Lys  Met Ser Val
    1415                1420                1425

Arg Asp  Cys Ala Trp Leu Arg  Arg Ser Pro Gly Val  Gly Cys Val
    1430                1435                1440

Pro Ala  Ala Glu His Arg Leu  Arg Glu Glu Ile Leu  Ala Lys Phe
    1445                1450                1455

Leu His  Trp Leu Met Ser Val  Tyr Val Val Glu Leu  Leu Arg Ser
    1460                1465                1470

Phe Phe  Tyr Val Thr Glu Thr  Thr Phe Gln Lys Asn  Arg Leu Phe
    1475                1480                1485

Phe Tyr  Arg Lys Ser Val Trp  Ser Lys Leu Gln Ser  Ile Gly Ile
    1490                1495                1500

Arg Gln  His Leu Lys Arg Val  Gln Leu Arg Glu Leu  Ser Glu Ala
    1505                1510                1515

Glu Val  Arg Gln His Arg Glu  Ala Arg Pro Ala Leu  Leu Thr Ser
    1520                1525                1530

Arg Leu  Arg Phe Ile Pro Lys  Pro Asp Gly Leu Arg  Pro Ile Val
    1535                1540                1545

Asn Met  Asp Tyr Val Val Gly  Ala Arg Thr Phe Arg  Arg Glu Lys
    1550                1555                1560

Arg Ala  Glu Arg Leu Thr Ser  Arg Val Lys Ala Leu  Phe Ser Val
    1565                1570                1575

Leu Asn  Tyr Glu Arg Ala Arg  Arg Pro Gly Leu Leu  Gly Ala Ser
    1580                1585                1590

Val Leu  Gly Leu Asp Asp Ile  His Arg Ala Trp Arg  Thr Phe Val
```

```
    1595                1600                1605

Leu Arg  Val Arg Ala Gln Asp  Pro Pro Pro Glu Leu  Tyr Phe Val
    1610                1615                1620

Lys Val  Ala Ile Thr Gly Ala  Tyr Asp Thr Ile Pro  Gln Asp Arg
    1625                1630                1635

Leu Thr  Glu Val Ile Ala Ser  Ile Ile Lys Pro Gln  Asn Thr Tyr
    1640                1645                1650

Cys Val  Arg Arg Tyr Ala Val  Val Gln Lys Ala Ala  His Gly His
    1655                1660                1665

Val Arg  Lys Ala Phe Lys Ser  His Val Ser Thr Leu  Thr Asp Leu
    1670                1675                1680

Gln Pro  Tyr Met Arg Gln Phe  Val Ala His Leu Gln  Glu Thr Ser
    1685                1690                1695

Pro Leu  Arg Asp Ala Val Val  Ile Glu Gln Ser Ser  Ser Leu Asn
    1700                1705                1710

Glu Ala  Ser Ser Gly Leu Phe  Asp Val Phe Leu Arg  Phe Met Cys
    1715                1720                1725

His His  Ala Val Arg Ile Arg  Gly Lys Ser Tyr Val  Gln Cys Gln
    1730                1735                1740

Gly Ile  Pro Gln Gly Ser Ile  Leu Ser Thr Leu Leu  Cys Ser Leu
    1745                1750                1755

Cys Tyr  Gly Asp Met Glu Asn  Lys Leu Phe Ala Gly  Ile Arg Arg
    1760                1765                1770

Asp Gly  Leu Leu Leu Arg Leu  Val Asp Asp Phe Leu  Leu Val Thr
    1775                1780                1785

Pro His  Leu Thr His Ala Lys  Thr Phe Leu Arg Thr  Leu Val Arg
    1790                1795                1800
```

```
Gly Val  Pro Glu Tyr Gly Cys  Val Val Asn Leu Arg  Lys Thr Val
    1805                1810                1815

Val Asn  Phe Pro Val Glu Asp  Glu Ala Leu Gly Gly  Thr Ala Phe
    1820                1825                1830

Val Gln  Met Pro Ala His Gly  Leu Phe Pro Trp Cys  Gly Leu Leu
    1835                1840                1845

Leu Asp  Thr Arg Thr Leu Glu  Val Gln Ser Asp Tyr  Ser Ser Tyr
    1850                1855                1860

Ala Arg  Thr Ser Ile Arg Ala  Ser Leu Thr Phe Asn  Arg Gly Phe
    1865                1870                1875

Lys Ala  Gly Arg Asn Met Arg  Arg Lys Leu Phe Gly  Val Leu Arg
    1880                1885                1890

Leu Lys  Cys His Ser Leu Phe  Leu Asp Leu Gln Val  Asn Ser Leu
    1895                1900                1905

Gln Thr  Val Cys Thr Asn Ile  Tyr Lys Ile Leu Leu  Leu Gln Ala
    1910                1915                1920

Tyr Arg  Phe His Ala Cys Val  Leu Gln Leu Pro Phe  His Gln Gln
    1925                1930                1935

Val Trp  Lys Asn Pro Thr Phe  Phe Leu Arg Val Ile  Ser Asp Thr
    1940                1945                1950

Ala Ser  Leu Cys Tyr Ser Ile  Leu Lys Ala Lys Asn  Ala Gly Met
    1955                1960                1965

Ser Leu  Gly Ala Lys Gly Ala  Ala Gly Pro Leu Pro  Ser Glu Ala
    1970                1975                1980

Val Gln  Trp Leu Cys His Gln  Ala Phe Leu Leu Lys  Leu Thr Arg
    1985                1990                1995

His Arg  Val Thr Tyr Val Pro  Leu Leu Gly Ser Leu  Arg Thr Ala
```

2000 2005 2010

Gln Thr Gln Leu Ser Arg Lys Leu Pro Gly Thr Thr Leu Thr Ala
2015 2020 2025

Leu Glu Ala Ala Ala Asn Pro Ala Leu Pro Ser Asp Phe Lys Thr
2030 2035 2040

Ile Leu Asp
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Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu Arg
35 40 45

Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu Ser
50 55 60

Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro Glu
65 70 75 80

Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro Asp
85 90 95

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

Lys Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln Arg
115 120 125

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Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu Leu
    130                 135                 140

Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu Pro
145                 150                 155                 160

Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg Leu Val
                165                 170                 175

Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala Arg Ala
            180                 185                 190

Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr Trp Ser
        195                 200                 205

Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu Gly Gln
    210                 215                 220

Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp Arg Gln
225                 230                 235                 240

Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr Ile Leu
                245                 250                 255

Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro Ser Gly
            260                 265                 270

Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp
        275                 280                 285

Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln Met Asp
    290                 295                 300

Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys
305                 310                 315                 320

His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile
                325                 330                 335

Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp Ile Arg
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            340                 345                 350

Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu Val
        355                 360                 365

Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile Asp Arg
    370                 375                 380

Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp Thr Leu
385                 390                 395                 400

Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu Glu Leu
                405                 410                 415

Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln Asp Leu
            420                 425                 430

Asp Thr Cys Asp Pro Arg Gln Leu Asp Val Leu Tyr Pro Lys Ala Arg
        435                 440                 445

Leu Ala Phe Gln Asn Met Asn Gly Ser Glu Tyr Phe Val Lys Ile Gln
    450                 455                 460

Ser Phe Leu Gly Gly Ala Pro Thr Glu Asp Leu Lys Ala Leu Ser Gln
465                 470                 475                 480

Gln Asn Val Ser Met Asp Leu Ala Thr Phe Met Lys Leu Arg Thr Asp
                485                 490                 495

Ala Val Leu Pro Leu Thr Val Ala Glu Val Gln Lys Leu Leu Gly Pro
            500                 505                 510

His Val Glu Gly Leu Lys Ala Glu Glu Arg His Arg Pro Val Arg Asp
        515                 520                 525

Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly Leu Gly
    530                 535                 540

Leu Gln Gly Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp Leu Ser Met
545                 550                 555                 560
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                565                 570                 575

Gly Asp Val Glu Glu Asn Pro Gly Pro Gly Ala Ala Pro Glu Pro Glu
            580                 585                 590

Arg Thr Pro Val Gly Gln Gly Ser Trp Ala His Pro Gly Arg Thr Arg
        595                 600                 605

Gly Pro Ser Asp Arg Gly Phe Cys Val Val Ser Pro Ala Arg Pro Ala
    610                 615                 620

Glu Glu Ala Thr Ser Leu Glu Gly Ala Leu Ser Gly Thr Arg His Ser
625                 630                 635                 640

His Pro Ser Val Gly Arg Gln His His Ala Gly Pro Pro Ser Thr Ser
                645                 650                 655

Arg Pro Pro Arg Pro Trp Asp Thr Pro Cys Pro Pro Val Tyr Ala Glu
            660                 665                 670

Thr Lys His Phe Leu Tyr Ser Ser Gly Asp Lys Glu Gln Leu Arg Pro
        675                 680                 685

Ser Phe Leu Leu Ser Ser Leu Arg Pro Ser Leu Thr Gly Ala Arg Arg
    690                 695                 700

Leu Val Glu Thr Ile Phe Leu Gly Ser Arg Pro Trp Met Pro Gly Thr
705                 710                 715                 720

Pro Arg Arg Leu Pro Arg Leu Pro Gln Arg Tyr Trp Gln Met Arg Pro
                725                 730                 735

Leu Phe Leu Glu Leu Leu Gly Asn His Ala Gln Cys Pro Tyr Gly Val
            740                 745                 750

Leu Leu Lys Thr His Cys Pro Leu Arg Ala Ala Val Thr Pro Ala Ala
        755                 760                 765

Gly Val Cys Ala Arg Glu Lys Pro Gln Gly Ser Val Ala Ala Pro Glu
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    770                 775                 780

Glu Glu Asp Thr Asp Pro Arg Arg Leu Val Gln Leu Leu Arg Gln His
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Ser Ser Pro Trp Gln Val Tyr Gly Phe Val Arg Ala Cys Leu Arg Arg
                805                 810                 815

Leu Val Pro Pro Gly Leu Trp Gly Ser Arg His Asn Glu Arg Arg Phe
            820                 825                 830

Leu Arg Asn Thr Lys Lys Phe Ile Ser Leu Gly Lys His Ala Lys Leu
        835                 840                 845

Ser Leu Gln Glu Leu Thr Trp Lys Met Ser Val Arg Asp Cys Ala Trp
    850                 855                 860

Leu Arg Arg Ser Pro Gly Val Gly Cys Val Pro Ala Ala Glu His Arg
865                 870                 875                 880

Leu Arg Glu Glu Ile Leu Ala Lys Phe Leu His Trp Leu Met Ser Val
                885                 890                 895

Tyr Val Val Glu Leu Leu Arg Ser Phe Phe Tyr Val Thr Glu Thr Thr
            900                 905                 910

Phe Gln Lys Asn Arg Leu Phe Phe Tyr Arg Lys Ser Val Trp Ser Lys
        915                 920                 925

Leu Gln Ser Ile Gly Ile Arg Gln His Leu Lys Arg Val Gln Leu Arg
    930                 935                 940

Glu Leu Ser Glu Ala Glu Val Arg Gln His Arg Glu Ala Arg Pro Ala
945                 950                 955                 960

Leu Leu Thr Ser Arg Leu Arg Phe Ile Pro Lys Pro Asp Gly Leu Arg
                965                 970                 975

Pro Ile Val Asn Met Asp Tyr Val Val Gly Ala Arg Thr Phe Arg Arg
            980                 985                 990
```

```
Glu Lys Arg Ala Glu Arg Leu Thr  Ser Arg Val Lys Ala  Leu Phe Ser
        995                 1000                1005


Val Leu  Asn Tyr Glu Arg Ala  Arg Arg Pro Gly Leu  Leu Gly Ala
    1010                1015                1020


Ser Val  Leu Gly Leu Asp Asp  Ile His Arg Ala Trp  Arg Thr Phe
    1025                1030                1035


Val Leu  Arg Val Arg Ala Gln  Asp Pro Pro Pro Glu  Leu Tyr Phe
    1040                1045                1050


Val Lys  Val Ala Ile Thr Gly  Ala Tyr Asp Thr Ile  Pro Gln Asp
    1055                1060                1065


Arg Leu  Thr Glu Val Ile Ala  Ser Ile Ile Lys Pro  Gln Asn Thr
    1070                1075                1080


Tyr Cys  Val Arg Arg Tyr Ala  Val Val Gln Lys Ala  Ala His Gly
    1085                1090                1095


His Val  Arg Lys Ala Phe Lys  Ser His Val Ser Thr  Leu Thr Asp
    1100                1105                1110


Leu Gln  Pro Tyr Met Arg Gln  Phe Val Ala His Leu  Gln Glu Thr
    1115                1120                1125


Ser Pro  Leu Arg Asp Ala Val  Val Ile Glu Gln Ser  Ser Ser Leu
    1130                1135                1140


Asn Glu  Ala Ser Ser Gly Leu  Phe Asp Val Phe Leu  Arg Phe Met
    1145                1150                1155


Cys His  His Ala Val Arg Ile  Arg Gly Lys Ser Tyr  Val Gln Cys
    1160                1165                1170


Gln Gly  Ile Pro Gln Gly Ser  Ile Leu Ser Thr Leu  Leu Cys Ser
    1175                1180                1185


Leu Cys  Tyr Gly Asp Met Glu  Asn Lys Leu Phe Ala  Gly Ile Arg
```

```
    1190                1195                1200

Arg Asp  Gly Leu Leu Leu Arg  Leu Val Asp Asp Phe  Leu Leu Val
    1205                1210                1215

Thr Pro  His Leu Thr His Ala  Lys Thr Phe Leu Arg  Thr Leu Val
    1220                1225                1230

Arg Gly  Val Pro Glu Tyr Gly  Cys Val Val Asn Leu  Arg Lys Thr
    1235                1240                1245

Val Val  Asn Phe Pro Val Glu  Asp Glu Ala Leu Gly  Gly Thr Ala
    1250                1255                1260

Phe Val  Gln Met Pro Ala His  Gly Leu Phe Pro Trp  Cys Gly Leu
    1265                1270                1275

Leu Leu  Asp Thr Arg Thr Leu  Glu Val Gln Ser Asp  Tyr Ser Ser
    1280                1285                1290

Tyr Ala  Arg Thr Ser Ile Arg  Ala Ser Leu Thr Phe  Asn Arg Gly
    1295                1300                1305

Phe Lys  Ala Gly Arg Asn Met  Arg Arg Lys Leu Phe  Gly Val Leu
    1310                1315                1320

Arg Leu  Lys Cys His Ser Leu  Phe Leu Asp Leu Gln  Val Asn Ser
    1325                1330                1335

Leu Gln  Thr Val Cys Thr Asn  Ile Tyr Lys Ile Leu  Leu Leu Gln
    1340                1345                1350

Ala Tyr  Arg Phe His Ala Cys  Val Leu Gln Leu Pro  Phe His Gln
    1355                1360                1365

Gln Val  Trp Lys Asn Pro Thr  Phe Phe Leu Arg Val  Ile Ser Asp
    1370                1375                1380

Thr Ala  Ser Leu Cys Tyr Ser  Ile Leu Lys Ala Lys  Asn Ala Gly
    1385                1390                1395
```

```
Met Ser  Leu Gly Ala Lys Gly  Ala Ala Gly Pro Leu  Pro Ser Glu
    1400                1405                1410

Ala Val  Gln Trp Leu Cys His  Gln Ala Phe Leu Leu  Lys Leu Thr
    1415                1420                1425

Arg His  Arg Val Thr Tyr Val  Pro Leu Leu Gly Ser  Leu Arg Thr
    1430                1435                1440

Ala Gln  Thr Gln Leu Ser Arg  Lys Leu Pro Gly Thr  Thr Leu Thr
    1445                1450                1455

Ala Leu  Glu Ala Ala Ala Asn  Pro Ala Leu Pro Ser  Asp Phe Lys
    1460                1465                1470

Thr Ile  Leu Asp Gly Ser Gly  Thr Ile Leu Ser Glu  Gly Ala Thr
    1475                1480                1485

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

Gly Pro  Thr Pro Gly Thr Gln  Ser Pro Phe Phe Leu  Leu Leu Leu
    1505                1510                1515

Leu Thr  Val Leu Thr Val Val  Thr Gly Ser Gly His  Ala Ser Ser
    1520                1525                1530

Thr Pro  Gly Gly Glu Lys Glu  Thr Ser Ala Thr Gln  Arg Ser Ser
    1535                1540                1545

Val Pro  Ser Ser Thr Glu Lys  Asn Ala Val Ser Met  Thr Ser Ser
    1550                1555                1560

Val Leu  Ser Ser His Ser Pro  Gly Ser Gly Ser Ser  Thr Thr Gln
    1565                1570                1575

Gly Gln  Asp Val Thr Leu Ala  Pro Ala Thr Glu Pro  Ala Ser Gly
    1580                1585                1590

Ser Ala  Ala Thr Trp Gly Gln  Asp Val Thr Ser Val  Pro Val Thr
```

```
    1595                1600                1605

Arg Pro  Ala Leu Gly Ser Thr  Thr Pro Pro Ala His  Asp Val Thr
    1610                1615                1620

Ser Ala  Pro Asp Asn Lys Pro  Ala Pro Gly Ser Thr  Ala Pro Pro
    1625                1630                1635

Ala His  Gly Val Thr Ser Ala  Pro Asp Thr Arg Pro  Ala Pro Gly
    1640                1645                1650

Ser Thr  Ala Pro Pro Ala His  Gly Val Thr Ser Ala  Pro Asp Thr
    1655                1660                1665

Arg Pro  Ala Pro Gly Ser Thr  Ala Pro Pro Ala His  Gly Val Thr
    1670                1675                1680

Ser Ala  Pro Asp Thr Arg Pro  Ala Pro Gly Ser Thr  Ala Pro Pro
    1685                1690                1695

Ala His  Gly Val Thr Ser Ala  Pro Asp Thr Arg Pro  Ala Pro Gly
    1700                1705                1710

Ser Thr  Ala Pro Pro Ala His  Gly Val Thr Ser Ala  Pro Asp Thr
    1715                1720                1725

Arg Pro  Ala Leu Gly Ser Thr  Ala Pro Pro Val His  Asn Val Thr
    1730                1735                1740

Ser Ala  Ser Gly Ser Ala Ser  Gly Ser Ala Ser Thr  Leu Val His
    1745                1750                1755

Asn Gly  Thr Ser Ala Arg Ala  Thr Thr Thr Pro Ala  Ser Lys Ser
    1760                1765                1770

Thr Pro  Phe Ser Ile Pro Ser  His His Ser Asp Thr  Pro Thr Thr
    1775                1780                1785

Leu Ala  Ser His Ser Thr Lys  Thr Asp Ala Ser Ser  Thr His His
    1790                1795                1800
```

```
Ser Ser  Val Pro Pro Leu Thr  Ser Ser Asn His Ser  Thr Ser Pro
    1805                1810                1815

Gln Leu  Ser Thr Gly Val Ser  Phe Phe Phe Leu Ser  Phe His Ile
    1820                1825                1830

Ser Asn  Leu Gln Phe Asn Ser  Ser Leu Glu Asp Pro  Ser Thr Asp
    1835                1840                1845

Tyr Tyr  Gln Glu Leu Gln Arg  Asp Ile Ser Glu Met  Phe Leu Gln
    1850                1855                1860

Ile Tyr  Lys Gln Gly Gly Phe  Leu Gly Leu Ser Asn  Ile Lys Phe
    1865                1870                1875

Arg Pro  Gly Ser Val Val Val  Gln Leu Thr Leu Ala  Phe Arg Glu
    1880                1885                1890

Gly Thr  Ile Asn Val His Asp  Val Glu Thr Gln Phe  Asn Gln Tyr
    1895                1900                1905

Lys Thr  Glu Ala Ala Ser Arg  Tyr Asn Leu Thr Ile  Ser Asp Val
    1910                1915                1920

Ser Val  Ser Asp Val Pro Phe  Pro Phe Ser Ala Gln  Ser Gly Ala
    1925                1930                1935

Gly Val  Pro Gly Trp Gly Ile  Ala Leu Leu Val Leu  Val Cys Val
    1940                1945                1950

Leu Val  Ala Leu Ala Ile Val  Tyr Leu Ile Ala Leu  Ala Val Cys
    1955                1960                1965

Gln Cys  Arg Arg Lys Asn Tyr  Gly Gln Leu Asp Ile  Phe Pro Ala
    1970                1975                1980

Arg Asp  Thr Tyr His Pro Met  Ser Glu Tyr Pro Thr  Tyr His Thr
    1985                1990                1995

His Gly  Arg Tyr Val Pro Pro  Ser Ser Thr Asp Arg  Ser Pro Tyr
```

2000 2005 2010

Glu Lys Val Ser Ala Gly Asn Gly Gly Ser Ser Leu Ser Tyr Thr
2015 2020 2025

Asn Pro Ala Val Ala Ala Ala Ser Ala Asn Leu
2030 2035

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20 25 30

Phe Cys Val Val Ser Pro Ala Arg Pro Ala Glu Glu Ala Thr Ser Leu
35 40 45

Glu Gly Ala Leu Ser Gly Thr Arg His Ser His Pro Ser Val Gly Arg
50 55 60

Gln His His Ala Gly Pro Pro Ser Thr Ser Arg Pro Pro Arg Pro Trp
65 70 75 80

Asp Thr Pro Cys Pro Pro Val Tyr Ala Glu Thr Lys His Phe Leu Tyr
85 90 95

Ser Ser Gly Asp Lys Glu Gln Leu Arg Pro Ser Phe Leu Leu Ser Ser
100 105 110

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

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

```
Leu Pro Gln Arg Tyr Trp Gln Met Arg Pro Leu Phe Leu Glu Leu Leu
145                 150                 155                 160

Gly Asn His Ala Gln Cys Pro Tyr Gly Val Leu Leu Lys Thr His Cys
                165                 170                 175

Pro Leu Arg Ala Ala Val Thr Pro Ala Ala Gly Val Cys Ala Arg Glu
            180                 185                 190

Lys Pro Gln Gly Ser Val Ala Ala Pro Glu Glu Glu Asp Thr Asp Pro
        195                 200                 205

Arg Arg Leu Val Gln Leu Leu Arg Gln His Ser Ser Pro Trp Gln Val
    210                 215                 220

Tyr Gly Phe Val Arg Ala Cys Leu Arg Arg Leu Val Pro Pro Gly Leu
225                 230                 235                 240

Trp Gly Ser Arg His Asn Glu Arg Arg Phe Leu Arg Asn Thr Lys Lys
                245                 250                 255

Phe Ile Ser Leu Gly Lys His Ala Lys Leu Ser Leu Gln Glu Leu Thr
            260                 265                 270

Trp Lys Met Ser Val Arg Asp Cys Ala Trp Leu Arg Arg Ser Pro Gly
        275                 280                 285

Val Gly Cys Val Pro Ala Ala Glu His Arg Leu Arg Glu Glu Ile Leu
    290                 295                 300

Ala Lys Phe Leu His Trp Leu Met Ser Val Tyr Val Val Glu Leu Leu
305                 310                 315                 320

Arg Ser Phe Phe Tyr Val Thr Glu Thr Thr Phe Gln Lys Asn Arg Leu
                325                 330                 335

Phe Phe Tyr Arg Lys Ser Val Trp Ser Lys Leu Gln Ser Ile Gly Ile
            340                 345                 350

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

```
        355                 360                 365

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

Arg Phe Ile Pro Lys Pro Asp Gly Leu Arg Pro Ile Val Asn Met Asp
385                 390                 395                 400

Tyr Val Val Gly Ala Arg Thr Phe Arg Arg Glu Lys Arg Ala Glu Arg
                405                 410                 415

Leu Thr Ser Arg Val Lys Ala Leu Phe Ser Val Leu Asn Tyr Glu Arg
            420                 425                 430

Ala Arg Arg Pro Gly Leu Leu Gly Ala Ser Val Leu Gly Leu Asp Asp
        435                 440                 445

Ile His Arg Ala Trp Arg Thr Phe Val Leu Arg Val Arg Ala Gln Asp
    450                 455                 460

Pro Pro Pro Glu Leu Tyr Phe Val Lys Val Ala Ile Thr Gly Ala Tyr
465                 470                 475                 480

Asp Thr Ile Pro Gln Asp Arg Leu Thr Glu Val Ile Ala Ser Ile Ile
                485                 490                 495

Lys Pro Gln Asn Thr Tyr Cys Val Arg Arg Tyr Ala Val Val Gln Lys
            500                 505                 510

Ala Ala His Gly His Val Arg Lys Ala Phe Lys Ser His Val Ser Thr
        515                 520                 525

Leu Thr Asp Leu Gln Pro Tyr Met Arg Gln Phe Val Ala His Leu Gln
    530                 535                 540

Glu Thr Ser Pro Leu Arg Asp Ala Val Val Ile Glu Gln Ser Ser Ser
545                 550                 555                 560

Leu Asn Glu Ala Ser Ser Gly Leu Phe Asp Val Phe Leu Arg Phe Met
                565                 570                 575
```

```
Cys His His Ala Val Arg Ile Arg Gly Lys Ser Tyr Val Gln Cys Gln
            580                 585                 590

Gly Ile Pro Gln Gly Ser Ile Leu Ser Thr Leu Leu Cys Ser Leu Cys
        595                 600                 605

Tyr Gly Asp Met Glu Asn Lys Leu Phe Ala Gly Ile Arg Arg Asp Gly
    610                 615                 620

Leu Leu Leu Arg Leu Val Asp Asp Phe Leu Leu Val Thr Pro His Leu
625                 630                 635                 640

Thr His Ala Lys Thr Phe Leu Arg Thr Leu Val Arg Gly Val Pro Glu
                645                 650                 655

Tyr Gly Cys Val Val Asn Leu Arg Lys Thr Val Val Asn Phe Pro Val
            660                 665                 670

Glu Asp Glu Ala Leu Gly Gly Thr Ala Phe Val Gln Met Pro Ala His
        675                 680                 685

Gly Leu Phe Pro Trp Cys Gly Leu Leu Leu Asp Thr Arg Thr Leu Glu
    690                 695                 700

Val Gln Ser Asp Tyr Ser Ser Tyr Ala Arg Thr Ser Ile Arg Ala Ser
705                 710                 715                 720

Leu Thr Phe Asn Arg Gly Phe Lys Ala Gly Arg Asn Met Arg Arg Lys
                725                 730                 735

Leu Phe Gly Val Leu Arg Leu Lys Cys His Ser Leu Phe Leu Asp Leu
            740                 745                 750

Gln Val Asn Ser Leu Gln Thr Val Cys Thr Asn Ile Tyr Lys Ile Leu
        755                 760                 765

Leu Leu Gln Ala Tyr Arg Phe His Ala Cys Val Leu Gln Leu Pro Phe
    770                 775                 780

His Gln Gln Val Trp Lys Asn Pro Thr Phe Phe Leu Arg Val Ile Ser
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```
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Asp Thr Ala Ser Leu Cys Tyr Ser Ile Leu Lys Ala Lys Asn Ala Gly
                805                 810                 815

Met Ser Leu Gly Ala Lys Gly Ala Ala Gly Pro Leu Pro Ser Glu Ala
            820                 825                 830

Val Gln Trp Leu Cys His Gln Ala Phe Leu Leu Lys Leu Thr Arg His
        835                 840                 845

Arg Val Thr Tyr Val Pro Leu Leu Gly Ser Leu Arg Thr Ala Gln Thr
    850                 855                 860

Gln Leu Ser Arg Lys Leu Pro Gly Thr Thr Leu Thr Ala Leu Glu Ala
865                 870                 875                 880

Ala Ala Asn Pro Ala Leu Pro Ser Asp Phe Lys Thr Ile Leu Asp Gly
                885                 890                 895

Ser Gly Glu Gly Arg Gly Ser Leu Leu Thr Cys Gly Asp Val Glu Glu
            900                 905                 910

Asn Pro Gly Pro Leu Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro Leu
        915                 920                 925

Asp Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro Arg
    930                 935                 940

Gln Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu
945                 950                 955                 960

Arg Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu
                965                 970                 975

Ser Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro
            980                 985                 990

Glu Asp Leu Asp Ala Leu Pro Leu  Asp Leu Leu Leu Phe  Leu Asn Pro
        995                 1000                1005
```

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Asp Ala  Phe Ser Gly Pro Gln  Ala Cys Thr Arg Phe  Phe Ser Arg
    1010                1015                1020

Ile Thr  Lys Ala Asn Val Asp  Leu Leu Pro Arg Gly  Ala Pro Glu
    1025                1030                1035

Arg Gln  Arg Leu Leu Pro Ala  Ala Leu Ala Cys Trp  Gly Val Arg
    1040                1045                1050

Gly Ser  Leu Leu Ser Glu Ala  Asp Val Arg Ala Leu  Gly Gly Leu
    1055                1060                1065

Ala Cys  Asp Leu Pro Gly Arg  Phe Val Ala Glu Ser  Ala Glu Val
    1070                1075                1080

Leu Leu  Pro Arg Leu Val Ser  Cys Pro Gly Pro Leu  Asp Gln Asp
    1085                1090                1095

Gln Gln  Glu Ala Ala Arg Ala  Ala Leu Gln Gly Gly  Gly Pro Pro
    1100                1105                1110

Tyr Gly  Pro Pro Ser Thr Trp  Ser Val Ser Thr Met  Asp Ala Leu
    1115                1120                1125

Arg Gly  Leu Leu Pro Val Leu  Gly Gln Pro Ile Ile  Arg Ser Ile
    1130                1135                1140

Pro Gln  Gly Ile Val Ala Ala  Trp Arg Gln Arg Ser  Ser Arg Asp
    1145                1150                1155

Pro Ser  Trp Arg Gln Pro Glu  Arg Thr Ile Leu Arg  Pro Arg Phe
    1160                1165                1170

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

Arg Glu  Ile Asp Glu Ser Leu  Ile Phe Tyr Lys Lys  Trp Glu Leu
    1190                1195                1200

Glu Ala  Cys Val Asp Ala Ala  Leu Leu Ala Thr Gln  Met Asp Arg
```

```
    1205                1210                1215

Val Asn  Ala Ile Pro Phe Thr  Tyr Glu Gln Leu Asp  Val Leu Lys
    1220                1225                1230

His Lys  Leu Asp Glu Leu Tyr  Pro Gln Gly Tyr Pro  Glu Ser Val
    1235                1240                1245

Ile Gln  His Leu Gly Tyr Leu  Phe Leu Lys Met Ser  Pro Glu Asp
    1250                1255                1260

Ile Arg  Lys Trp Asn Val Thr  Ser Leu Glu Thr Leu  Lys Ala Leu
    1265                1270                1275

Leu Glu  Val Asn Lys Gly His  Glu Met Ser Pro Gln  Val Ala Thr
    1280                1285                1290

Leu Ile  Asp Arg Phe Val Lys  Gly Arg Gly Gln Leu  Asp Lys Asp
    1295                1300                1305

Thr Leu  Asp Thr Leu Thr Ala  Phe Tyr Pro Gly Tyr  Leu Cys Ser
    1310                1315                1320

Leu Ser  Pro Glu Glu Leu Ser  Ser Val Pro Pro Ser  Ser Ile Trp
    1325                1330                1335

Ala Val  Arg Pro Gln Asp Leu  Asp Thr Cys Asp Pro  Arg Gln Leu
    1340                1345                1350

Asp Val  Leu Tyr Pro Lys Ala  Arg Leu Ala Phe Gln  Asn Met Asn
    1355                1360                1365

Gly Ser  Glu Tyr Phe Val Lys  Ile Gln Ser Phe Leu  Gly Gly Ala
    1370                1375                1380

Pro Thr  Glu Asp Leu Lys Ala  Leu Ser Gln Gln Asn  Val Ser Met
    1385                1390                1395

Asp Leu  Ala Thr Phe Met Lys  Leu Arg Thr Asp Ala  Val Leu Pro
    1400                1405                1410
```

```
Leu Thr  Val Ala Glu Val Gln  Lys Leu Leu Gly Pro  His Val Glu
    1415                1420                1425

Gly Leu  Lys Ala Glu Glu Arg  His Arg Pro Val Arg  Asp Trp Ile
    1430                1435                1440

Leu Arg  Gln Arg Gln Asp Asp  Leu Asp Thr Leu Gly  Leu Gly Leu
    1445                1450                1455

Gln Gly  Gly Ile Pro Asn Gly  Tyr Leu Val Leu Asp  Leu Ser Met
    1460                1465                1470

Gln Glu  Ala Leu Gly Ser Gly  Arg Ile Phe Asn Ala  His Tyr Ala
    1475                1480                1485

Gly Tyr  Phe Ala Asp Leu Leu  Ile His Asp Ile Glu  Thr Asn Pro
    1490                1495                1500

Gly Pro  Thr Pro Gly Thr Gln  Ser Pro Phe Phe Leu  Leu Leu Leu
    1505                1510                1515

Leu Thr  Val Leu Thr Val Val  Thr Gly Ser Gly His  Ala Ser Ser
    1520                1525                1530

Thr Pro  Gly Gly Glu Lys Glu  Thr Ser Ala Thr Gln  Arg Ser Ser
    1535                1540                1545

Val Pro  Ser Ser Thr Glu Lys  Asn Ala Val Ser Met  Thr Ser Ser
    1550                1555                1560

Val Leu  Ser Ser His Ser Pro  Gly Ser Gly Ser Ser  Thr Thr Gln
    1565                1570                1575

Gly Gln  Asp Val Thr Leu Ala  Pro Ala Thr Glu Pro  Ala Ser Gly
    1580                1585                1590

Ser Ala  Ala Thr Trp Gly Gln  Asp Val Thr Ser Val  Pro Val Thr
    1595                1600                1605

Arg Pro  Ala Leu Gly Ser Thr  Thr Pro Pro Ala His  Asp Val Thr
```

```
    1610                1615                1620

Ser Ala  Pro Asp Asn Lys Pro  Ala Pro Gly Ser Thr  Ala Pro Pro
    1625                1630                1635

Ala His  Gly Val Thr Ser Ala  Pro Asp Thr Arg Pro  Ala Pro Gly
    1640                1645                1650

Ser Thr  Ala Pro Pro Ala His  Gly Val Thr Ser Ala  Pro Asp Thr
    1655                1660                1665

Arg Pro  Ala Pro Gly Ser Thr  Ala Pro Pro Ala His  Gly Val Thr
    1670                1675                1680

Ser Ala  Pro Asp Thr Arg Pro  Ala Pro Gly Ser Thr  Ala Pro Pro
    1685                1690                1695

Ala His  Gly Val Thr Ser Ala  Pro Asp Thr Arg Pro  Ala Pro Gly
    1700                1705                1710

Ser Thr  Ala Pro Pro Ala His  Gly Val Thr Ser Ala  Pro Asp Thr
    1715                1720                1725

Arg Pro  Ala Leu Gly Ser Thr  Ala Pro Pro Val His  Asn Val Thr
    1730                1735                1740

Ser Ala  Ser Gly Ser Ala Ser  Gly Ser Ala Ser Thr  Leu Val His
    1745                1750                1755

Asn Gly  Thr Ser Ala Arg Ala  Thr Thr Thr Pro Ala  Ser Lys Ser
    1760                1765                1770

Thr Pro  Phe Ser Ile Pro Ser  His His Ser Asp Thr  Pro Thr Thr
    1775                1780                1785

Leu Ala  Ser His Ser Thr Lys  Thr Asp Ala Ser Ser  Thr His His
    1790                1795                1800

Ser Ser  Val Pro Pro Leu Thr  Ser Ser Asn His Ser  Thr Ser Pro
    1805                1810                1815
```

```
Gln Leu  Ser Thr Gly Val Ser  Phe Phe Phe Leu Ser  Phe His Ile
    1820                1825                1830

Ser Asn  Leu Gln Phe Asn Ser  Ser Leu Glu Asp Pro  Ser Thr Asp
    1835                1840                1845

Tyr Tyr  Gln Glu Leu Gln Arg  Asp Ile Ser Glu Met  Phe Leu Gln
    1850                1855                1860

Ile Tyr  Lys Gln Gly Gly Phe  Leu Gly Leu Ser Asn  Ile Lys Phe
    1865                1870                1875

Arg Pro  Gly Ser Val Val Val  Gln Leu Thr Leu Ala  Phe Arg Glu
    1880                1885                1890

Gly Thr  Ile Asn Val His Asp  Val Glu Thr Gln Phe  Asn Gln Tyr
    1895                1900                1905

Lys Thr  Glu Ala Ala Ser Arg  Tyr Asn Leu Thr Ile  Ser Asp Val
    1910                1915                1920

Ser Val  Ser Asp Val Pro Phe  Pro Phe Ser Ala Gln  Ser Gly Ala
    1925                1930                1935

Gly Val  Pro Gly Trp Gly Ile  Ala Leu Leu Val Leu  Val Cys Val
    1940                1945                1950

Leu Val  Ala Leu Ala Ile Val  Tyr Leu Ile Ala Leu  Ala Val Cys
    1955                1960                1965

Gln Cys  Arg Arg Lys Asn Tyr  Gly Gln Leu Asp Ile  Phe Pro Ala
    1970                1975                1980

Arg Asp  Thr Tyr His Pro Met  Ser Glu Tyr Pro Thr  Tyr His Thr
    1985                1990                1995

His Gly  Arg Tyr Val Pro Pro  Ser Ser Thr Asp Arg  Ser Pro Tyr
    2000                2005                2010

Glu Lys  Val Ser Ala Gly Asn  Gly Gly Ser Ser Leu  Ser Tyr Thr
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2015 2020 2025

Asn Pro Ala Val Ala Ala Ala Ser Ala Asn Leu
2030 2035

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Gly Ser Trp Ala His Pro Gly Arg Thr Arg Gly Pro Ser Asp Arg Gly
20 25 30

Phe Cys Val Val Ser Pro Ala Arg Pro Ala Glu Glu Ala Thr Ser Leu
35 40 45

Glu Gly Ala Leu Ser Gly Thr Arg His Ser His Pro Ser Val Gly Arg
50 55 60

Gln His His Ala Gly Pro Pro Ser Thr Ser Arg Pro Pro Arg Pro Trp
65 70 75 80

Asp Thr Pro Cys Pro Pro Val Tyr Ala Glu Thr Lys His Phe Leu Tyr
85 90 95

Ser Ser Gly Asp Lys Glu Gln Leu Arg Pro Ser Phe Leu Leu Ser Ser
100 105 110

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

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

Leu Pro Gln Arg Tyr Trp Gln Met Arg Pro Leu Phe Leu Glu Leu Leu

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145                 150                 155                 160

Gly Asn His Ala Gln Cys Pro Tyr Gly Val Leu Leu Lys Thr His Cys
                165                 170                 175

Pro Leu Arg Ala Ala Val Thr Pro Ala Ala Gly Val Cys Ala Arg Glu
            180                 185                 190

Lys Pro Gln Gly Ser Val Ala Ala Pro Glu Glu Glu Asp Thr Asp Pro
        195                 200                 205

Arg Arg Leu Val Gln Leu Leu Arg Gln His Ser Ser Pro Trp Gln Val
    210                 215                 220

Tyr Gly Phe Val Arg Ala Cys Leu Arg Arg Leu Val Pro Pro Gly Leu
225                 230                 235                 240

Trp Gly Ser Arg His Asn Glu Arg Arg Phe Leu Arg Asn Thr Lys Lys
                245                 250                 255

Phe Ile Ser Leu Gly Lys His Ala Lys Leu Ser Leu Gln Glu Leu Thr
            260                 265                 270

Trp Lys Met Ser Val Arg Asp Cys Ala Trp Leu Arg Arg Ser Pro Gly
        275                 280                 285

Val Gly Cys Val Pro Ala Ala Glu His Arg Leu Arg Glu Glu Ile Leu
    290                 295                 300

Ala Lys Phe Leu His Trp Leu Met Ser Val Tyr Val Val Glu Leu Leu
305                 310                 315                 320

Arg Ser Phe Phe Tyr Val Thr Glu Thr Thr Phe Gln Lys Asn Arg Leu
                325                 330                 335

Phe Phe Tyr Arg Lys Ser Val Trp Ser Lys Leu Gln Ser Ile Gly Ile
            340                 345                 350

Arg Gln His Leu Lys Arg Val Gln Leu Arg Glu Leu Ser Glu Ala Glu
        355                 360                 365
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```
Val Arg Gln His Arg Glu Ala Arg Pro Ala Leu Leu Thr Ser Arg Leu
    370                 375                 380

Arg Phe Ile Pro Lys Pro Asp Gly Leu Arg Pro Ile Val Asn Met Asp
385                 390                 395                 400

Tyr Val Val Gly Ala Arg Thr Phe Arg Arg Glu Lys Arg Ala Glu Arg
                405                 410                 415

Leu Thr Ser Arg Val Lys Ala Leu Phe Ser Val Leu Asn Tyr Glu Arg
            420                 425                 430

Ala Arg Arg Pro Gly Leu Leu Gly Ala Ser Val Leu Gly Leu Asp Asp
        435                 440                 445

Ile His Arg Ala Trp Arg Thr Phe Val Leu Arg Val Arg Ala Gln Asp
    450                 455                 460

Pro Pro Pro Glu Leu Tyr Phe Val Lys Val Ala Ile Thr Gly Ala Tyr
465                 470                 475                 480

Asp Thr Ile Pro Gln Asp Arg Leu Thr Glu Val Ile Ala Ser Ile Ile
                485                 490                 495

Lys Pro Gln Asn Thr Tyr Cys Val Arg Arg Tyr Ala Val Val Gln Lys
            500                 505                 510

Ala Ala His Gly His Val Arg Lys Ala Phe Lys Ser His Val Ser Thr
        515                 520                 525

Leu Thr Asp Leu Gln Pro Tyr Met Arg Gln Phe Val Ala His Leu Gln
    530                 535                 540

Glu Thr Ser Pro Leu Arg Asp Ala Val Val Ile Glu Gln Ser Ser Ser
545                 550                 555                 560

Leu Asn Glu Ala Ser Ser Gly Leu Phe Asp Val Phe Leu Arg Phe Met
                565                 570                 575

Cys His His Ala Val Arg Ile Arg Gly Lys Ser Tyr Val Gln Cys Gln
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Gly Ile Pro Gln Gly Ser Ile Leu Ser Thr Leu Leu Cys Ser Leu Cys
        595                 600                 605

Tyr Gly Asp Met Glu Asn Lys Leu Phe Ala Gly Ile Arg Arg Asp Gly
    610                 615                 620

Leu Leu Leu Arg Leu Val Asp Asp Phe Leu Leu Val Thr Pro His Leu
625                 630                 635                 640

Thr His Ala Lys Thr Phe Leu Arg Thr Leu Val Arg Gly Val Pro Glu
                645                 650                 655

Tyr Gly Cys Val Val Asn Leu Arg Lys Thr Val Val Asn Phe Pro Val
            660                 665                 670

Glu Asp Glu Ala Leu Gly Gly Thr Ala Phe Val Gln Met Pro Ala His
        675                 680                 685

Gly Leu Phe Pro Trp Cys Gly Leu Leu Leu Asp Thr Arg Thr Leu Glu
    690                 695                 700

Val Gln Ser Asp Tyr Ser Ser Tyr Ala Arg Thr Ser Ile Arg Ala Ser
705                 710                 715                 720

Leu Thr Phe Asn Arg Gly Phe Lys Ala Gly Arg Asn Met Arg Arg Lys
                725                 730                 735

Leu Phe Gly Val Leu Arg Leu Lys Cys His Ser Leu Phe Leu Asp Leu
            740                 745                 750

Gln Val Asn Ser Leu Gln Thr Val Cys Thr Asn Ile Tyr Lys Ile Leu
        755                 760                 765

Leu Leu Gln Ala Tyr Arg Phe His Ala Cys Val Leu Gln Leu Pro Phe
    770                 775                 780

His Gln Gln Val Trp Lys Asn Pro Thr Phe Phe Leu Arg Val Ile Ser
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```

```
Asp Thr Ala Ser Leu Cys Tyr Ser Ile Leu Lys Ala Lys Asn Ala Gly
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Met Ser Leu Gly Ala Lys Gly Ala Ala Gly Pro Leu Pro Ser Glu Ala
            820                 825                 830

Val Gln Trp Leu Cys His Gln Ala Phe Leu Leu Lys Leu Thr Arg His
        835                 840                 845

Arg Val Thr Tyr Val Pro Leu Leu Gly Ser Leu Arg Thr Ala Gln Thr
    850                 855                 860

Gln Leu Ser Arg Lys Leu Pro Gly Thr Thr Leu Thr Ala Leu Glu Ala
865                 870                 875                 880

Ala Ala Asn Pro Ala Leu Pro Ser Asp Phe Lys Thr Ile Leu Asp Gly
                885                 890                 895

Ser Gly Thr Ile Leu Ser Glu Gly Ala Thr Asn Phe Ser Leu Leu Lys
            900                 905                 910

Leu Ala Gly Asp Val Glu Leu Asn Pro Gly Pro Thr Pro Gly Thr Gln
        915                 920                 925

Ser Pro Phe Phe Leu Leu Leu Leu Leu Thr Val Leu Thr Val Val Thr
    930                 935                 940

Gly Ser Gly His Ala Ser Ser Thr Pro Gly Gly Glu Lys Glu Thr Ser
945                 950                 955                 960

Ala Thr Gln Arg Ser Ser Val Pro Ser Ser Thr Glu Lys Asn Ala Val
                965                 970                 975

Ser Met Thr Ser Ser Val Leu Ser Ser His Ser Pro Gly Ser Gly Ser
            980                 985                 990

Ser Thr Thr Gln Gly Gln Asp Val  Thr Leu Ala Pro Ala  Thr Glu Pro
        995                 1000                1005

Ala Ser  Gly Ser Ala Ala Thr  Trp Gly Gln Asp Val  Thr Ser Val
```

```
    1010                1015                1020

Pro Val  Thr Arg Pro Ala Leu  Gly Ser Thr Thr Pro  Pro Ala His
    1025                1030                1035

Asp Val  Thr Ser Ala Pro Asp  Asn Lys Pro Ala Pro  Gly Ser Thr
    1040                1045                1050

Ala Pro  Pro Ala His Gly Val  Thr Ser Ala Pro Asp  Thr Arg Pro
    1055                1060                1065

Ala Pro  Gly Ser Thr Ala Pro  Pro Ala His Gly Val  Thr Ser Ala
    1070                1075                1080

Pro Asp  Thr Arg Pro Ala Pro  Gly Ser Thr Ala Pro  Pro Ala His
    1085                1090                1095

Gly Val  Thr Ser Ala Pro Asp  Thr Arg Pro Ala Pro  Gly Ser Thr
    1100                1105                1110

Ala Pro  Pro Ala His Gly Val  Thr Ser Ala Pro Asp  Thr Arg Pro
    1115                1120                1125

Ala Pro  Gly Ser Thr Ala Pro  Pro Ala His Gly Val  Thr Ser Ala
    1130                1135                1140

Pro Asp  Thr Arg Pro Ala Leu  Gly Ser Thr Ala Pro  Pro Val His
    1145                1150                1155

Asn Val  Thr Ser Ala Ser Gly  Ser Ala Ser Gly Ser  Ala Ser Thr
    1160                1165                1170

Leu Val  His Asn Gly Thr Ser  Ala Arg Ala Thr Thr  Thr Pro Ala
    1175                1180                1185

Ser Lys  Ser Thr Pro Phe Ser  Ile Pro Ser His His  Ser Asp Thr
    1190                1195                1200

Pro Thr  Thr Leu Ala Ser His  Ser Thr Lys Thr Asp  Ala Ser Ser
    1205                1210                1215
```

```
Thr His  His Ser Ser Val Pro  Pro Leu Thr Ser Ser  Asn His Ser
    1220                1225                1230

Thr Ser  Pro Gln Leu Ser Thr  Gly Val Ser Phe Phe  Phe Leu Ser
    1235                1240                1245

Phe His  Ile Ser Asn Leu Gln  Phe Asn Ser Ser Leu  Glu Asp Pro
    1250                1255                1260

Ser Thr  Asp Tyr Tyr Gln Glu  Leu Gln Arg Asp Ile  Ser Glu Met
    1265                1270                1275

Phe Leu  Gln Ile Tyr Lys Gln  Gly Gly Phe Leu Gly  Leu Ser Asn
    1280                1285                1290

Ile Lys  Phe Arg Pro Gly Ser  Val Val Val Gln Leu  Thr Leu Ala
    1295                1300                1305

Phe Arg  Glu Gly Thr Ile Asn  Val His Asp Val Glu  Thr Gln Phe
    1310                1315                1320

Asn Gln  Tyr Lys Thr Glu Ala  Ala Ser Arg Tyr Asn  Leu Thr Ile
    1325                1330                1335

Ser Asp  Val Ser Val Ser Asp  Val Pro Phe Pro Phe  Ser Ala Gln
    1340                1345                1350

Ser Gly  Ala Gly Val Pro Gly  Trp Gly Ile Ala Leu  Leu Val Leu
    1355                1360                1365

Val Cys  Val Leu Val Ala Leu  Ala Ile Val Tyr Leu  Ile Ala Leu
    1370                1375                1380

Ala Val  Cys Gln Cys Arg Arg  Lys Asn Tyr Gly Gln  Leu Asp Ile
    1385                1390                1395

Phe Pro  Ala Arg Asp Thr Tyr  His Pro Met Ser Glu  Tyr Pro Thr
    1400                1405                1410

Tyr His  Thr His Gly Arg Tyr  Val Pro Pro Ser Ser  Thr Asp Arg
```

```
    1415                1420                1425

Ser Pro  Tyr Glu Lys Val Ser  Ala Gly Asn Gly Gly  Ser Ser Leu
    1430                1435                1440

Ser Tyr  Thr Asn Pro Ala Val  Ala Ala Ala Ser Ala  Asn Leu Gly
    1445                1450                1455

Ser Gly  Arg Ile Phe Asn Ala  His Tyr Ala Gly Tyr  Phe Ala Asp
    1460                1465                1470

Leu Leu  Ile His Asp Ile Glu  Thr Asn Pro Gly Pro  Leu Ala Gly
    1475                1480                1485

Glu Thr  Gly Gln Glu Ala Ala  Pro Leu Asp Gly Val  Leu Ala Asn
    1490                1495                1500

Pro Pro  Asn Ile Ser Ser Leu  Ser Pro Arg Gln Leu  Leu Gly Phe
    1505                1510                1515

Pro Cys  Ala Glu Val Ser Gly  Leu Ser Thr Glu Arg  Val Arg Glu
    1520                1525                1530

Leu Ala  Val Ala Leu Ala Gln  Lys Asn Val Lys Leu  Ser Thr Glu
    1535                1540                1545

Gln Leu  Arg Cys Leu Ala His  Arg Leu Ser Glu Pro  Pro Glu Asp
    1550                1555                1560

Leu Asp  Ala Leu Pro Leu Asp  Leu Leu Leu Phe Leu  Asn Pro Asp
    1565                1570                1575

Ala Phe  Ser Gly Pro Gln Ala  Cys Thr Arg Phe Phe  Ser Arg Ile
    1580                1585                1590

Thr Lys  Ala Asn Val Asp Leu  Leu Pro Arg Gly Ala  Pro Glu Arg
    1595                1600                1605

Gln Arg  Leu Leu Pro Ala Ala  Leu Ala Cys Trp Gly  Val Arg Gly
    1610                1615                1620
```

```
Ser Leu  Leu Ser Glu Ala Asp  Val Arg Ala Leu Gly  Gly Leu Ala
    1625                1630                1635

Cys Asp  Leu Pro Gly Arg Phe  Val Ala Glu Ser Ala  Glu Val Leu
    1640                1645                1650

Leu Pro  Arg Leu Val Ser Cys  Pro Gly Pro Leu Asp  Gln Asp Gln
    1655                1660                1665

Gln Glu  Ala Ala Arg Ala Ala  Leu Gln Gly Gly Gly  Pro Pro Tyr
    1670                1675                1680

Gly Pro  Pro Ser Thr Trp Ser  Val Ser Thr Met Asp  Ala Leu Arg
    1685                1690                1695

Gly Leu  Leu Pro Val Leu Gly  Gln Pro Ile Ile Arg  Ser Ile Pro
    1700                1705                1710

Gln Gly  Ile Val Ala Ala Trp  Arg Gln Arg Ser Ser  Arg Asp Pro
    1715                1720                1725

Ser Trp  Arg Gln Pro Glu Arg  Thr Ile Leu Arg Pro  Arg Phe Arg
    1730                1735                1740

Arg Glu  Val Glu Lys Thr Ala  Cys Pro Ser Gly Lys  Lys Ala Arg
    1745                1750                1755

Glu Ile  Asp Glu Ser Leu Ile  Phe Tyr Lys Lys Trp  Glu Leu Glu
    1760                1765                1770

Ala Cys  Val Asp Ala Ala Leu  Leu Ala Thr Gln Met  Asp Arg Val
    1775                1780                1785

Asn Ala  Ile Pro Phe Thr Tyr  Glu Gln Leu Asp Val  Leu Lys His
    1790                1795                1800

Lys Leu  Asp Glu Leu Tyr Pro  Gln Gly Tyr Pro Glu  Ser Val Ile
    1805                1810                1815

Gln His  Leu Gly Tyr Leu Phe  Leu Lys Met Ser Pro  Glu Asp Ile
```

```
    1820                1825                1830

Arg Lys  Trp Asn Val Thr Ser  Leu Glu Thr Leu Lys  Ala Leu Leu
    1835                1840                1845

Glu Val  Asn Lys Gly His Glu  Met Ser Pro Gln Val  Ala Thr Leu
    1850                1855                1860

Ile Asp  Arg Phe Val Lys Gly  Arg Gly Gln Leu Asp  Lys Asp Thr
    1865                1870                1875

Leu Asp  Thr Leu Thr Ala Phe  Tyr Pro Gly Tyr Leu  Cys Ser Leu
    1880                1885                1890

Ser Pro  Glu Glu Leu Ser Ser  Val Pro Pro Ser Ser  Ile Trp Ala
    1895                1900                1905

Val Arg  Pro Gln Asp Leu Asp  Thr Cys Asp Pro Arg  Gln Leu Asp
    1910                1915                1920

Val Leu  Tyr Pro Lys Ala Arg  Leu Ala Phe Gln Asn  Met Asn Gly
    1925                1930                1935

Ser Glu  Tyr Phe Val Lys Ile  Gln Ser Phe Leu Gly  Gly Ala Pro
    1940                1945                1950

Thr Glu  Asp Leu Lys Ala Leu  Ser Gln Gln Asn Val  Ser Met Asp
    1955                1960                1965

Leu Ala  Thr Phe Met Lys Leu  Arg Thr Asp Ala Val  Leu Pro Leu
    1970                1975                1980

Thr Val  Ala Glu Val Gln Lys  Leu Leu Gly Pro His  Val Glu Gly
    1985                1990                1995

Leu Lys  Ala Glu Glu Arg His  Arg Pro Val Arg Asp  Trp Ile Leu
    2000                2005                2010

Arg Gln  Arg Gln Asp Asp Leu  Asp Thr Leu Gly Leu  Gly Leu Gln
    2015                2020                2025
```

Gly Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp Leu Ser Met Gln
    2030   2035   2040

Glu Ala Leu
    2045

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<211> 5214
<212> DNA
<213> Artificial Sequence

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gccacccaga gaagcagcgt gccaagcagc accgagaaga acgccgtgtc catgaccagc 180

tccgtgctga gcagccactc tcctggcagc ggcagcagca caacacaggg ccaggatgtg 240

acactggccc ctgccacaga acctgcctct ggatctgccg ccacctgggg acaggacgtg 300

acaagcgtgc cagtgaccag acctgccctg ggctctacaa caccccctgc ccacgatgtg 360

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<211> 1738
<212> PRT
<213> Artificial Sequence

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<400> 56

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

Leu Thr Val Leu Thr Val Val Thr Gly Ser Gly His Ala Ser Ser Thr
20 25 30

Pro Gly Gly Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro
35 40 45

Ser Ser Thr Glu Lys Asn Ala Val Ser Met Thr Ser Ser Val Leu Ser

```
    50                  55                  60

Ser His Ser Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val
65                  70                  75                  80

Thr Leu Ala Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp
                85                  90                  95

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

Thr Thr Pro Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro
        115                 120                 125

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    130                 135                 140

Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val
145                 150                 155                 160

Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro
                165                 170                 175

Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser
            180                 185                 190

Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro
        195                 200                 205

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    210                 215                 220

Asp Thr Arg Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val
225                 230                 235                 240

Thr Ser Ala Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His
                245                 250                 255

Asn Gly Thr Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr
            260                 265                 270
```

```
Pro Phe Ser Ile Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala
        275                 280                 285

Ser His Ser Thr Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val
    290                 295                 300

Pro Pro Leu Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr
305                 310                 315                 320

Gly Val Ser Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln Phe
                325                 330                 335

Asn Ser Ser Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln
            340                 345                 350

Arg Asp Ile Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe
        355                 360                 365

Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln
    370                 375                 380

Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp Val Glu
385                 390                 395                 400

Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala Ala Ser Arg Tyr Asn Leu
                405                 410                 415

Thr Ile Ser Asp Val Ser Val Ser Asp Val Pro Phe Pro Phe Ser Ala
            420                 425                 430

Gln Ser Gly Ala Gly Val Pro Gly Trp Gly Ile Ala Leu Leu Val Leu
        435                 440                 445

Val Cys Val Leu Val Ala Leu Ala Ile Val Tyr Leu Ile Ala Leu Ala
    450                 455                 460

Val Cys Gln Cys Arg Arg Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro
465                 470                 475                 480

Ala Arg Asp Thr Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr His Thr
```

```
                485                 490                 495

His Gly Arg Tyr Val Pro Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu
            500                 505                 510

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

Ala Val Ala Ala Ala Ser Ala Asn Leu Gly Ser Gly Arg Ile Phe Asn
    530                 535                 540

Ala His Tyr Ala Gly Tyr Phe Ala Asp Leu Leu Ile His Asp Ile Glu
545                 550                 555                 560

Thr Asn Pro Gly Pro Leu Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro
                565                 570                 575

Leu Asp Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro
            580                 585                 590

Arg Gln Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr
        595                 600                 605

Glu Arg Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys
    610                 615                 620

Leu Ser Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro
625                 630                 635                 640

Pro Glu Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn
                645                 650                 655

Pro Asp Ala Phe Ser Gly Pro Gln Ala Cys Thr Arg Phe Phe Ser Arg
            660                 665                 670

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

Gln Arg Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser
    690                 695                 700
```

```
Leu Leu Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp
705                 710                 715                 720

Leu Pro Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg
                725                 730                 735

Leu Val Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala
            740                 745                 750

Arg Ala Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr
        755                 760                 765

Trp Ser Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu
    770                 775                 780

Gly Gln Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp
785                 790                 795                 800

Arg Gln Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr
                805                 810                 815

Ile Leu Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro
            820                 825                 830

Ser Gly Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys
        835                 840                 845

Lys Trp Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln
    850                 855                 860

Met Asp Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val
865                 870                 875                 880

Leu Lys His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser
                885                 890                 895

Val Ile Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp
            900                 905                 910

Ile Arg Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu
```

```
        915                 920                 925

Glu Val Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile
    930                 935                 940

Asp Arg Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp
945                 950                 955                 960

Thr Leu Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu
                965                 970                 975

Glu Leu Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln
            980                 985                 990

Asp Leu Asp Thr Cys Asp Pro Arg  Gln Leu Asp Val Leu  Tyr Pro Lys
        995                 1000                1005

Ala Arg  Leu Ala Phe Gln Asn  Met Asn Gly Ser Glu  Tyr Phe Val
    1010                1015                1020

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

Ala Leu  Ser Gln Gln Asn Val  Ser Met Asp Leu Ala  Thr Phe Met
    1040                1045                1050

Lys Leu  Arg Thr Asp Ala Val  Leu Pro Leu Thr Val  Ala Glu Val
    1055                1060                1065

Gln Lys  Leu Leu Gly Pro His  Val Glu Gly Leu Lys  Ala Glu Glu
    1070                1075                1080

Arg His  Arg Pro Val Arg Asp  Trp Ile Leu Arg Gln  Arg Gln Asp
    1085                1090                1095

Asp Leu  Asp Thr Leu Gly Leu  Gly Leu Gln Gly Gly  Ile Pro Asn
    1100                1105                1110

Gly Tyr  Leu Val Leu Asp Leu  Ser Met Gln Glu Ala  Leu Gly Ser
    1115                1120                1125
```

```
Gly Glu  Gly Arg Gly Ser Leu  Leu Thr Cys Gly Asp  Val Glu Glu
    1130                1135                1140

Asn Pro  Gly Pro Ala Lys Phe  Leu His Trp Leu Met  Ser Val Tyr
    1145                1150                1155

Val Val  Glu Leu Leu Arg Ser  Phe Phe Tyr Val Thr  Glu Thr Thr
    1160                1165                1170

Phe Gln  Lys Asn Arg Leu Phe  Phe Tyr Arg Lys Ser  Val Trp Ser
    1175                1180                1185

Lys Leu  Gln Ser Ile Gly Ile  Arg Gln His Leu Lys  Arg Val Gln
    1190                1195                1200

Leu Arg  Glu Leu Ser Glu Ala  Glu Val Arg Gln His  Arg Glu Ala
    1205                1210                1215

Arg Pro  Ala Leu Leu Thr Ser  Arg Leu Arg Phe Ile  Pro Lys Pro
    1220                1225                1230

Asp Gly  Leu Arg Pro Ile Val  Asn Met Asp Tyr Val  Val Gly Ala
    1235                1240                1245

Arg Thr  Phe Arg Arg Glu Lys  Arg Ala Glu Arg Leu  Thr Ser Arg
    1250                1255                1260

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

Pro Gly  Leu Leu Gly Ala Ser  Val Leu Gly Leu Asp  Asp Ile His
    1280                1285                1290

Arg Ala  Trp Arg Thr Phe Val  Leu Arg Val Arg Ala  Gln Asp Pro
    1295                1300                1305

Pro Pro  Glu Leu Tyr Phe Val  Lys Val Ala Ile Thr  Gly Ala Tyr
    1310                1315                1320

Asp Thr  Ile Pro Gln Asp Arg  Leu Thr Glu Val Ile  Ala Ser Ile
```

```
    1325                1330                1335

Ile Lys  Pro Gln Asn Thr Tyr  Cys Val Arg Arg Tyr  Ala Val Val
    1340                1345                1350

Gln Lys  Ala Ala His Gly His  Val Arg Lys Ala Phe  Lys Ser His
    1355                1360                1365

Val Ser  Thr Leu Thr Asp Leu  Gln Pro Tyr Met Arg  Gln Phe Val
    1370                1375                1380

Ala His  Leu Gln Glu Thr Ser  Pro Leu Arg Asp Ala  Val Val Ile
    1385                1390                1395

Glu Gln  Ser Ser Ser Leu Asn  Glu Ala Ser Ser Gly  Leu Phe Asp
    1400                1405                1410

Val Phe  Leu Arg Phe Met Cys  His His Ala Val Arg  Ile Arg Gly
    1415                1420                1425

Lys Ser  Tyr Val Gln Cys Gln  Gly Ile Pro Gln Gly  Ser Ile Leu
    1430                1435                1440

Ser Thr  Leu Leu Cys Ser Leu  Cys Tyr Gly Asp Met  Glu Asn Lys
    1445                1450                1455

Leu Phe  Ala Gly Ile Arg Arg  Asp Gly Leu Leu Leu  Arg Leu Val
    1460                1465                1470

Asp Asp  Phe Leu Leu Val Thr  Pro His Leu Thr His  Ala Lys Thr
    1475                1480                1485

Phe Leu  Arg Thr Leu Val Arg  Gly Val Pro Glu Tyr  Gly Cys Val
    1490                1495                1500

Val Asn  Leu Arg Lys Thr Val  Val Asn Phe Pro Val  Glu Asp Glu
    1505                1510                1515

Ala Leu  Gly Gly Thr Ala Phe  Val Gln Met Pro Ala  His Gly Leu
    1520                1525                1530
```

```
Phe Pro  Trp Cys Gly Leu Leu  Leu Asp Thr Arg Thr  Leu Glu Val
    1535                1540                1545

Gln Ser  Asp Tyr Ser Ser Tyr  Ala Arg Thr Ser Ile  Arg Ala Ser
    1550                1555                1560

Leu Thr  Phe Asn Arg Gly Phe  Lys Ala Gly Arg Asn  Met Arg Arg
    1565                1570                1575

Lys Leu  Phe Gly Val Leu Arg  Leu Lys Cys His Ser  Leu Phe Leu
    1580                1585                1590

Asp Leu  Gln Val Asn Ser Leu  Gln Thr Val Cys Thr  Asn Ile Tyr
    1595                1600                1605

Lys Ile  Leu Leu Leu Gln Ala  Tyr Arg Phe His Ala  Cys Val Leu
    1610                1615                1620

Gln Leu  Pro Phe His Gln Gln  Val Trp Lys Asn Pro  Thr Phe Phe
    1625                1630                1635

Leu Arg  Val Ile Ser Asp Thr  Ala Ser Leu Cys Tyr  Ser Ile Leu
    1640                1645                1650

Lys Ala  Lys Asn Ala Gly Met  Ser Leu Gly Ala Lys  Gly Ala Ala
    1655                1660                1665

Gly Pro  Leu Pro Ser Glu Ala  Val Gln Trp Leu Cys  His Gln Ala
    1670                1675                1680

Phe Leu  Leu Lys Leu Thr Arg  His Arg Val Thr Tyr  Val Pro Leu
    1685                1690                1695

Leu Gly  Ser Leu Arg Thr Ala  Gln Thr Gln Leu Ser  Arg Lys Leu
    1700                1705                1710

Pro Gly  Thr Thr Leu Thr Ala  Leu Glu Ala Ala Ala  Asn Pro Ala
    1715                1720                1725

Leu Pro  Ser Asp Phe Lys Thr  Ile Leu Asp
```

1730 1735

<210> 57
<211> 5235
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 57
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gtgtccggcc tgagcacaga gagagtgcgg gaactggctg tggccctggc ccagaaaaac 180

gtgaagctga gcaccgagca gctgcggtgc ctggcccaca gactgtctga gcctcccgag 240

gatctggacg ccctgcctct ggatctgctg ctgttcctga accccgacgc cttcagcgga 300

cctcaggcct gcacccggtt cttcagcaga atcaccaagg ccaacgtgga cctgctgccc 360

agaggcgccc ctgagagaca gagactgctg cctgctgctc tggcctgttg gggagtgcgg 420

ggctctctgc tgtctgaagc tgatgtgcgg gccctgggag gcctggcttg tgatctgcct 480

ggaagattcg tggccgagag cgccgaagtg ctgctgccta gactggtgtc ctgtcccggc 540

cctctggacc aggatcagca ggaagctgcc agagctgctc tgcagggcgg aggccctcct 600

tatggacctc ctagcacttg gagcgtgtcc accatggatg ccctgagggg cctgctgcca 660

gtgctgggcc agcctatcat cagatccatc ccacagggca tcgtggccgc ctggcggcag 720

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acctacgtcc cgctgctggg ctcgctgcgc actgcacaga cccagctgtc tagaaaactc 5160

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aagaccatct tggac 5235

<210> 58
<211> 1745
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 58

Met Ala Ser Leu Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro Leu Asp
1 5 10 15

Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro Arg Gln
20 25 30

Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu Arg
35 40 45

Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu Ser
50 55 60

Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro Glu

```
65                  70                  75                  80

Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro Asp
                85                  90                  95

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

Lys Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln Arg
        115                 120                 125

Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu Leu
    130                 135                 140

Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu Pro
145                 150                 155                 160

Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg Leu Val
                165                 170                 175

Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala Arg Ala
            180                 185                 190

Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr Trp Ser
        195                 200                 205

Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu Gly Gln
    210                 215                 220

Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp Arg Gln
225                 230                 235                 240

Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr Ile Leu
                245                 250                 255

Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro Ser Gly
            260                 265                 270

Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp
        275                 280                 285
```

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Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln Met Asp
    290                 295                 300

Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys
305                 310                 315                 320

His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile
                325                 330                 335

Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp Ile Arg
            340                 345                 350

Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu Val
        355                 360                 365

Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile Asp Arg
    370                 375                 380

Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp Thr Leu
385                 390                 395                 400

Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu Glu Leu
                405                 410                 415

Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln Asp Leu
            420                 425                 430

Asp Thr Cys Asp Pro Arg Gln Leu Asp Val Leu Tyr Pro Lys Ala Arg
        435                 440                 445

Leu Ala Phe Gln Asn Met Asn Gly Ser Glu Tyr Phe Val Lys Ile Gln
    450                 455                 460

Ser Phe Leu Gly Gly Ala Pro Thr Glu Asp Leu Lys Ala Leu Ser Gln
465                 470                 475                 480

Gln Asn Val Ser Met Asp Leu Ala Thr Phe Met Lys Leu Arg Thr Asp
                485                 490                 495

Ala Val Leu Pro Leu Thr Val Ala Glu Val Gln Lys Leu Leu Gly Pro
```

```
            500                 505                 510

His Val Glu Gly Leu Lys Ala Glu Glu Arg His Arg Pro Val Arg Asp
        515                 520                 525

Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly Leu Gly
    530                 535                 540

Leu Gln Gly Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp Leu Ser Met
545                 550                 555                 560

Gln Glu Ala Leu Gly Ser Gly Arg Ile Phe Asn Ala His Tyr Ala Gly
                565                 570                 575

Tyr Phe Ala Asp Leu Leu Ile His Asp Ile Glu Thr Asn Pro Gly Pro
            580                 585                 590

Thr Pro Gly Thr Gln Ser Pro Phe Phe Leu Leu Leu Leu Leu Thr Val
        595                 600                 605

Leu Thr Val Val Thr Gly Ser Gly His Ala Ser Ser Thr Pro Gly Gly
    610                 615                 620

Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro Ser Ser Thr
625                 630                 635                 640

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

Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val Thr Leu Ala
            660                 665                 670

Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp Gly Gln Asp
        675                 680                 685

Val Thr Ser Val Pro Val Thr Arg Pro Ala Leu Gly Ser Thr Thr Pro
    690                 695                 700

Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro Ala Pro Gly
705                 710                 715                 720
```

```
Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg
                725                 730                 735

Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala
            740                 745                 750

Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly
        755                 760                 765

Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro
    770                 775                 780

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

Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg
                805                 810                 815

Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val Thr Ser Ala
            820                 825                 830

Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His Asn Gly Thr
        835                 840                 845

Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr Pro Phe Ser
    850                 855                 860

Ile Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala Ser His Ser
865                 870                 875                 880

Thr Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val Pro Pro Leu
                885                 890                 895

Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr Gly Val Ser
            900                 905                 910

Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln Phe Asn Ser Ser
        915                 920                 925

Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln Arg Asp Ile
```

```
    930                 935                 940

Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe Leu Gly Leu
945                 950                 955                 960

Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln Leu Thr Leu
                965                 970                 975

Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp Val Glu Thr Gln Phe
            980                 985                 990

Asn Gln Tyr Lys Thr Glu Ala Ala  Ser Arg Tyr Asn Leu  Thr Ile Ser
        995                 1000                1005

Asp Val  Ser Val Ser Asp Val  Pro Phe Pro Phe Ser  Ala Gln Ser
    1010                1015                1020

Gly Ala  Gly Val Pro Gly Trp  Gly Ile Ala Leu Leu  Val Leu Val
    1025                1030                1035

Cys Val  Leu Val Ala Leu Ala  Ile Val Tyr Leu Ile  Ala Leu Ala
    1040                1045                1050

Val Cys  Gln Cys Arg Arg Lys  Asn Tyr Gly Gln Leu  Asp Ile Phe
    1055                1060                1065

Pro Ala  Arg Asp Thr Tyr His  Pro Met Ser Glu Tyr  Pro Thr Tyr
    1070                1075                1080

His Thr  His Gly Arg Tyr Val  Pro Pro Ser Ser Thr  Asp Arg Ser
    1085                1090                1095

Pro Tyr  Glu Lys Val Ser Ala  Gly Asn Gly Gly Ser  Ser Leu Ser
    1100                1105                1110

Tyr Thr  Asn Pro Ala Val Ala  Ala Ala Ser Ala Asn  Leu Gly Ser
    1115                1120                1125

Gly Thr  Ile Leu Ser Glu Gly  Ala Thr Asn Phe Ser  Leu Leu Lys
    1130                1135                1140
```

```
Leu Ala  Gly Asp Val Glu Leu  Asn Pro Gly Pro Ala  Lys Phe Leu
    1145                1150                1155

His Trp  Leu Met Ser Val Tyr  Val Val Glu Leu Leu  Arg Ser Phe
    1160                1165                1170

Phe Tyr  Val Thr Glu Thr Thr  Phe Gln Lys Asn Arg  Leu Phe Phe
    1175                1180                1185

Tyr Arg  Lys Ser Val Trp Ser  Lys Leu Gln Ser Ile  Gly Ile Arg
    1190                1195                1200

Gln His  Leu Lys Arg Val Gln  Leu Arg Glu Leu Ser  Glu Ala Glu
    1205                1210                1215

Val Arg  Gln His Arg Glu Ala  Arg Pro Ala Leu Leu  Thr Ser Arg
    1220                1225                1230

Leu Arg  Phe Ile Pro Lys Pro  Asp Gly Leu Arg Pro  Ile Val Asn
    1235                1240                1245

Met Asp  Tyr Val Val Gly Ala  Arg Thr Phe Arg Arg  Glu Lys Arg
    1250                1255                1260

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

Asn Tyr  Glu Arg Ala Arg Arg  Pro Gly Leu Leu Gly  Ala Ser Val
    1280                1285                1290

Leu Gly  Leu Asp Asp Ile His  Arg Ala Trp Arg Thr  Phe Val Leu
    1295                1300                1305

Arg Val  Arg Ala Gln Asp Pro  Pro Pro Glu Leu Tyr  Phe Val Lys
    1310                1315                1320

Val Ala  Ile Thr Gly Ala Tyr  Asp Thr Ile Pro Gln  Asp Arg Leu
    1325                1330                1335

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

```
    1340                1345                1350

Val Arg  Arg Tyr Ala Val Val  Gln Lys Ala Ala His  Gly His Val
    1355                1360                1365

Arg Lys  Ala Phe Lys Ser His  Val Ser Thr Leu Thr  Asp Leu Gln
    1370                1375                1380

Pro Tyr  Met Arg Gln Phe Val  Ala His Leu Gln Glu  Thr Ser Pro
    1385                1390                1395

Leu Arg  Asp Ala Val Val Ile  Glu Gln Ser Ser Ser  Leu Asn Glu
    1400                1405                1410

Ala Ser  Ser Gly Leu Phe Asp  Val Phe Leu Arg Phe  Met Cys His
    1415                1420                1425

His Ala  Val Arg Ile Arg Gly  Lys Ser Tyr Val Gln  Cys Gln Gly
    1430                1435                1440

Ile Pro  Gln Gly Ser Ile Leu  Ser Thr Leu Leu Cys  Ser Leu Cys
    1445                1450                1455

Tyr Gly  Asp Met Glu Asn Lys  Leu Phe Ala Gly Ile  Arg Arg Asp
    1460                1465                1470

Gly Leu  Leu Leu Arg Leu Val  Asp Asp Phe Leu Leu  Val Thr Pro
    1475                1480                1485

His Leu  Thr His Ala Lys Thr  Phe Leu Arg Thr Leu  Val Arg Gly
    1490                1495                1500

Val Pro  Glu Tyr Gly Cys Val  Val Asn Leu Arg Lys  Thr Val Val
    1505                1510                1515

Asn Phe  Pro Val Glu Asp Glu  Ala Leu Gly Gly Thr  Ala Phe Val
    1520                1525                1530

Gln Met  Pro Ala His Gly Leu  Phe Pro Trp Cys Gly  Leu Leu Leu
    1535                1540                1545
```

```
Asp Thr  Arg Thr Leu Glu Val  Gln Ser Asp Tyr Ser  Ser Tyr Ala
    1550                1555                1560

Arg Thr  Ser Ile Arg Ala Ser  Leu Thr Phe Asn Arg  Gly Phe Lys
    1565                1570                1575

Ala Gly  Arg Asn Met Arg Arg  Lys Leu Phe Gly Val  Leu Arg Leu
    1580                1585                1590

Lys Cys  His Ser Leu Phe Leu  Asp Leu Gln Val Asn  Ser Leu Gln
    1595                1600                1605

Thr Val  Cys Thr Asn Ile Tyr  Lys Ile Leu Leu Leu  Gln Ala Tyr
    1610                1615                1620

Arg Phe  His Ala Cys Val Leu  Gln Leu Pro Phe His  Gln Gln Val
    1625                1630                1635

Trp Lys  Asn Pro Thr Phe Phe  Leu Arg Val Ile Ser  Asp Thr Ala
    1640                1645                1650

Ser Leu  Cys Tyr Ser Ile Leu  Lys Ala Lys Asn Ala  Gly Met Ser
    1655                1660                1665

Leu Gly  Ala Lys Gly Ala Ala  Gly Pro Leu Pro Ser  Glu Ala Val
    1670                1675                1680

Gln Trp  Leu Cys His Gln Ala  Phe Leu Leu Lys Leu  Thr Arg His
    1685                1690                1695

Arg Val  Thr Tyr Val Pro Leu  Leu Gly Ser Leu Arg  Thr Ala Gln
    1700                1705                1710

Thr Gln  Leu Ser Arg Lys Leu  Pro Gly Thr Thr Leu  Thr Ala Leu
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Glu Ala  Ala Ala Asn Pro Ala  Leu Pro Ser Asp Phe  Lys Thr Ile
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Leu Asp
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<400> 60

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Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro Arg Gln
20 25 30

Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu Arg
35 40 45

Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu Ser
50 55 60

Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro Glu
65 70 75 80

```
Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro Asp
                85                  90                  95

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

Lys Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln Arg
        115                 120                 125

Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu Leu
    130                 135                 140

Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu Pro
145                 150                 155                 160

Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg Leu Val
                165                 170                 175

Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala Arg Ala
            180                 185                 190

Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr Trp Ser
        195                 200                 205

Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu Gly Gln
    210                 215                 220

Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp Arg Gln
225                 230                 235                 240

Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr Ile Leu
                245                 250                 255

Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro Ser Gly
            260                 265                 270

Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp
        275                 280                 285

Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln Met Asp
```

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    290                 295                 300

Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys
305                 310                 315                 320

His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile
                325                 330                 335

Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp Ile Arg
            340                 345                 350

Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu Val
        355                 360                 365

Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile Asp Arg
    370                 375                 380

Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp Thr Leu
385                 390                 395                 400

Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu Glu Leu
                405                 410                 415

Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln Asp Leu
            420                 425                 430

Asp Thr Cys Asp Pro Arg Gln Leu Asp Val Leu Tyr Pro Lys Ala Arg
        435                 440                 445

Leu Ala Phe Gln Asn Met Asn Gly Ser Glu Tyr Phe Val Lys Ile Gln
    450                 455                 460

Ser Phe Leu Gly Gly Ala Pro Thr Glu Asp Leu Lys Ala Leu Ser Gln
465                 470                 475                 480

Gln Asn Val Ser Met Asp Leu Ala Thr Phe Met Lys Leu Arg Thr Asp
                485                 490                 495

Ala Val Leu Pro Leu Thr Val Ala Glu Val Gln Lys Leu Leu Gly Pro
            500                 505                 510
```

```
His Val Glu Gly Leu Lys Ala Glu Glu Arg His Arg Pro Val Arg Asp
        515                 520                 525

Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly Leu Gly
    530                 535                 540

Leu Gln Gly Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp Leu Ser Met
545                 550                 555                 560

Gln Glu Ala Leu Gly Ser Gly Glu Gly Arg Gly Ser Leu Leu Thr Cys
                565                 570                 575

Gly Asp Val Glu Glu Asn Pro Gly Pro Ala Lys Phe Leu His Trp Leu
            580                 585                 590

Met Ser Val Tyr Val Val Glu Leu Leu Arg Ser Phe Phe Tyr Val Thr
        595                 600                 605

Glu Thr Thr Phe Gln Lys Asn Arg Leu Phe Phe Tyr Arg Lys Ser Val
    610                 615                 620

Trp Ser Lys Leu Gln Ser Ile Gly Ile Arg Gln His Leu Lys Arg Val
625                 630                 635                 640

Gln Leu Arg Glu Leu Ser Glu Ala Glu Val Arg Gln His Arg Glu Ala
                645                 650                 655

Arg Pro Ala Leu Leu Thr Ser Arg Leu Arg Phe Ile Pro Lys Pro Asp
            660                 665                 670

Gly Leu Arg Pro Ile Val Asn Met Asp Tyr Val Val Gly Ala Arg Thr
        675                 680                 685

Phe Arg Arg Glu Lys Arg Ala Glu Arg Leu Thr Ser Arg Val Lys Ala
    690                 695                 700

Leu Phe Ser Val Leu Asn Tyr Glu Arg Ala Arg Arg Pro Gly Leu Leu
705                 710                 715                 720

Gly Ala Ser Val Leu Gly Leu Asp Asp Ile His Arg Ala Trp Arg Thr
```

```
                725                 730                 735

Phe Val Leu Arg Val Arg Ala Gln Asp Pro Pro Pro Glu Leu Tyr Phe
            740                 745                 750

Val Lys Val Ala Ile Thr Gly Ala Tyr Asp Thr Ile Pro Gln Asp Arg
        755                 760                 765

Leu Thr Glu Val Ile Ala Ser Ile Ile Lys Pro Gln Asn Thr Tyr Cys
    770                 775                 780

Val Arg Arg Tyr Ala Val Val Gln Lys Ala Ala His Gly His Val Arg
785                 790                 795                 800

Lys Ala Phe Lys Ser His Val Ser Thr Leu Thr Asp Leu Gln Pro Tyr
                805                 810                 815

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

Ala Val Val Ile Glu Gln Ser Ser Ser Leu Asn Glu Ala Ser Ser Gly
        835                 840                 845

Leu Phe Asp Val Phe Leu Arg Phe Met Cys His His Ala Val Arg Ile
    850                 855                 860

Arg Gly Lys Ser Tyr Val Gln Cys Gln Gly Ile Pro Gln Gly Ser Ile
865                 870                 875                 880

Leu Ser Thr Leu Leu Cys Ser Leu Cys Tyr Gly Asp Met Glu Asn Lys
                885                 890                 895

Leu Phe Ala Gly Ile Arg Arg Asp Gly Leu Leu Leu Arg Leu Val Asp
            900                 905                 910

Asp Phe Leu Leu Val Thr Pro His Leu Thr His Ala Lys Thr Phe Leu
        915                 920                 925

Arg Thr Leu Val Arg Gly Val Pro Glu Tyr Gly Cys Val Val Asn Leu
    930                 935                 940
```

```
Arg Lys Thr Val Val Asn Phe Pro Val Glu Asp Glu Ala Leu Gly Gly
945                 950                 955                 960


Thr Ala Phe Val Gln Met Pro Ala His Gly Leu Phe Pro Trp Cys Gly
                965                 970                 975


Leu Leu Leu Asp Thr Arg Thr Leu Glu Val Gln Ser Asp Tyr Ser Ser
            980                 985                 990


Tyr Ala Arg Thr Ser Ile Arg Ala  Ser Leu Thr Phe Asn  Arg Gly Phe
        995                 1000                1005


Lys Ala  Gly Arg Asn Met Arg  Arg Lys Leu Phe Gly  Val Leu Arg
    1010                1015                1020


Leu Lys  Cys His Ser Leu Phe  Leu Asp Leu Gln Val  Asn Ser Leu
    1025                1030                1035


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


Tyr Arg  Phe His Ala Cys Val  Leu Gln Leu Pro Phe  His Gln Gln
    1055                1060                1065


Val Trp  Lys Asn Pro Thr Phe  Phe Leu Arg Val Ile  Ser Asp Thr
    1070                1075                1080


Ala Ser  Leu Cys Tyr Ser Ile  Leu Lys Ala Lys Asn  Ala Gly Met
    1085                1090                1095


Ser Leu  Gly Ala Lys Gly Ala  Ala Gly Pro Leu Pro  Ser Glu Ala
    1100                1105                1110


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


His Arg  Val Thr Tyr Val Pro  Leu Leu Gly Ser Leu  Arg Thr Ala
    1130                1135                1140


Gln Thr  Gln Leu Ser Arg Lys  Leu Pro Gly Thr Thr  Leu Thr Ala
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```
    1145                1150                1155

Leu Glu  Ala Ala Ala Asn Pro  Ala Leu Pro Ser Asp  Phe Lys Thr
    1160                1165                1170

Ile Leu  Asp Gly Ser Gly Thr  Ile Leu Ser Glu Gly  Ala Thr Asn
    1175                1180                1185

Phe Ser  Leu Leu Lys Leu Ala  Gly Asp Val Glu Leu  Asn Pro Gly
    1190                1195                1200

Pro Thr  Pro Gly Thr Gln Ser  Pro Phe Phe Leu Leu  Leu Leu Leu
    1205                1210                1215

Thr Val  Leu Thr Val Val Thr  Gly Ser Gly His Ala  Ser Ser Thr
    1220                1225                1230

Pro Gly  Gly Glu Lys Glu Thr  Ser Ala Thr Gln Arg  Ser Ser Val
    1235                1240                1245

Pro Ser  Ser Thr Glu Lys Asn  Ala Val Ser Met Thr  Ser Ser Val
    1250                1255                1260

Leu Ser  Ser His Ser Pro Gly  Ser Gly Ser Ser Thr  Thr Gln Gly
    1265                1270                1275

Gln Asp  Val Thr Leu Ala Pro  Ala Thr Glu Pro Ala  Ser Gly Ser
    1280                1285                1290

Ala Ala  Thr Trp Gly Gln Asp  Val Thr Ser Val Pro  Val Thr Arg
    1295                1300                1305

Pro Ala  Leu Gly Ser Thr Thr  Pro Pro Ala His Asp  Val Thr Ser
    1310                1315                1320

Ala Pro  Asp Asn Lys Pro Ala  Pro Gly Ser Thr Ala  Pro Pro Ala
    1325                1330                1335

His Gly  Val Thr Ser Ala Pro  Asp Thr Arg Pro Ala  Pro Gly Ser
    1340                1345                1350
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```
Thr Ala  Pro Pro Ala His Gly  Val Thr Ser Ala Pro  Asp Thr Arg
    1355                1360                1365

Pro Ala  Pro Gly Ser Thr Ala  Pro Pro Ala His Gly  Val Thr Ser
    1370                1375                1380

Ala Pro  Asp Thr Arg Pro Ala  Pro Gly Ser Thr Ala  Pro Pro Ala
    1385                1390                1395

His Gly  Val Thr Ser Ala Pro  Asp Thr Arg Pro Ala  Pro Gly Ser
    1400                1405                1410

Thr Ala  Pro Pro Ala His Gly  Val Thr Ser Ala Pro  Asp Thr Arg
    1415                1420                1425

Pro Ala  Leu Gly Ser Thr Ala  Pro Pro Val His Asn  Val Thr Ser
    1430                1435                1440

Ala Ser  Gly Ser Ala Ser Gly  Ser Ala Ser Thr Leu  Val His Asn
    1445                1450                1455

Gly Thr  Ser Ala Arg Ala Thr  Thr Thr Pro Ala Ser  Lys Ser Thr
    1460                1465                1470

Pro Phe  Ser Ile Pro Ser His  His Ser Asp Thr Pro  Thr Thr Leu
    1475                1480                1485

Ala Ser  His Ser Thr Lys Thr  Asp Ala Ser Ser Thr  His His Ser
    1490                1495                1500

Ser Val  Pro Pro Leu Thr Ser  Ser Asn His Ser Thr  Ser Pro Gln
    1505                1510                1515

Leu Ser  Thr Gly Val Ser Phe  Phe Phe Leu Ser Phe  His Ile Ser
    1520                1525                1530

Asn Leu  Gln Phe Asn Ser Ser  Leu Glu Asp Pro Ser  Thr Asp Tyr
    1535                1540                1545

Tyr Gln  Glu Leu Gln Arg Asp  Ile Ser Glu Met Phe  Leu Gln Ile
```

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    1550                1555                1560

Tyr Lys  Gln Gly Gly Phe Leu  Gly Leu Ser Asn Ile  Lys Phe Arg
    1565                1570                1575

Pro Gly  Ser Val Val Val Gln  Leu Thr Leu Ala Phe  Arg Glu Gly
    1580                1585                1590

Thr Ile  Asn Val His Asp Val  Glu Thr Gln Phe Asn  Gln Tyr Lys
    1595                1600                1605

Thr Glu  Ala Ala Ser Arg Tyr  Asn Leu Thr Ile Ser  Asp Val Ser
    1610                1615                1620

Val Ser  Asp Val Pro Phe Pro  Phe Ser Ala Gln Ser  Gly Ala Gly
    1625                1630                1635

Val Pro  Gly Trp Gly Ile Ala  Leu Leu Val Leu Val  Cys Val Leu
    1640                1645                1650

Val Ala  Leu Ala Ile Val Tyr  Leu Ile Ala Leu Ala  Val Cys Gln
    1655                1660                1665

Cys Arg  Arg Lys Asn Tyr Gly  Gln Leu Asp Ile Phe  Pro Ala Arg
    1670                1675                1680

Asp Thr  Tyr His Pro Met Ser  Glu Tyr Pro Thr Tyr  His Thr His
    1685                1690                1695

Gly Arg  Tyr Val Pro Pro Ser  Ser Thr Asp Arg Ser  Pro Tyr Glu
    1700                1705                1710

Lys Val  Ser Ala Gly Asn Gly  Gly Ser Ser Leu Ser  Tyr Thr Asn
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Pro Ala  Val Ala Ala Ala Ser  Ala Asn Leu
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<213> Artificial Sequence

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Pro Gly Gly Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro
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Ser Ser Thr Glu Lys Asn Ala Val Ser Met Thr Ser Ser Val Leu Ser
    50                  55                  60

Ser His Ser Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val
65                  70                  75                  80

Thr Leu Ala Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp
                85                  90                  95

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

Thr Thr Pro Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro
        115                 120                 125

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    130                 135                 140

Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val
145                 150                 155                 160

Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro
                165                 170                 175

Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser
            180                 185                 190

Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro
        195                 200                 205

Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro
    210                 215                 220

Asp Thr Arg Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val
225                 230                 235                 240
```

```
Thr Ser Ala Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His
                245                 250                 255

Asn Gly Thr Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr
            260                 265                 270

Pro Phe Ser Ile Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala
        275                 280                 285

Ser His Ser Thr Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val
    290                 295                 300

Pro Pro Leu Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr
305                 310                 315                 320

Gly Val Ser Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln Phe
                325                 330                 335

Asn Ser Ser Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln
            340                 345                 350

Arg Asp Ile Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe
        355                 360                 365

Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln
    370                 375                 380

Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp Val Glu
385                 390                 395                 400

Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala Ala Ser Arg Tyr Asn Leu
                405                 410                 415

Thr Ile Ser Asp Val Ser Val Ser Asp Val Pro Phe Pro Phe Ser Ala
            420                 425                 430

Gln Ser Gly Ala Gly Val Pro Gly Trp Gly Ile Ala Leu Leu Val Leu
        435                 440                 445

Val Cys Val Leu Val Ala Leu Ala Ile Val Tyr Leu Ile Ala Leu Ala
```

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Val Cys Gln Cys Arg Arg Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro
465                 470                 475                 480

Ala Arg Asp Thr Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr His Thr
                485                 490                 495

His Gly Arg Tyr Val Pro Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu
            500                 505                 510

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

Ala Val Ala Ala Ala Ser Ala Asn Leu Gly Ser Gly Arg Ile Phe Asn
    530                 535                 540

Ala His Tyr Ala Gly Tyr Phe Ala Asp Leu Leu Ile His Asp Ile Glu
545                 550                 555                 560

Thr Asn Pro Gly Pro Leu Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro
                565                 570                 575

Leu Asp Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro
            580                 585                 590

Arg Gln Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr
        595                 600                 605

Glu Arg Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys
    610                 615                 620

Leu Ser Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro
625                 630                 635                 640

Pro Glu Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn
                645                 650                 655

Pro Asp Ala Phe Ser Gly Pro Gln Ala Cys Thr Arg Phe Phe Ser Arg
            660                 665                 670
```

```
Ile Thr Lys Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg
        675                 680                 685

Gln Arg Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser
    690                 695                 700

Leu Leu Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp
705                 710                 715                 720

Leu Pro Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg
                725                 730                 735

Leu Val Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala
            740                 745                 750

Arg Ala Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr
        755                 760                 765

Trp Ser Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu
    770                 775                 780

Gly Gln Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp
785                 790                 795                 800

Arg Gln Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr
                805                 810                 815

Ile Leu Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro
            820                 825                 830

Ser Gly Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys
        835                 840                 845

Lys Trp Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln
    850                 855                 860

Met Asp Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val
865                 870                 875                 880

Leu Lys His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser
```

```
               885                 890                 895

Val Ile Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp
            900                 905                 910

Ile Arg Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu
        915                 920                 925

Glu Val Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile
    930                 935                 940

Asp Arg Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp
945                 950                 955                 960

Thr Leu Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu
               965                 970                 975

Glu Leu Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln
            980                 985                 990

Asp Leu Asp Thr Cys Asp Pro Arg  Gln Leu Asp Val Leu  Tyr Pro Lys
        995                 1000                1005

Ala Arg  Leu Ala Phe Gln Asn  Met Asn Gly Ser Glu  Tyr Phe Val
    1010                1015                1020

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

Ala Leu  Ser Gln Gln Asn Val  Ser Met Asp Leu Ala  Thr Phe Met
    1040                1045                1050

Lys Leu  Arg Thr Asp Ala Val  Leu Pro Leu Thr Val  Ala Glu Val
    1055                1060                1065

Gln Lys  Leu Leu Gly Pro His  Val Glu Gly Leu Lys  Ala Glu Glu
    1070                1075                1080

Arg His  Arg Pro Val Arg Asp  Trp Ile Leu Arg Gln  Arg Gln Asp
    1085                1090                1095
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Asp Leu  Asp Thr Leu Gly Leu  Gly Leu Gln Gly Gly  Ile Pro Asn
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Gly Tyr  Leu Val Leu Asp Leu  Ser Met Gln Glu Ala  Leu Gly Ser
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Gly Glu  Gly Arg Gly Ser Leu  Leu Thr Cys Gly Asp  Val Glu Glu
    1130                1135                1140

Asn Pro  Gly Pro Ser Phe Leu  Leu Ser Ser Leu Arg  Pro Ser Leu
    1145                1150                1155

Thr Gly  Ala Arg Arg Leu Val  Glu Thr Ile Phe Leu  Gly Ser Arg
    1160                1165                1170

Pro Trp  Met Pro Gly Thr Pro  Arg Arg Leu Pro Arg  Leu Pro Gln
    1175                1180                1185

Arg Tyr  Trp Gln Met Arg Pro  Leu Phe Leu Glu Leu  Leu Gly Asn
    1190                1195                1200

His Ala  Gln Cys Pro Tyr Gly  Val Leu Leu Lys Thr  His Cys Pro
    1205                1210                1215

Leu Arg  Ala Ala Val Thr Pro  Ala Ala Gly Val Cys  Ala Arg Glu
    1220                1225                1230

Lys Pro  Gln Gly Ser Val Ala  Ala Pro Glu Glu Glu  Asp Thr Asp
    1235                1240                1245

Pro Arg  Arg Leu Val Gln Leu  Leu Arg Gln His Ser  Ser Pro Trp
    1250                1255                1260

Gln Val  Tyr Gly Phe Val Arg  Ala Cys Leu Arg Arg  Leu Val Pro
    1265                1270                1275

Pro Gly  Leu Trp Gly Ser Arg  His Asn Glu Arg Arg  Phe Leu Arg
    1280                1285                1290

Asn Thr  Lys Lys Phe Ile Ser  Leu Gly Lys His Ala  Lys Leu Ser
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Leu Gln  Glu Leu Thr Trp Lys  Met Ser Val Arg Asp  Cys Ala Trp
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Leu Arg  Arg Ser Pro Gly Val  Gly Cys Val Pro Ala  Ala Glu His
    1325                1330                1335

Arg Leu  Arg Glu Glu Ile Leu  Ala Lys Phe Leu His  Trp Leu Met
    1340                1345                1350

Ser Val  Tyr Val Val Glu Leu  Leu Arg Ser Phe Phe  Tyr Val Thr
    1355                1360                1365

Glu Thr  Thr Phe Gln Lys Asn  Arg Leu Phe Phe Tyr  Arg Lys Ser
    1370                1375                1380

Val Trp  Ser Lys Leu Gln Ser  Ile Gly Ile Arg Gln  His Leu Lys
    1385                1390                1395

Arg Val  Gln Leu Arg Glu Leu  Ser Glu Ala Glu Val  Arg Gln His
    1400                1405                1410

Arg Glu  Ala Arg Pro Ala Leu  Leu Thr Ser Arg Leu  Arg Phe Ile
    1415                1420                1425

Pro Lys  Pro Asp Gly Leu Arg  Pro Ile Val Asn Met  Asp Tyr Val
    1430                1435                1440

Val Gly  Ala Arg Thr Phe Arg  Arg Glu Lys Arg Ala  Glu Arg Leu
    1445                1450                1455

Thr Ser  Arg Val Lys Ala Leu  Phe Ser Val Leu Asn  Tyr Glu Arg
    1460                1465                1470

Ala Arg  Arg Pro Gly Leu Leu  Gly Ala Ser Val Leu  Gly Leu Asp
    1475                1480                1485

Asp Ile  His Arg Ala Trp Arg  Thr Phe Val Leu Arg  Val Arg Ala
    1490                1495                1500
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Gln Asp  Pro Pro Pro Glu Leu  Tyr Phe Val Lys Val  Ala Ile Thr
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Gly Ala  Tyr Asp Thr Ile Pro  Gln Asp Arg Leu Thr  Glu Val Ile
    1520                1525                1530

Ala Ser  Ile Ile Lys Pro Gln  Asn Thr Tyr Cys Val  Arg Arg Tyr
    1535                1540                1545

Ala Val  Val Gln Lys Ala Ala  His Gly His Val Arg  Lys Ala Phe
    1550                1555                1560

Lys Ser  His Val Ser Thr Leu  Thr Asp Leu Gln Pro  Tyr Met Arg
    1565                1570                1575

Gln Phe  Val Ala His Leu Gln  Glu Thr Ser Pro Leu  Arg Asp Ala
    1580                1585                1590

Val Val  Ile Glu Gln Ser Ser  Ser Leu Asn Glu Ala  Ser Ser Gly
    1595                1600                1605

Leu Phe  Asp Val Phe Leu Arg  Phe Met Cys His His  Ala Val Arg
    1610                1615                1620

Ile Arg  Gly Lys Ser Tyr Val  Gln Cys Gln Gly Ile  Pro Gln Gly
    1625                1630                1635

Ser Ile  Leu Ser Thr Leu Leu  Cys Ser Leu Cys Tyr  Gly Asp Met
    1640                1645                1650

Glu Asn  Lys Leu Phe Ala Gly  Ile Arg Arg Asp Gly  Leu Leu Leu
    1655                1660                1665

Arg Leu  Val Asp Asp Phe Leu  Leu Val Thr Pro His  Leu Thr His
    1670                1675                1680

Ala Lys  Thr Phe Leu Arg Thr  Leu Val Arg Gly Val  Pro Glu Tyr
    1685                1690                1695

Gly Cys  Val Val Asn Leu Arg  Lys Thr Val Val Asn  Phe Pro Val
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Glu Asp  Glu Ala Leu Gly Gly  Thr Ala Phe Val Gln  Met Pro Ala
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His Gly  Leu Phe Pro Trp Cys  Gly Leu Leu Leu Asp  Thr Arg Thr
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Leu Glu  Val Gln Ser Asp Tyr  Ser Ser Tyr Ala Arg  Thr Ser Ile
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Arg Ala  Ser Leu Thr Phe Asn  Arg Gly Phe Lys Ala  Gly Arg Asn
    1760                1765                1770

Met Arg  Arg Lys Leu Phe Gly  Val Leu Arg Leu Lys  Cys His Ser
    1775                1780                1785

Leu Phe  Leu Asp Leu Gln Val  Asn Ser Leu Gln Thr  Val Cys Thr
    1790                1795                1800

Asn Ile  Tyr Lys Ile Leu Leu  Leu Gln Ala Tyr Arg  Phe His Ala
    1805                1810                1815

Cys Val  Leu Gln Leu Pro Phe  His Gln Gln Val Trp  Lys Asn Pro
    1820                1825                1830

Thr Phe  Phe Leu Arg Val Ile  Ser Asp Thr Ala Ser  Leu Cys Tyr
    1835                1840                1845

Ser Ile  Leu Lys Ala Lys Asn  Ala Gly Met Ser Leu  Gly Ala Lys
    1850                1855                1860

Gly Ala  Ala Gly Pro Leu Pro  Ser Glu Ala Val Gln  Trp Leu Cys
    1865                1870                1875

His Gln  Ala Phe Leu Leu Lys  Leu Thr Arg His Arg  Val Thr Tyr
    1880                1885                1890

Val Pro  Leu Leu Gly Ser Leu  Arg Thr Ala Gln Thr  Gln Leu Ser
    1895                1900                1905
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Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu Arg
35 40 45

Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu Ser
50 55 60

Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro Glu
65 70 75 80

Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro Asp
85 90 95

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

Lys Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln Arg
115 120 125

Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu Leu
130 135 140

Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu Pro
145 150 155 160

Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg Leu Val
165 170 175

Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala Arg Ala

```
            180                 185                 190

Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr Trp Ser
        195                 200                 205

Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu Gly Gln
    210                 215                 220

Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp Arg Gln
225                 230                 235                 240

Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr Ile Leu
                245                 250                 255

Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro Ser Gly
            260                 265                 270

Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp
        275                 280                 285

Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln Met Asp
    290                 295                 300

Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys
305                 310                 315                 320

His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile
                325                 330                 335

Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp Ile Arg
            340                 345                 350

Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu Val
        355                 360                 365

Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile Asp Arg
    370                 375                 380

Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp Thr Leu
385                 390                 395                 400
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Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu Glu Leu
                405                 410                 415

Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln Asp Leu
            420                 425                 430

Asp Thr Cys Asp Pro Arg Gln Leu Asp Val Leu Tyr Pro Lys Ala Arg
        435                 440                 445

Leu Ala Phe Gln Asn Met Asn Gly Ser Glu Tyr Phe Val Lys Ile Gln
    450                 455                 460

Ser Phe Leu Gly Gly Ala Pro Thr Glu Asp Leu Lys Ala Leu Ser Gln
465                 470                 475                 480

Gln Asn Val Ser Met Asp Leu Ala Thr Phe Met Lys Leu Arg Thr Asp
                485                 490                 495

Ala Val Leu Pro Leu Thr Val Ala Glu Val Gln Lys Leu Leu Gly Pro
            500                 505                 510

His Val Glu Gly Leu Lys Ala Glu Glu Arg His Arg Pro Val Arg Asp
        515                 520                 525

Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly Leu Gly
    530                 535                 540

Leu Gln Gly Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp Leu Ser Met
545                 550                 555                 560

Gln Glu Ala Leu Gly Ser Gly Arg Ile Phe Asn Ala His Tyr Ala Gly
                565                 570                 575

Tyr Phe Ala Asp Leu Leu Ile His Asp Ile Glu Thr Asn Pro Gly Pro
            580                 585                 590

Thr Pro Gly Thr Gln Ser Pro Phe Phe Leu Leu Leu Leu Leu Thr Val
        595                 600                 605

Leu Thr Val Val Thr Gly Ser Gly His Ala Ser Ser Thr Pro Gly Gly
```

```
    610                 615                 620

Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro Ser Ser Thr
625                 630                 635                 640

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

Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val Thr Leu Ala
            660                 665                 670

Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp Gly Gln Asp
        675                 680                 685

Val Thr Ser Val Pro Val Thr Arg Pro Ala Leu Gly Ser Thr Thr Pro
    690                 695                 700

Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro Ala Pro Gly
705                 710                 715                 720

Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg
                725                 730                 735

Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala
            740                 745                 750

Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly
        755                 760                 765

Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro
    770                 775                 780

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

Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg
                805                 810                 815

Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val Thr Ser Ala
            820                 825                 830
```

```
Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His Asn Gly Thr
        835                 840                 845

Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr Pro Phe Ser
    850                 855                 860

Ile Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala Ser His Ser
865                 870                 875                 880

Thr Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val Pro Pro Leu
                885                 890                 895

Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr Gly Val Ser
            900                 905                 910

Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln Phe Asn Ser Ser
        915                 920                 925

Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln Arg Asp Ile
    930                 935                 940

Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe Leu Gly Leu
945                 950                 955                 960

Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln Leu Thr Leu
                965                 970                 975

Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp Val Glu Thr Gln Phe
            980                 985                 990

Asn Gln Tyr Lys Thr Glu Ala Ala  Ser Arg Tyr Asn Leu  Thr Ile Ser
        995                 1000                1005

Asp Val  Ser Val Ser Asp Val  Pro Phe Pro Phe Ser  Ala Gln Ser
    1010                1015                1020

Gly Ala  Gly Val Pro Gly Trp  Gly Ile Ala Leu Leu  Val Leu Val
    1025                1030                1035

Cys Val  Leu Val Ala Leu Ala  Ile Val Tyr Leu Ile  Ala Leu Ala
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```
    1040                1045                1050

Val Cys  Gln Cys Arg Arg Lys  Asn Tyr Gly Gln Leu  Asp Ile Phe
    1055                1060                1065

Pro Ala  Arg Asp Thr Tyr His  Pro Met Ser Glu Tyr  Pro Thr Tyr
    1070                1075                1080

His Thr  His Gly Arg Tyr Val  Pro Pro Ser Ser Thr  Asp Arg Ser
    1085                1090                1095

Pro Tyr  Glu Lys Val Ser Ala  Gly Asn Gly Gly Ser  Ser Leu Ser
    1100                1105                1110

Tyr Thr  Asn Pro Ala Val Ala  Ala Ala Ser Ala Asn  Leu Gly Ser
    1115                1120                1125

Gly Thr  Ile Leu Ser Glu Gly  Ala Thr Asn Phe Ser  Leu Leu Lys
    1130                1135                1140

Leu Ala  Gly Asp Val Glu Leu  Asn Pro Gly Pro Ser  Phe Leu Leu
    1145                1150                1155

Ser Ser  Leu Arg Pro Ser Leu  Thr Gly Ala Arg Arg  Leu Val Glu
    1160                1165                1170

Thr Ile  Phe Leu Gly Ser Arg  Pro Trp Met Pro Gly  Thr Pro Arg
    1175                1180                1185

Arg Leu  Pro Arg Leu Pro Gln  Arg Tyr Trp Gln Met  Arg Pro Leu
    1190                1195                1200

Phe Leu  Glu Leu Leu Gly Asn  His Ala Gln Cys Pro  Tyr Gly Val
    1205                1210                1215

Leu Leu  Lys Thr His Cys Pro  Leu Arg Ala Ala Val  Thr Pro Ala
    1220                1225                1230

Ala Gly  Val Cys Ala Arg Glu  Lys Pro Gln Gly Ser  Val Ala Ala
    1235                1240                1245
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Pro Glu  Glu Glu Asp Thr Asp  Pro Arg Arg Leu Val  Gln Leu Leu
    1250                1255                1260

Arg Gln  His Ser Ser Pro Trp  Gln Val Tyr Gly Phe  Val Arg Ala
    1265                1270                1275

Cys Leu  Arg Arg Leu Val Pro  Pro Gly Leu Trp Gly  Ser Arg His
    1280                1285                1290

Asn Glu  Arg Arg Phe Leu Arg  Asn Thr Lys Lys Phe  Ile Ser Leu
    1295                1300                1305

Gly Lys  His Ala Lys Leu Ser  Leu Gln Glu Leu Thr  Trp Lys Met
    1310                1315                1320

Ser Val  Arg Asp Cys Ala Trp  Leu Arg Arg Ser Pro  Gly Val Gly
    1325                1330                1335

Cys Val  Pro Ala Ala Glu His  Arg Leu Arg Glu Glu  Ile Leu Ala
    1340                1345                1350

Lys Phe  Leu His Trp Leu Met  Ser Val Tyr Val Val  Glu Leu Leu
    1355                1360                1365

Arg Ser  Phe Phe Tyr Val Thr  Glu Thr Thr Phe Gln  Lys Asn Arg
    1370                1375                1380

Leu Phe  Phe Tyr Arg Lys Ser  Val Trp Ser Lys Leu  Gln Ser Ile
    1385                1390                1395

Gly Ile  Arg Gln His Leu Lys  Arg Val Gln Leu Arg  Glu Leu Ser
    1400                1405                1410

Glu Ala  Glu Val Arg Gln His  Arg Glu Ala Arg Pro  Ala Leu Leu
    1415                1420                1425

Thr Ser  Arg Leu Arg Phe Ile  Pro Lys Pro Asp Gly  Leu Arg Pro
    1430                1435                1440

Ile Val  Asn Met Asp Tyr Val  Val Gly Ala Arg Thr  Phe Arg Arg
```

```
    1445                1450                1455

Glu Lys  Arg Ala Glu Arg Leu  Thr Ser Arg Val Lys  Ala Leu Phe
    1460                1465                1470

Ser Val  Leu Asn Tyr Glu Arg  Ala Arg Arg Pro Gly  Leu Leu Gly
    1475                1480                1485

Ala Ser  Val Leu Gly Leu Asp  Asp Ile His Arg Ala  Trp Arg Thr
    1490                1495                1500

Phe Val  Leu Arg Val Arg Ala  Gln Asp Pro Pro Pro  Glu Leu Tyr
    1505                1510                1515

Phe Val  Lys Val Ala Ile Thr  Gly Ala Tyr Asp Thr  Ile Pro Gln
    1520                1525                1530

Asp Arg  Leu Thr Glu Val Ile  Ala Ser Ile Ile Lys  Pro Gln Asn
    1535                1540                1545

Thr Tyr  Cys Val Arg Arg Tyr  Ala Val Val Gln Lys  Ala Ala His
    1550                1555                1560

Gly His  Val Arg Lys Ala Phe  Lys Ser His Val Ser  Thr Leu Thr
    1565                1570                1575

Asp Leu  Gln Pro Tyr Met Arg  Gln Phe Val Ala His  Leu Gln Glu
    1580                1585                1590

Thr Ser  Pro Leu Arg Asp Ala  Val Val Ile Glu Gln  Ser Ser Ser
    1595                1600                1605

Leu Asn  Glu Ala Ser Ser Gly  Leu Phe Asp Val Phe  Leu Arg Phe
    1610                1615                1620

Met Cys  His His Ala Val Arg  Ile Arg Gly Lys Ser  Tyr Val Gln
    1625                1630                1635

Cys Gln  Gly Ile Pro Gln Gly  Ser Ile Leu Ser Thr  Leu Leu Cys
    1640                1645                1650
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Ser Leu  Cys Tyr Gly Asp Met  Glu Asn Lys Leu Phe  Ala Gly Ile
    1655                1660                1665

Arg Arg  Asp Gly Leu Leu Leu  Arg Leu Val Asp Asp  Phe Leu Leu
    1670                1675                1680

Val Thr  Pro His Leu Thr His  Ala Lys Thr Phe Leu  Arg Thr Leu
    1685                1690                1695

Val Arg  Gly Val Pro Glu Tyr  Gly Cys Val Val Asn  Leu Arg Lys
    1700                1705                1710

Thr Val  Val Asn Phe Pro Val  Glu Asp Glu Ala Leu  Gly Gly Thr
    1715                1720                1725

Ala Phe  Val Gln Met Pro Ala  His Gly Leu Phe Pro  Trp Cys Gly
    1730                1735                1740

Leu Leu  Leu Asp Thr Arg Thr  Leu Glu Val Gln Ser  Asp Tyr Ser
    1745                1750                1755

Ser Tyr  Ala Arg Thr Ser Ile  Arg Ala Ser Leu Thr  Phe Asn Arg
    1760                1765                1770

Gly Phe  Lys Ala Gly Arg Asn  Met Arg Arg Lys Leu  Phe Gly Val
    1775                1780                1785

Leu Arg  Leu Lys Cys His Ser  Leu Phe Leu Asp Leu  Gln Val Asn
    1790                1795                1800

Ser Leu  Gln Thr Val Cys Thr  Asn Ile Tyr Lys Ile  Leu Leu Leu
    1805                1810                1815

Gln Ala  Tyr Arg Phe His Ala  Cys Val Leu Gln Leu  Pro Phe His
    1820                1825                1830

Gln Gln  Val Trp Lys Asn Pro  Thr Phe Phe Leu Arg  Val Ile Ser
    1835                1840                1845

Asp Thr  Ala Ser Leu Cys Tyr  Ser Ile Leu Lys Ala  Lys Asn Ala
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1850 1855 1860

Gly Met Ser Leu Gly Ala Lys Gly Ala Ala Gly Pro Leu Pro Ser
1865 1870 1875

Glu Ala Val Gln Trp Leu Cys His Gln Ala Phe Leu Leu Lys Leu
1880 1885 1890

Thr Arg His Arg Val Thr Tyr Val Pro Leu Leu Gly Ser Leu Arg
1895 1900 1905

Thr Ala Gln Thr Gln Leu Ser Arg Lys Leu Pro Gly Thr Thr Leu
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Lys Thr Ile Leu Asp
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gtcgtgggcg ctcgcacctt tcgccgtgaa aagcgggccg aacgcttgac ctcacgggtg 2700

aaggccctct tctccgtgct gaactacgag agagcaagac ggcctggcct gctgggagct 2760

tcggtgctgg gactggacga tatccaccgg gcttggcgga cctttgttct ccgggtgaga 2820

gcccaagacc ctccgccgga actgtacttc gtgaaggtgg cgatcaccgg agcctatgat 2880

actattccgc aagatcgact caccgaagtc atcgcctcga tcatcaaacc gcagaacact 2940

tactgcgtca ggcggtacgc cgtggtccag aaggccgcgc atggccacgt gagaaaggcg 3000

ttcaagtcgc acgtgtccac tctcaccgac ctccagcctt acatgaggca attcgttgcg 3060

catttgcaag agacttcgcc cctgagagat gcggtggtca tcgagcagag ctccagcctg 3120

aacgaagcga gcagcggtct gtttgacgtg ttcctccgct tcatgtgtca tcacgcggtg 3180

cgaatcaggg gaaaatcata cgtgcagtgc cagggaatcc cacaaggcag cattctgtcg 3240

actctcttgt gttccctttg ctacggcgat atggaaaaca agctgttcgc tgggatcaga 3300

cgggacgggt tgctgctcag actggtggac gacttcctgc tggtgactcc gcacctcact 3360

cacgccaaaa cctttctccg cactctggtg aggggagtgc cagaatacgg ctgtgtggtc 3420

aatctccgga aaactgtggt gaatttccct gtcgaggatg aggcactcgg aggaaccgca 3480

tttgtccaaa tgccagcaca tggcctgttc ccatggtgcg gtctgctgct ggacacccga 3540

actcttgaag tgcagtccga ctactccagc tatgcccgga cgagcatccg cgccagcctc 3600

actttcaatc gcggctttaa ggccggacga aacatgcgca gaaagctttt cggagtcctc 3660

cggcttaaat gccattcgct ctttctcgat ctccaagtca attcgctgca gaccgtgtgc 3720

acgaacatct acaagatcct gctgctccaa gcctaccggt tccacgcttg cgtgcttcag 3780

ctgccgtttc accaacaggt gtggaagaac ccgaccttct ttctgcgggt cattagcgat 3840

actgcctccc tgtgttactc aatcctcaag gcaaagaacg ccggaatgtc gctgggtgcg 3900

aaaggagccg cgggacctct tcctagcgaa gcggtgcagt ggctctgcca ccaggctttc 3960

ctcctgaagc tgaccaggca cagagtgacc tacgtcccgc tgctgggctc gctgcgcact 4020

gcacagaccc agctgtctag aaaactcccc ggcaccaccc tgaccgctct ggaagccgcc 4080

gccaacccag cattgccgtc agatttcaag accatcttgg acggatccgg cacaatcctg 4140

tctgagggcg ccaccaactt cagcctgctg aaactggccg gcgacgtgga actgaaccct 4200

ggccctaccc ctggaaccca gagccccttc ttccttctgc tgctgctgac cgtgctgact 4260

gtcgtgacag gctctggcca cgccagctct acacctggcg gcgagaaaga gacaagcgcc 4320

acccagagaa gcagcgtgcc aagcagcacc gagaagaacg ccgtgtccat gaccagctcc 4380

gtgctgagca gccactctcc tggcagcggc agcagcacaa cacagggcca ggatgtgaca 4440

ctggcccctg ccacagaacc tgcctctgga tctgccgcca cctggggaca ggacgtgaca 4500

agcgtgccag tgaccagacc tgccctgggc tctacaacac cccctgccca cgatgtgacc 4560

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gacaccccta ccacactggc cagccactcc accaagaccg atgcctctag cacccaccac 5100

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cagttcaacc agtacaagac cgaggccgcc agccggtaca acctgaccat ctccgatgtg 5460

tccgtgtccg acgtgccctt cccattctct gcccagtctg gcgcaggcgt gccaggatgg 5520

ggaattgctc tgctggtgct cgtgtgcgtg ctggtggccc tggccatcgt gtatctgatt 5580

gccctggccg tgtgccagtg ccggcggaag aattacggcc agctggacat cttccccgcc 5640

agagacacct accaccccat gagcgagtac cccacatacc acacccacgg cagatacgtg 5700

ccacccagct ccaccgacag atccccctac gagaaagtgt ctgccggcaa cggcggcagc 5760

tccctgagct acacaaatcc tgccgtggcc gctgcctccg ccaacctg 5808

<210> 66
<211> 1936
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 66

Met Ala Ser Leu Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro Leu Asp
1 5 10 15

Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro Arg Gln
20 25 30

Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu Arg
35 40 45

Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu Ser
50 55 60

Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro Glu
65 70 75 80

Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro Asp
85 90 95

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

Lys Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln Arg

```
        115                 120                 125

Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu Leu
    130                 135                 140

Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu Pro
145                 150                 155                 160

Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg Leu Val
                165                 170                 175

Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala Arg Ala
            180                 185                 190

Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr Trp Ser
        195                 200                 205

Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu Gly Gln
    210                 215                 220

Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp Arg Gln
225                 230                 235                 240

Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr Ile Leu
                245                 250                 255

Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro Ser Gly
            260                 265                 270

Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp
        275                 280                 285

Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln Met Asp
    290                 295                 300

Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys
305                 310                 315                 320

His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile
                325                 330                 335
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```
Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp Ile Arg
            340                 345                 350

Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu Val
        355                 360                 365

Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile Asp Arg
    370                 375                 380

Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp Thr Leu
385                 390                 395                 400

Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu Glu Leu
                405                 410                 415

Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln Asp Leu
            420                 425                 430

Asp Thr Cys Asp Pro Arg Gln Leu Asp Val Leu Tyr Pro Lys Ala Arg
        435                 440                 445

Leu Ala Phe Gln Asn Met Asn Gly Ser Glu Tyr Phe Val Lys Ile Gln
    450                 455                 460

Ser Phe Leu Gly Gly Ala Pro Thr Glu Asp Leu Lys Ala Leu Ser Gln
465                 470                 475                 480

Gln Asn Val Ser Met Asp Leu Ala Thr Phe Met Lys Leu Arg Thr Asp
                485                 490                 495

Ala Val Leu Pro Leu Thr Val Ala Glu Val Gln Lys Leu Leu Gly Pro
            500                 505                 510

His Val Glu Gly Leu Lys Ala Glu Glu Arg His Arg Pro Val Arg Asp
        515                 520                 525

Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly Leu Gly
    530                 535                 540

Leu Gln Gly Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp Leu Ser Met
```

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545                 550                 555                 560

Gln Glu Ala Leu Gly Ser Gly Glu Gly Arg Gly Ser Leu Leu Thr Cys
                565                 570                 575

Gly Asp Val Glu Glu Asn Pro Gly Pro Ser Phe Leu Leu Ser Ser Leu
            580                 585                 590

Arg Pro Ser Leu Thr Gly Ala Arg Arg Leu Val Glu Thr Ile Phe Leu
        595                 600                 605

Gly Ser Arg Pro Trp Met Pro Gly Thr Pro Arg Arg Leu Pro Arg Leu
    610                 615                 620

Pro Gln Arg Tyr Trp Gln Met Arg Pro Leu Phe Leu Glu Leu Leu Gly
625                 630                 635                 640

Asn His Ala Gln Cys Pro Tyr Gly Val Leu Leu Lys Thr His Cys Pro
                645                 650                 655

Leu Arg Ala Ala Val Thr Pro Ala Ala Gly Val Cys Ala Arg Glu Lys
            660                 665                 670

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

Arg Leu Val Gln Leu Leu Arg Gln His Ser Ser Pro Trp Gln Val Tyr
    690                 695                 700

Gly Phe Val Arg Ala Cys Leu Arg Arg Leu Val Pro Pro Gly Leu Trp
705                 710                 715                 720

Gly Ser Arg His Asn Glu Arg Arg Phe Leu Arg Asn Thr Lys Lys Phe
                725                 730                 735

Ile Ser Leu Gly Lys His Ala Lys Leu Ser Leu Gln Glu Leu Thr Trp
            740                 745                 750

Lys Met Ser Val Arg Asp Cys Ala Trp Leu Arg Arg Ser Pro Gly Val
        755                 760                 765
```

```
Gly Cys Val Pro Ala Ala Glu His Arg Leu Arg Glu Glu Ile Leu Ala
    770                 775                 780

Lys Phe Leu His Trp Leu Met Ser Val Tyr Val Val Glu Leu Leu Arg
785                 790                 795                 800

Ser Phe Phe Tyr Val Thr Glu Thr Thr Phe Gln Lys Asn Arg Leu Phe
                805                 810                 815

Phe Tyr Arg Lys Ser Val Trp Ser Lys Leu Gln Ser Ile Gly Ile Arg
            820                 825                 830

Gln His Leu Lys Arg Val Gln Leu Arg Glu Leu Ser Glu Ala Glu Val
        835                 840                 845

Arg Gln His Arg Glu Ala Arg Pro Ala Leu Leu Thr Ser Arg Leu Arg
    850                 855                 860

Phe Ile Pro Lys Pro Asp Gly Leu Arg Pro Ile Val Asn Met Asp Tyr
865                 870                 875                 880

Val Val Gly Ala Arg Thr Phe Arg Arg Glu Lys Arg Ala Glu Arg Leu
                885                 890                 895

Thr Ser Arg Val Lys Ala Leu Phe Ser Val Leu Asn Tyr Glu Arg Ala
            900                 905                 910

Arg Arg Pro Gly Leu Leu Gly Ala Ser Val Leu Gly Leu Asp Asp Ile
        915                 920                 925

His Arg Ala Trp Arg Thr Phe Val Leu Arg Val Arg Ala Gln Asp Pro
    930                 935                 940

Pro Pro Glu Leu Tyr Phe Val Lys Val Ala Ile Thr Gly Ala Tyr Asp
945                 950                 955                 960

Thr Ile Pro Gln Asp Arg Leu Thr Glu Val Ile Ala Ser Ile Ile Lys
                965                 970                 975

Pro Gln Asn Thr Tyr Cys Val Arg Arg Tyr Ala Val Val Gln Lys Ala
```

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           980                 985                 990

Ala His Gly His Val Arg Lys Ala  Phe Lys Ser His Val  Ser Thr Leu
        995                1000                1005

Thr Asp  Leu Gln Pro Tyr Met  Arg Gln Phe Val Ala  His Leu Gln
    1010                1015                1020

Glu Thr  Ser Pro Leu Arg Asp  Ala Val Val Ile Glu  Gln Ser Ser
    1025                1030                1035

Ser Leu  Asn Glu Ala Ser Ser  Gly Leu Phe Asp Val  Phe Leu Arg
    1040                1045                1050

Phe Met  Cys His His Ala Val  Arg Ile Arg Gly Lys  Ser Tyr Val
    1055                1060                1065

Gln Cys  Gln Gly Ile Pro Gln  Gly Ser Ile Leu Ser  Thr Leu Leu
    1070                1075                1080

Cys Ser  Leu Cys Tyr Gly Asp  Met Glu Asn Lys Leu  Phe Ala Gly
    1085                1090                1095

Ile Arg  Arg Asp Gly Leu Leu  Leu Arg Leu Val Asp  Asp Phe Leu
    1100                1105                1110

Leu Val  Thr Pro His Leu Thr  His Ala Lys Thr Phe  Leu Arg Thr
    1115                1120                1125

Leu Val  Arg Gly Val Pro Glu  Tyr Gly Cys Val Val  Asn Leu Arg
    1130                1135                1140

Lys Thr  Val Val Asn Phe Pro  Val Glu Asp Glu Ala  Leu Gly Gly
    1145                1150                1155

Thr Ala  Phe Val Gln Met Pro  Ala His Gly Leu Phe  Pro Trp Cys
    1160                1165                1170

Gly Leu  Leu Leu Asp Thr Arg  Thr Leu Glu Val Gln  Ser Asp Tyr
    1175                1180                1185
```

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Ser Ser  Tyr Ala Arg Thr Ser  Ile Arg Ala Ser Leu  Thr Phe Asn
    1190                1195                1200

Arg Gly  Phe Lys Ala Gly Arg  Asn Met Arg Arg Lys  Leu Phe Gly
    1205                1210                1215

Val Leu  Arg Leu Lys Cys His  Ser Leu Phe Leu Asp  Leu Gln Val
    1220                1225                1230

Asn Ser  Leu Gln Thr Val Cys  Thr Asn Ile Tyr Lys  Ile Leu Leu
    1235                1240                1245

Leu Gln  Ala Tyr Arg Phe His  Ala Cys Val Leu Gln  Leu Pro Phe
    1250                1255                1260

His Gln  Gln Val Trp Lys Asn  Pro Thr Phe Phe Leu  Arg Val Ile
    1265                1270                1275

Ser Asp  Thr Ala Ser Leu Cys  Tyr Ser Ile Leu Lys  Ala Lys Asn
    1280                1285                1290

Ala Gly  Met Ser Leu Gly Ala  Lys Gly Ala Ala Gly  Pro Leu Pro
    1295                1300                1305

Ser Glu  Ala Val Gln Trp Leu  Cys His Gln Ala Phe  Leu Leu Lys
    1310                1315                1320

Leu Thr  Arg His Arg Val Thr  Tyr Val Pro Leu Leu  Gly Ser Leu
    1325                1330                1335

Arg Thr  Ala Gln Thr Gln Leu  Ser Arg Lys Leu Pro  Gly Thr Thr
    1340                1345                1350

Leu Thr  Ala Leu Glu Ala Ala  Ala Asn Pro Ala Leu  Pro Ser Asp
    1355                1360                1365

Phe Lys  Thr Ile Leu Asp Gly  Ser Gly Thr Ile Leu  Ser Glu Gly
    1370                1375                1380

Ala Thr  Asn Phe Ser Leu Leu  Lys Leu Ala Gly Asp  Val Glu Leu
```

```
    1385                1390                1395

Asn Pro  Gly Pro Thr Pro Gly  Thr Gln Ser Pro Phe  Phe Leu Leu
    1400                1405                1410

Leu Leu  Leu Thr Val Leu Thr  Val Val Thr Gly Ser  Gly His Ala
    1415                1420                1425

Ser Ser  Thr Pro Gly Gly Glu  Lys Glu Thr Ser Ala  Thr Gln Arg
    1430                1435                1440

Ser Ser  Val Pro Ser Ser Thr  Glu Lys Asn Ala Val  Ser Met Thr
    1445                1450                1455

Ser Ser  Val Leu Ser Ser His  Ser Pro Gly Ser Gly  Ser Ser Thr
    1460                1465                1470

Thr Gln  Gly Gln Asp Val Thr  Leu Ala Pro Ala Thr  Glu Pro Ala
    1475                1480                1485

Ser Gly  Ser Ala Ala Thr Trp  Gly Gln Asp Val Thr  Ser Val Pro
    1490                1495                1500

Val Thr  Arg Pro Ala Leu Gly  Ser Thr Thr Pro Pro  Ala His Asp
    1505                1510                1515

Val Thr  Ser Ala Pro Asp Asn  Lys Pro Ala Pro Gly  Ser Thr Ala
    1520                1525                1530

Pro Pro  Ala His Gly Val Thr  Ser Ala Pro Asp Thr  Arg Pro Ala
    1535                1540                1545

Pro Gly  Ser Thr Ala Pro Pro  Ala His Gly Val Thr  Ser Ala Pro
    1550                1555                1560

Asp Thr  Arg Pro Ala Pro Gly  Ser Thr Ala Pro Pro  Ala His Gly
    1565                1570                1575

Val Thr  Ser Ala Pro Asp Thr  Arg Pro Ala Pro Gly  Ser Thr Ala
    1580                1585                1590
```

```
Pro Pro  Ala His Gly Val Thr  Ser Ala Pro Asp Thr  Arg Pro Ala
    1595                 1600                 1605

Pro Gly  Ser Thr Ala Pro Pro  Ala His Gly Val Thr  Ser Ala Pro
    1610                 1615                 1620

Asp Thr  Arg Pro Ala Leu Gly  Ser Thr Ala Pro Pro  Val His Asn
    1625                 1630                 1635

Val Thr  Ser Ala Ser Gly Ser  Ala Ser Gly Ser Ala  Ser Thr Leu
    1640                 1645                 1650

Val His  Asn Gly Thr Ser Ala  Arg Ala Thr Thr Thr  Pro Ala Ser
    1655                 1660                 1665

Lys Ser  Thr Pro Phe Ser Ile  Pro Ser His His Ser  Asp Thr Pro
    1670                 1675                 1680

Thr Thr  Leu Ala Ser His Ser  Thr Lys Thr Asp Ala  Ser Ser Thr
    1685                 1690                 1695

His His  Ser Ser Val Pro Pro  Leu Thr Ser Ser Asn  His Ser Thr
    1700                 1705                 1710

Ser Pro  Gln Leu Ser Thr Gly  Val Ser Phe Phe Phe  Leu Ser Phe
    1715                 1720                 1725

His Ile  Ser Asn Leu Gln Phe  Asn Ser Ser Leu Glu  Asp Pro Ser
    1730                 1735                 1740

Thr Asp  Tyr Tyr Gln Glu Leu  Gln Arg Asp Ile Ser  Glu Met Phe
    1745                 1750                 1755

Leu Gln  Ile Tyr Lys Gln Gly  Gly Phe Leu Gly Leu  Ser Asn Ile
    1760                 1765                 1770

Lys Phe  Arg Pro Gly Ser Val  Val Val Gln Leu Thr  Leu Ala Phe
    1775                 1780                 1785

Arg Glu  Gly Thr Ile Asn Val  His Asp Val Glu Thr  Gln Phe Asn
```

```
    1790                1795                1800

Gln Tyr  Lys Thr Glu Ala Ala  Ser Arg Tyr Asn Leu  Thr Ile Ser
    1805                1810                1815

Asp Val  Ser Val Ser Asp Val  Pro Phe Pro Phe Ser  Ala Gln Ser
    1820                1825                1830

Gly Ala  Gly Val Pro Gly Trp  Gly Ile Ala Leu Leu  Val Leu Val
    1835                1840                1845

Cys Val  Leu Val Ala Leu Ala  Ile Val Tyr Leu Ile  Ala Leu Ala
    1850                1855                1860

Val Cys  Gln Cys Arg Arg Lys  Asn Tyr Gly Gln Leu  Asp Ile Phe
    1865                1870                1875

Pro Ala  Arg Asp Thr Tyr His  Pro Met Ser Glu Tyr  Pro Thr Tyr
    1880                1885                1890

His Thr  His Gly Arg Tyr Val  Pro Pro Ser Ser Thr  Asp Arg Ser
    1895                1900                1905

Pro Tyr  Glu Lys Val Ser Ala  Gly Asn Gly Gly Ser  Ser Leu Ser
    1910                1915                1920

Tyr Thr  Asn Pro Ala Val Ala  Ala Ala Ser Ala Asn  Leu
    1925                1930                1935


<210>  67
<211>  84
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  67
ggatccggca gaatcttcaa cgcccactac gccggctact tcgccgacct gctgatccac       60

gacatcgaga caaaccctgg cccc                                              84


<210>  68
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<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 68

Gly Ser Gly Arg Ile Phe Asn Ala His Tyr Ala Gly Tyr Phe Ala Asp
1 5 10 15

Leu Leu Ile His Asp Ile Glu Thr Asn Pro Gly Pro
20 25

<210> 69
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 69
ggatccggcg agggcagagg cagcctgctg acatgtggcg acgtggaaga gaaccctggc 60

ccc 63

<210> 70
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 70

Gly Ser Gly Glu Gly Arg Gly Ser Leu Leu Thr Cys Gly Asp Val Glu
1 5 10 15

Glu Asn Pro Gly Pro
20

<210> 71
<211> 84
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 71
ggatccggca caatcctgtc tgagggcgcc accaacttca gcctgctgaa actggccggc 60

gacgtggaac tgaaccctgg ccct 84

<210> 72
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 72

Gly Ser Gly Thr Ile Leu Ser Glu Gly Ala Thr Asn Phe Ser Leu Leu
1 5 10 15

Lys Leu Ala Gly Asp Val Glu Leu Asn Pro Gly Pro
            20 25

<210> 73
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 73
ggatccggcg ccaccaattt cagcctgctg aaacaggccg gcgacgtgga agagaaccct 60

ggccct 66

<210> 74
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 74

Gly Ser Gly Ala Thr Asn Phe Ser Leu Leu Lys Gln Ala Gly Asp Val
1 5 10 15

Glu Glu Asn Pro Gly Pro
20

<210> 75
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 75
gagacaaacc ctggcccccc ggctggcgag acaggacagg aag 43

<210> 76
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 76
gttgaagatt ctgccggatc ccaggttggc ggaggcagcg gccacg 46

<210> 77
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 77
gctacttcgc cgacctgctg atccacgaca tcgagacaaa ccctggc 47

<210> 78
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 78
ggtcggcgaa gtagccggcg tagtgggcgt tgaagattct gccggat 47

<210> 79

<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 79
ttctgaagat gagccccgag gaca 24

<210> 80
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 80
cggcgtctca ttcttctttc tgtc 24

<210> 81
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 81
accctgtgac gaacatggct agcctggctg gcgagacagg acagga 46

<210> 82
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 82
accctgtgac gaacatggct agcacaggct ctggccacgc cag 43

<210> 83
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 83
accctgtgac gaacatggct agcacccctg gaacccagag cc 42

<210> 84
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 84
accctgtgac gaacatggct agcggagctg ccccggagcc gg 42

<210> 85
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 85
tctcaccgac ctccagcctt acat 24

<210> 86
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 86
acggaggctc cggcggactg gctggcgaga caggaca 37

<210> 87
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 87
tgggaggctc cggcggagga gctgccccgg agccgg 36

<210> 88

<211> 56
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 88
cctgctgatc cacgacatcg agacaaaccc tggccccacc cctggaaccc agagcc 56

<210> 89
<211> 52
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 89
tggccggcga cgtggaactg aaccctggcc ctacaggctc tggccacgcc ag 52

<210> 90
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 90
tggccggcga cgtggaactg aaccctggcc ctacccctgg aacccagagc c 51

<210> 91
<211> 54
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 91
tggccggcga cgtggaactg aaccctggcc ctagcttcct cctgtcgtcg ctca 54

<210> 92
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
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<400> 92
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<400> 93
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<210> 94
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<220>
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<400> 94
tggaagagaa ccctggccct ctggctggcg agacaggaca gga 43

<210> 95
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<400> 95
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<400> 96
gcgacgtgga agagaaccct ggccccctgg ctggcgagac aggacagga 49

<210> 97

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<400> 97
gcgacgtgga agagaaccct ggccccagct tcctcctgtc gtcgctca 48

<210> 98
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<220>
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<400> 98
gcgacgtgga agagaaccct ggccccgcca aatttctgca ttggctgatg 50

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<400> 99
gcgacgtgga agagaaccct ggccccggag ctgccccgga gccgg 45

<210> 100
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<400> 104
gggcccagat cttcacaggg cttcctgcat gctcaggtcc agcac 45

<210> 105
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<400> 105
acgaacatgg ctagcacccc tggaacccag agccccttc 39

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<400> 107
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<210> 108
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<400> 112
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<400> 113
aaggacagaa agaagaatga gacg 24

<210> 114
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<210> 115

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<400> 115
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<400> 118
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<210> 119
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<400> 119
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<210> 120
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<400> 120
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<210> 121
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<400> 121
aggctggagg tcggtgagag tgga 24

<210> 122
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<220>
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<400> 122
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<210> 123
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<400> 123
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<210> 124

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<400> 124
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<210> 125
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<400> 125
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<210> 127
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<400> 127
accctgtgac gaacatggga gctgccccgg agccggaga 39

<210> 128
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<400> 128
caacaagcta gcctggctgg cgagacagga ca 32

<210> 129
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<212> DNA
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<400> 129
caacaaagat ctttacaggg cttcctgcat gcacag 36

<210> 130
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<400> 130
accctgtgac gaacatggct agc 23

<210> 131
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<212> DNA
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<220>
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<400> 131
agatctgggc cctaaca 17

<210> 132
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<400> 132

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

<210> 133
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223>   Synthetic Construct

<400> 133

Thr Pro Gly Thr Gln Ser Pro Phe Phe Leu Leu Leu Leu Leu Thr
1   5   10   15

<210> 134
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 134

Thr Gln Ser Pro Phe Phe Leu Leu Leu Leu Leu Thr Val Leu Thr
1   5   10   15

<210> 135
<211> 15
<212> PRT
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<220>
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<400> 135

Phe Phe Leu Leu Leu Leu Leu Thr Val Leu Thr Val Val Thr Gly
1   5   10   15

<210> 136
<211> 15
<212> PRT
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<220>
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<400> 136

Leu Leu Leu Thr Val Leu Thr Val Val Thr Gly Ser Gly His Ala

1 5 10 15

<210> 137
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 137

Val Leu Thr Val Val Thr Gly Ser Gly His Ala Ser Ser Thr Pro
1 5 10 15

<210> 138
<211> 15
<212> PRT
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<220>
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<400> 138

Val Thr Gly Ser Gly His Ala Ser Ser Thr Pro Gly Gly Glu Lys
1 5 10 15

<210> 139
<211> 15
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<220>
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<400> 139

Gly His Ala Ser Ser Thr Pro Gly Gly Glu Lys Glu Thr Ser Ala
1 5 10 15

<210> 140
<211> 15
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<220>
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<400> 140

Ser Thr Pro Gly Gly Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser
1 5 10 15

<210> 141
<211> 15
<212> PRT
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<220>
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<400> 141

Gly Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro Ser
1 5 10 15

<210> 142
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<220>
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<400> 142

Thr Ser Ala Thr Gln Arg Ser Ser Val Pro Ser Ser Thr Glu Lys
1 5 10 15

<210> 143
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<220>
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<400> 143

Gln Arg Ser Ser Val Pro Ser Ser Thr Glu Lys Asn Ala Val Ser
1 5 10 15

<210> 144
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<220>
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<400> 144

Val Pro Ser Ser Thr Glu Lys Asn Ala Val Ser Met Thr Ser Ser
1 5 10 15

<210> 145
<211> 15
<212> PRT
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<220>
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<400> 145

Thr Glu Lys Asn Ala Val Ser Met Thr Ser Ser Val Leu Ser Ser
1 5 10 15

<210> 146
<211> 15
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<220>
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<400> 146

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

<210> 147
<211> 15
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<400> 147

Thr Ser Ser Val Leu Ser Ser His Ser Pro Gly Ser Gly Ser Ser
1 5 10 15

<210> 148
<211> 15
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<220>
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<400> 148

Leu Ser Ser His Ser Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly
1   5   10   15

<210> 149
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<400> 149

Ser Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val Thr
1   5   10   15

<210> 150
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<220>
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<400> 150

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

<210> 151
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<400> 151

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

<210> 152
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<220>
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<400> 152

Asp Val Thr Leu Ala Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala
1 5 10 15

<210> 153
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<220>
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<400> 153

Ala Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp Gly
1 5 10 15

<210> 154
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<220>
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<400> 154

Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp Gly Gln Asp Val Thr
1 5 10 15

<210> 155
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<400> 155

Gly Ser Ala Ala Thr Trp Gly Gln Asp Val Thr Ser Val Pro Val
1 5 10 15

<210> 156

<211> 15
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<400> 156

Thr Trp Gly Gln Asp Val Thr Ser Val Pro Val Thr Arg Pro Ala
1 5 10 15

<210> 157
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<220>
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<400> 157

Asp Val Thr Ser Val Pro Val Thr Arg Pro Ala Leu Gly Ser Thr
1 5 10 15

<210> 158
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<220>
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<400> 158

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

<210> 159
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<400> 159

Arg Pro Ala Leu Gly Ser Thr Thr Pro Pro Ala His Asp Val Thr
1 5 10 15

<210> 160
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<400> 160

Gly Ser Thr Thr Pro Pro Ala His Asp Val Thr Ser Ala Pro Asp
1   5   10   15

<210> 161
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<220>
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<400> 161

Pro Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro Ala
1   5   10   15

<210> 162
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<220>
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<400> 162

Asp Val Thr Ser Ala Pro Asp Asn Lys Pro Ala Pro Gly Ser Thr
1   5   10   15

<210> 163
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 163

Ala Pro Asp Asn Lys Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala

1 5 10 15

<210> 164
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 164

Lys Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr
1 5 10 15

<210> 165
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<220>
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<400> 165

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp
1 5 10 15

<210> 166
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<220>
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<400> 166

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

<210> 167
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 167

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr
1 5 10 15

<210> 168
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 168

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala
1 5 10 15

<210> 169
<211> 15
<212> PRT
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<220>
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<400> 169

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

<210> 170
<211> 15
<212> PRT
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<400> 170

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Leu Gly Ser Thr
1 5 10 15

<210> 171
<211> 15
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<220>
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<400> 171

Ala Pro Asp Thr Arg Pro Ala Leu Gly Ser Thr Ala Pro Pro Val
1 5 10 15

<210> 172
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<220>
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<400> 172

Arg Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val Thr
1 5 10 15

<210> 173
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<400> 173

Gly Ser Thr Ala Pro Pro Val His Asn Val Thr Ser Ala Ser Gly
1 5 10 15

<210> 174
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<400> 174

Pro Pro Val His Asn Val Thr Ser Ala Ser Gly Ser Ala Ser Gly
1 5 10 15

<210> 175
<211> 15
<212> PRT
<213> Artificial Sequence

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<400> 175

Asn Val Thr Ser Ala Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr
1   5   10   15

<210> 176
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 176

Ala Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His Asn
1   5   10   15

<210> 177
<211> 15
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<400> 177

Ala Ser Gly Ser Ala Ser Thr Leu Val His Asn Gly Thr Ser Ala
1   5   10   15

<210> 178
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<400> 178

Ala Ser Thr Leu Val His Asn Gly Thr Ser Ala Arg Ala Thr Thr
1   5   10   15

<210> 179
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<400> 179

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

<210> 180
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<400> 180

Thr Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr Pro
1 5 10 15

<210> 181
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<400> 181

Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr Pro Phe Ser Ile Pro
1 5 10 15

<210> 182
<211> 15
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<400> 182

Pro Ala Ser Lys Ser Thr Pro Phe Ser Ile Pro Ser His His Ser
1 5 10 15

<210> 183

<211> 15
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<213> Artificial Sequence

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<400> 183

Ser Thr Pro Phe Ser Ile Pro Ser His His Ser Asp Thr Pro Thr
1 5 10 15

<210> 184
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<400> 184

Ser Ile Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala Ser
1 5 10 15

<210> 185
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<400> 185

His His Ser Asp Thr Pro Thr Thr Leu Ala Ser His Ser Thr Lys
1 5 10 15

<210> 186
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<400> 186

Thr Pro Thr Thr Leu Ala Ser His Ser Thr Lys Thr Asp Ala Ser
1 5 10 15

<210> 187
<211> 15
<212> PRT
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<400> 187

Leu Ala Ser His Ser Thr Lys Thr Asp Ala Ser Ser Thr His His
1   5   10   15

<210> 188
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<212> PRT
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<400> 188

Ser Thr Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val Pro
1   5   10   15

<210> 189
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<400> 189

Asp Ala Ser Ser Thr His His Ser Ser Val Pro Pro Leu Thr Ser
1   5   10   15

<210> 190
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<400> 190

Thr His His Ser Ser Val Pro Pro Leu Thr Ser Ser Asn His Ser

1 5 10 15

<210> 191
<211> 15
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<400> 191

Ser Val Pro Pro Leu Thr Ser Ser Asn His Ser Thr Ser Pro Gln
1 5 10 15

<210> 192
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<400> 192

Leu Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr Gly
1 5 10 15

<210> 193
<211> 15
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<400> 193

Asn His Ser Thr Ser Pro Gln Leu Ser Thr Gly Val Ser Phe Phe
1 5 10 15

<210> 194
<211> 15
<212> PRT
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<400> 194

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

<210> 195
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<400> 195

Ser Thr Gly Val Ser Phe Phe Phe Leu Ser Phe His Ile Ser Asn
1 5 10 15

<210> 196
<211> 15
<212> PRT
<213> Artificial Sequence

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<400> 196

Ser Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln Phe Asn
1 5 10 15

<210> 197
<211> 15
<212> PRT
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<220>
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<400> 197

Leu Ser Phe His Ile Ser Asn Leu Gln Phe Asn Ser Ser Leu Glu
1 5 10 15

<210> 198
<211> 15
<212> PRT
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<400> 198

Ile Ser Asn Leu Gln Phe Asn Ser Ser Leu Glu Asp Pro Ser Thr
1 5 10 15

<210> 199
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 199

Gln Phe Asn Ser Ser Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln
1 5 10 15

<210> 200
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 200

Ser Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln Arg
1 5 10 15

<210> 201
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 201

Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln Arg Asp Ile Ser Glu
1 5 10 15

<210> 202
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 202

Tyr Tyr Gln Glu Leu Gln Arg Asp Ile Ser Glu Met Phe Leu Gln
1   5   10   15

<210> 203
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 203

Leu Gln Arg Asp Ile Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln
1   5   10   15

<210> 204
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 204

Ile Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe Leu
1   5   10   15

<210> 205
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<212> PRT
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<400> 205

Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe Leu Gly Leu Ser Asn
1   5   10   15

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<400> 206

Tyr Lys Gln Gly Gly Phe Leu Gly Leu Ser Asn Ile Lys Phe Arg
1 5 10 15

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<400> 207

Gly Phe Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser Val
1 5 10 15

<210> 208
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<400> 208

Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln Leu
1 5 10 15

<210> 209
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<400> 209

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

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<400> 210

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

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<400> 211

Val Val Val Gln Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn
1 5 10 15

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<400> 212

Gln Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp
1 5 10 15

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<400> 213

Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp Val Glu Thr Gln
1 5 10 15

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<400> 214

Gly Thr Ile Asn Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr
1   5   10   15

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<400> 215

Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala
1   5   10   15

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<400> 216

Glu Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala Ala Ser Arg Tyr
1   5   10   15

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<400> 217

Asn Gln Tyr Lys Thr Glu Ala Ala Ser Arg Tyr Asn Leu Thr Ile

1 5 10 15

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<400> 218

Thr Glu Ala Ala Ser Arg Tyr Asn Leu Thr Ile Ser Asp Val Ser
1 5 10 15

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<400> 219

Ser Arg Tyr Asn Leu Thr Ile Ser Asp Val Ser Val Ser Asp Val
1 5 10 15

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<400> 220

Leu Thr Ile Ser Asp Val Ser Val Ser Asp Val Pro Phe Pro Phe
1 5 10 15

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<400> 221

Asp Val Ser Val Ser Asp Val Pro Phe Pro Phe Ser Ala Gln Ser
1 5 10 15

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<400> 222

Ser Asp Val Pro Phe Pro Phe Ser Ala Gln Ser Gly Ala Gly Val
1 5 10 15

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<400> 223

Phe Pro Phe Ser Ala Gln Ser Gly Ala Gly Val Pro Gly Trp Gly
1 5 10 15

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<400> 224

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

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<400> 225

Ala Gly Val Pro Gly Trp Gly Ile Ala Leu Leu Val Leu Val Cys
1 5 10 15

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<400> 226

Gly Trp Gly Ile Ala Leu Leu Val Leu Val Cys Val Leu Val Ala
1 5 10 15

<210> 227
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<400> 227

Ala Leu Leu Val Leu Val Cys Val Leu Val Ala Leu Ala Ile Val
1 5 10 15

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<400> 228

Leu Val Cys Val Leu Val Ala Leu Ala Ile Val Tyr Leu Ile Ala
1 5 10 15

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<220>
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<400> 229

Leu Val Ala Leu Ala Ile Val Tyr Leu Ile Ala Leu Ala Val Cys
1   5   10   15

<210> 230
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<220>
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<400> 230

Ala Ile Val Tyr Leu Ile Ala Leu Ala Val Cys Gln Cys Arg Arg
1   5   10   15

<210> 231
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<220>
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<400> 231

Leu Ile Ala Leu Ala Val Cys Gln Cys Arg Arg Lys Asn Tyr Gly
1   5   10   15

<210> 232
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<220>
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<400> 232

Ala Val Cys Gln Cys Arg Arg Lys Asn Tyr Gly Gln Leu Asp Ile
1   5   10   15

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<400> 233

Cys Arg Arg Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro Ala Arg
1 5 10 15

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<400> 234

Asn Tyr Gly Gln Leu Asp Ile Phe Pro Ala Arg Asp Thr Tyr His
1 5 10 15

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<400> 235

Leu Asp Ile Phe Pro Ala Arg Asp Thr Tyr His Pro Met Ser Glu
1 5 10 15

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<400> 236

Pro Ala Arg Asp Thr Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr
1 5 10 15

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<220>
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<400> 237

Thr Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr His Thr His Gly
1 5 10 15

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<400> 238

Met Ser Glu Tyr Pro Thr Tyr His Thr His Gly Arg Tyr Val Pro
1 5 10 15

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<220>
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<400> 239

Pro Thr Tyr His Thr His Gly Arg Tyr Val Pro Pro Ser Ser Thr
1 5 10 15

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<400> 240

Thr His Gly Arg Tyr Val Pro Pro Ser Ser Thr Asp Arg Ser Pro
1 5 10 15

<210> 241
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<400> 241

Tyr Val Pro Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu Lys Val
1 5 10 15

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<400> 242

Ser Ser Thr Asp Arg Ser Pro Tyr Glu Lys Val Ser Ala Gly Asn
1 5 10 15

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<400> 243

Arg Ser Pro Tyr Glu Lys Val Ser Ala Gly Asn Gly Gly Ser Ser
1 5 10 15

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<400> 244

Glu Lys Val Ser Ala Gly Asn Gly Gly Ser Ser Leu Ser Tyr Thr

1 5 10 15

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<400> 245

Ala Gly Asn Gly Gly Ser Ser Leu Ser Tyr Thr Asn Pro Ala Val
1 5 10 15

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<400> 246

Gly Ser Ser Leu Ser Tyr Thr Asn Pro Ala Val Ala Ala Ala Ser
1 5 10 15

<210> 247
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<213> Artificial Sequence

<220>
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<400> 247

Leu Ser Tyr Thr Asn Pro Ala Val Ala Ala Ala Ser Ala Asn Leu
1 5 10 15

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<213> Artificial Sequence

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<400> 248

Met Ala Ser Leu Pro Thr Ala Arg Pro Leu Leu Gly Ser Cys Gly
1 5 10 15

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<220>
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<400> 249

Thr Ala Arg Pro Leu Leu Gly Ser Cys Gly Thr Pro Ala Leu Gly
1 5 10 15

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<400> 250

Leu Leu Gly Ser Cys Gly Thr Pro Ala Leu Gly Ser Leu Leu Phe
1 5 10 15

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<220>
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<400> 251

Cys Gly Thr Pro Ala Leu Gly Ser Leu Leu Phe Leu Leu Phe Ser
1 5 10 15

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<220>
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<400> 252

Ala Leu Gly Ser Leu Leu Phe Leu Leu Phe Ser Leu Gly Trp Val
1 5 10 15

<210> 253
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<220>
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<400> 253

Leu Leu Phe Leu Leu Phe Ser Leu Gly Trp Val Gln Pro Ser Arg
1 5 10 15

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<400> 254

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

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<400> 255

Gly Trp Val Gln Pro Ser Arg Thr Leu Ala Gly Glu Thr Gly Gln
1 5 10 15

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<220>
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<400> 256

Pro Ser Arg Thr Leu Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro
1   5   10   15

<210> 257
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<212> PRT
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<220>
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<400> 257

Thr Leu Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro Leu Asp Gly
1   5   10   15

<210> 258
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<220>
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<400> 258

Thr Gly Gln Glu Ala Ala Pro Leu Asp Gly Val Leu Ala Asn Pro
1   5   10   15

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<400> 259

Ala Ala Pro Leu Asp Gly Val Leu Ala Asn Pro Pro Asn Ile Ser
1   5   10   15

<210> 260
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<400> 260

Asp Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro
1 5 10 15

<210> 261
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<220>
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<400> 261

Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro Arg Gln Leu Leu
1 5 10 15

<210> 262
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<400> 262

Asn Ile Ser Ser Leu Ser Pro Arg Gln Leu Leu Gly Phe Pro Cys
1 5 10 15

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<400> 263

Leu Ser Pro Arg Gln Leu Leu Gly Phe Pro Cys Ala Glu Val Ser
1 5 10 15

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<220>
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<400> 264

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

<210> 265
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<400> 265

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

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<400> 266

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

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<400> 267

Leu Ser Thr Glu Arg Val Arg Glu Leu Ala Val Ala Leu Ala Gln
1 5 10 15

<210> 268
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<400> 268

Arg Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys
1 5 10 15

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<400> 269

Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu Ser Thr Glu
1 5 10 15

<210> 270
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<400> 270

Leu Ala Gln Lys Asn Val Lys Leu Ser Thr Glu Gln Leu Arg Cys
1 5 10 15

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<400> 271

Asn Val Lys Leu Ser Thr Glu Gln Leu Arg Cys Leu Ala His Arg

1 5 10 15

<210> 272
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<213> Artificial Sequence

<220>
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<400> 272

Ser Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro
1 5 10 15

<210> 273
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<212> PRT
<213> Artificial Sequence

<220>
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<400> 273

Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro Glu Asp Leu
1 5 10 15

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<400> 274

Ala His Arg Leu Ser Glu Pro Pro Glu Asp Leu Asp Ala Leu Pro
1 5 10 15

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<400> 275

Ser Glu Pro Pro Glu Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu
1 5 10 15

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<220>
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<400> 276

Glu Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn
1 5 10 15

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<212> PRT
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<220>
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<400> 277

Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro Asp Ala Phe
1 5 10 15

<210> 278
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<220>
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<400> 278

Asp Leu Leu Leu Phe Leu Asn Pro Asp Ala Phe Ser Gly Pro Gln
1 5 10 15

<210> 279
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<220>
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<400> 279

Phe Leu Asn Pro Asp Ala Phe Ser Gly Pro Gln Ala Cys Thr Arg
1 5 10 15

<210> 280
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<220>
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<400> 280

Asp Ala Phe Ser Gly Pro Gln Ala Cys Thr Arg Phe Phe Ser Arg
1 5 10 15

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<220>
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<400> 281

Gly Pro Gln Ala Cys Thr Arg Phe Phe Ser Arg Ile Thr Lys Ala
1 5 10 15

<210> 282
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<213> Artificial Sequence

<220>
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<400> 282

Cys Thr Arg Phe Phe Ser Arg Ile Thr Lys Ala Asn Val Asp Leu
1 5 10 15

<210> 283
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<220>
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<400> 283

Phe Ser Arg Ile Thr Lys Ala Asn Val Asp Leu Leu Pro Arg Gly
1   5   10   15

<210> 284
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<220>
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<400> 284

Thr Lys Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg
1   5   10   15

<210> 285
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<213> Artificial Sequence

<220>
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<400> 285

Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln Arg Leu Leu
1   5   10   15

<210> 286
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<212> PRT
<213> Artificial Sequence

<220>
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<400> 286

Pro Arg Gly Ala Pro Glu Arg Gln Arg Leu Leu Pro Ala Ala Leu
1   5   10   15

<210> 287
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<220>
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<400> 287

Pro Glu Arg Gln Arg Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly
1 5 10 15

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<220>
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<400> 288

Arg Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser
1 5 10 15

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<400> 289

Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu Leu Ser Glu
1 5 10 15

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<400> 290

Cys Trp Gly Val Arg Gly Ser Leu Leu Ser Glu Ala Asp Val Arg
1 5 10 15

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<400> 291

Arg Gly Ser Leu Leu Ser Glu Ala Asp Val Arg Ala Leu Gly Gly
1 5 10 15

<210> 292
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<400> 292

Leu Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp
1 5 10 15

<210> 293
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<220>
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<400> 293

Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu Pro Gly Arg
1 5 10 15

<210> 294
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<213> Artificial Sequence

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<400> 294

Leu Gly Gly Leu Ala Cys Asp Leu Pro Gly Arg Phe Val Ala Glu
1 5 10 15

<210> 295
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<400> 295

Ala Cys Asp Leu Pro Gly Arg Phe Val Ala Glu Ser Ala Glu Val
1   5   10   15

<210> 296
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<213> Artificial Sequence

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<400> 296

Pro Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg
1   5   10   15

<210> 297
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<400> 297

Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg Leu Val Ser Cys
1   5   10   15

<210> 298
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<212> PRT
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<220>
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<400> 298

Ala Glu Val Leu Leu Pro Arg Leu Val Ser Cys Pro Gly Pro Leu

1 5 10 15

<210> 299
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<212> PRT
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<220>
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<400> 299

Leu Pro Arg Leu Val Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln
1 5 10 15

<210> 300
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<212> PRT
<213> Artificial Sequence

<220>
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<400> 300

Val Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala
1 5 10 15

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<212> PRT
<213> Artificial Sequence

<220>
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<400> 301

Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala Arg Ala Ala Leu
1 5 10 15

<210> 302
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<212> PRT
<213> Artificial Sequence

<220>
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<400> 302

Gln Asp Gln Gln Glu Ala Ala Arg Ala Ala Leu Gln Gly Gly Gly
1 5 10 15

<210> 303
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<220>
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<400> 303

Glu Ala Ala Arg Ala Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly
1 5 10 15

<210> 304
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<400> 304

Ala Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr
1 5 10 15

<210> 305
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<213> Artificial Sequence

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<400> 305

Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr Trp Ser Val Ser
1 5 10 15

<210> 306
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<400> 306

Pro Tyr Gly Pro Pro Ser Thr Trp Ser Val Ser Thr Met Asp Ala
1 5 10 15

<210> 307
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<400> 307

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

<210> 308
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<213> Artificial Sequence

<220>
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<400> 308

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

<210> 309
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<213> Artificial Sequence

<220>
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<400> 309

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

<210> 310
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<213> Artificial Sequence

<220>
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<400> 310

Arg Gly Leu Leu Pro Val Leu Gly Gln Pro Ile Ile Arg Ser Ile
1   5   10   15

<210> 311
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 311

Pro Val Leu Gly Gln Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile
1   5   10   15

<210> 312
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<212> PRT
<213> Artificial Sequence

<220>
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<400> 312

Gln Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp
1   5   10   15

<210> 313
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<212> PRT
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<220>
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<400> 313

Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp Arg Gln Arg Ser
1   5   10   15

<210> 314
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<212> PRT

<213> Artificial Sequence

<220>
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<400> 314

Gln Gly Ile Val Ala Ala Trp Arg Gln Arg Ser Ser Arg Asp Pro
1 5 10 15

<210> 315
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 315

Ala Ala Trp Arg Gln Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln
1 5 10 15

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Gln Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr
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Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr Ile Leu Arg Pro
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Trp Arg Gln Pro Glu Arg Thr Ile Leu Arg Pro Arg Phe Arg Arg
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Glu Arg Thr Ile Leu Arg Pro Arg Phe Arg Arg Glu Val Glu Lys
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Leu Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro
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Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro Ser Gly Lys Lys
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Val Glu Lys Thr Ala Cys Pro Ser Gly Lys Lys Ala Arg Glu Ile
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<400> 323

Ala Cys Pro Ser Gly Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu
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Gly Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys
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Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp Glu Leu

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Glu Ser Leu Ile Phe Tyr Lys Lys Trp Glu Leu Glu Ala Cys Val
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Phe Tyr Lys Lys Trp Glu Leu Glu Ala Cys Val Asp Ala Ala Leu
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<400> 328

Trp Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln
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<400> 329

Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln Met Asp Arg Val
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<400> 330

Ala Ala Leu Leu Ala Thr Gln Met Asp Arg Val Asn Ala Ile Pro
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Ala Thr Gln Met Asp Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu
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Asp Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val
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Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys His Lys
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<400> 334

Thr Tyr Glu Gln Leu Asp Val Leu Lys His Lys Leu Asp Glu Leu
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Leu Asp Val Leu Lys His Lys Leu Asp Glu Leu Tyr Pro Gln Gly
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<400> 336

Lys His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser
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<400> 337

Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile Gln His
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<400> 338

Pro Gln Gly Tyr Pro Glu Ser Val Ile Gln His Leu Gly Tyr Leu
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<400> 339

Pro Glu Ser Val Ile Gln His Leu Gly Tyr Leu Phe Leu Lys Met
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<400> 340

Ile Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp
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Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp Ile Arg Lys Trp
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<400> 342

Leu Lys Met Ser Pro Glu Asp Ile Arg Lys Trp Asn Val Thr Ser
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<400> 343

Pro Glu Asp Ile Arg Lys Trp Asn Val Thr Ser Leu Glu Thr Leu
1 5 10 15

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<400> 344

Arg Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu
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<400> 345

Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu Val Asn Lys
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<400> 346

Glu Thr Leu Lys Ala Leu Leu Glu Val Asn Lys Gly His Glu Met
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<400> 347

Ala Leu Leu Glu Val Asn Lys Gly His Glu Met Ser Pro Gln Val
1   5   10   15

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<400> 348

Val Asn Lys Gly His Glu Met Ser Pro Gln Val Ala Thr Leu Ile
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<400> 349

His Glu Met Ser Pro Gln Val Ala Thr Leu Ile Asp Arg Phe Val
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<400> 350

Pro Gln Val Ala Thr Leu Ile Asp Arg Phe Val Lys Gly Arg Gly
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<400> 351

Thr Leu Ile Asp Arg Phe Val Lys Gly Arg Gly Gln Leu Asp Lys
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<400> 352

Arg Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp

1 5 10 15

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<400> 353

Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp Thr Leu Thr Ala
1 5 10 15

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<400> 354

Leu Asp Lys Asp Thr Leu Asp Thr Leu Thr Ala Phe Tyr Pro Gly
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<400> 355

Thr Leu Asp Thr Leu Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser
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<400> 356

Leu Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu
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<400> 357

Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu Glu Leu Ser Ser
1 5 10 15

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<400> 358

Leu Cys Ser Leu Ser Pro Glu Glu Leu Ser Ser Val Pro Pro Ser
1 5 10 15

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<400> 359

Ser Pro Glu Glu Leu Ser Ser Val Pro Pro Ser Ser Ile Trp Ala
1 5 10 15

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<400> 360

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

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<400> 361

Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln Asp Leu Asp Thr
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<400> 362

Ile Trp Ala Val Arg Pro Gln Asp Leu Asp Thr Cys Asp Pro Arg
1 5 10 15

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<400> 363

Arg Pro Gln Asp Leu Asp Thr Cys Asp Pro Arg Gln Leu Asp Val
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<400> 364

Leu Asp Thr Cys Asp Pro Arg Gln Leu Asp Val Leu Tyr Pro Lys
1   5   10   15

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<400> 365

Asp Pro Arg Gln Leu Asp Val Leu Tyr Pro Lys Ala Arg Leu Ala
1   5   10   15

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<400> 366

Leu Asp Val Leu Tyr Pro Lys Ala Arg Leu Ala Phe Gln Asn Met
1   5   10   15

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<400> 367

Tyr Pro Lys Ala Arg Leu Ala Phe Gln Asn Met Asn Gly Ser Glu
1   5   10   15

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<400> 368

Arg Leu Ala Phe Gln Asn Met Asn Gly Ser Glu Tyr Phe Val Lys
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<400> 369

Gln Asn Met Asn Gly Ser Glu Tyr Phe Val Lys Ile Gln Ser Phe
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<400> 370

Gly Ser Glu Tyr Phe Val Lys Ile Gln Ser Phe Leu Gly Gly Ala
1 5 10 15

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<400> 371

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

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<400> 372

Gln Ser Phe Leu Gly Gly Ala Pro Thr Glu Asp Leu Lys Ala Leu
1 5 10 15

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<400> 373

Gly Gly Ala Pro Thr Glu Asp Leu Lys Ala Leu Ser Gln Gln Asn
1 5 10 15

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<400> 374

Thr Glu Asp Leu Lys Ala Leu Ser Gln Gln Asn Val Ser Met Asp
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<400> 375

Lys Ala Leu Ser Gln Gln Asn Val Ser Met Asp Leu Ala Thr Phe
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<400> 376

Gln Gln Asn Val Ser Met Asp Leu Ala Thr Phe Met Lys Leu Arg
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<400> 377

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

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<400> 378

Ala Thr Phe Met Lys Leu Arg Thr Asp Ala Val Leu Pro Leu Thr
1 5 10 15

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<400> 379

Lys Leu Arg Thr Asp Ala Val Leu Pro Leu Thr Val Ala Glu Val

1 5 10 15

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<400> 380

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

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<400> 381

Pro Leu Thr Val Ala Glu Val Gln Lys Leu Leu Gly Pro His Val
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<400> 382

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

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<400> 383

Lys Leu Leu Gly Pro His Val Glu Gly Leu Lys Ala Glu Glu Arg
1 5 10 15

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<400> 384

Pro His Val Glu Gly Leu Lys Ala Glu Glu Arg His Arg Pro Val
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<400> 385

Gly Leu Lys Ala Glu Glu Arg His Arg Pro Val Arg Asp Trp Ile
1 5 10 15

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<400> 386

Glu Glu Arg His Arg Pro Val Arg Asp Trp Ile Leu Arg Gln Arg
1 5 10 15

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<400> 387

Arg Pro Val Arg Asp Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu
1 5 10 15

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<400> 388

Asp Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly
1 5 10 15

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<400> 389

Arg Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly Leu Gly Leu Gln
1 5 10 15

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<400> 390

Asp Asp Leu Asp Thr Leu Gly Leu Gly Leu Gln Gly Gly Ile Pro
1 5 10 15

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<400> 391

Thr Leu Gly Leu Gly Leu Gln Gly Gly Ile Pro Asn Gly Tyr Leu
1   5   10   15

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<400> 392

Gly Leu Gln Gly Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp Leu
1   5   10   15

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<400> 393

Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp Leu Ser Met Gln Glu
1   5   10   15

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<400> 394

Tyr Leu Val Leu Asp Leu Ser Met Gln Glu Ala Leu Ser Gly Thr
1   5   10   15

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<400> 395

Leu Asp Leu Ser Met Gln Glu Ala Leu Ser Gly Thr Pro Cys Leu
1 5 10 15

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<400> 396

Met Gln Glu Ala Leu Ser Gly Thr Pro Cys Leu Leu Gly Pro Gly
1 5 10 15

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<400> 397

Leu Ser Gly Thr Pro Cys Leu Leu Gly Pro Gly Pro Val Leu Thr
1 5 10 15

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<400> 398

Pro Cys Leu Leu Gly Pro Gly Pro Val Leu Thr Val Leu Ala Leu
1 5 10 15

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<400> 399

Gly Pro Gly Pro Val Leu Thr Val Leu Ala Leu Leu Leu Ala Ser
1 5 10 15

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<400> 400

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

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<400> 401

Arg Arg Gly Ala Ala Pro Glu Pro Glu Arg Thr Pro Val Gly Gln
1 5 10 15

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<400> 402

Ala Pro Glu Pro Glu Arg Thr Pro Val Gly Gln Gly Ser Trp Ala
1 5 10 15

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<400> 403

Glu Arg Thr Pro Val Gly Gln Gly Ser Trp Ala His Pro Gly Arg
1   5   10   15

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<400> 404

Val Gly Gln Gly Ser Trp Ala His Pro Gly Arg Thr Arg Gly Pro
1   5   10   15

<210> 405
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<400> 405

Ser Trp Ala His Pro Gly Arg Thr Arg Gly Pro Ser Asp Arg Gly
1   5   10   15

<210> 406
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<400> 406

Pro Gly Arg Thr Arg Gly Pro Ser Asp Arg Gly Phe Cys Val Val

1 5 10 15

<210> 407
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<400> 407

Arg Gly Pro Ser Asp Arg Gly Phe Cys Val Val Ser Pro Ala Arg
1 5 10 15

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<400> 408

Asp Arg Gly Phe Cys Val Val Ser Pro Ala Arg Pro Ala Glu Glu
1 5 10 15

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<400> 409

Cys Val Val Ser Pro Ala Arg Pro Ala Glu Glu Ala Thr Ser Leu
1 5 10 15

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<400> 410

Pro Ala Arg Pro Ala Glu Glu Ala Thr Ser Leu Glu Gly Ala Leu
1 5 10 15

<210> 411
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<400> 411

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

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<400> 412

Thr Ser Leu Glu Gly Ala Leu Ser Gly Thr Arg His Ser His Pro
1 5 10 15

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<400> 413

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

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<400> 414

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

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<400> 415

Ser His Pro Ser Val Gly Arg Gln His His Ala Gly Pro Pro Ser
1 5 10 15

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<400> 416

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

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<400> 417

His His Ala Gly Pro Pro Ser Thr Ser Arg Pro Pro Arg Pro Trp
1 5 10 15

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<400> 418

Pro Pro Ser Thr Ser Arg Pro Pro Arg Pro Trp Asp Thr Pro Cys
1   5   10   15

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<400> 419

Ser Arg Pro Pro Arg Pro Trp Asp Thr Pro Cys Pro Pro Val Tyr
1   5   10   15

<210> 420
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<220>
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<400> 420

Arg Pro Trp Asp Thr Pro Cys Pro Pro Val Tyr Ala Glu Thr Lys
1   5   10   15

<210> 421
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<400> 421

Thr Pro Cys Pro Pro Val Tyr Ala Glu Thr Lys His Phe Leu Tyr
1   5   10   15

<210> 422
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<400> 422

Pro Val Tyr Ala Glu Thr Lys His Phe Leu Tyr Ser Ser Gly Asp
1 5 10 15

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<400> 423

Glu Thr Lys His Phe Leu Tyr Ser Ser Gly Asp Lys Glu Gln Leu
1 5 10 15

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<400> 424

Phe Leu Tyr Ser Ser Gly Asp Lys Glu Gln Leu Arg Pro Ser Phe
1 5 10 15

<210> 425
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<220>
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<400> 425

Ser Gly Asp Lys Glu Gln Leu Arg Pro Ser Phe Leu Leu Ser Ser
1 5 10 15

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<400> 426

Glu Gln Leu Arg Pro Ser Phe Leu Leu Ser Ser Leu Arg Pro Ser
1 5 10 15

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<400> 427

Pro Ser Phe Leu Leu Ser Ser Leu Arg Pro Ser Leu Thr Gly Ala
1 5 10 15

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<400> 428

Leu Ser Ser Leu Arg Pro Ser Leu Thr Gly Ala Arg Arg Leu Val
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Arg Pro Ser Leu Thr Gly Ala Arg Arg Leu Val Glu Thr Ile Phe
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Thr Gly Ala Arg Arg Leu Val Glu Thr Ile Phe Leu Gly Ser Arg
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Arg Leu Val Glu Thr Ile Phe Leu Gly Ser Arg Pro Trp Met Pro
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Thr Ile Phe Leu Gly Ser Arg Pro Trp Met Pro Gly Thr Pro Arg
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Gly Ser Arg Pro Trp Met Pro Gly Thr Pro Arg Arg Leu Pro Arg

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Trp Met Pro Gly Thr Pro Arg Arg Leu Pro Arg Leu Pro Gln Arg
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Thr Pro Arg Arg Leu Pro Arg Leu Pro Gln Arg Tyr Trp Gln Met
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Leu Pro Arg Leu Pro Gln Arg Tyr Trp Gln Met Arg Pro Leu Phe
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Pro Gln Arg Tyr Trp Gln Met Arg Pro Leu Phe Leu Glu Leu Leu
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<400> 438

Trp Gln Met Arg Pro Leu Phe Leu Glu Leu Leu Gly Asn His Ala
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Pro Leu Phe Leu Glu Leu Leu Gly Asn His Ala Gln Cys Pro Tyr
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<400> 440

Glu Leu Leu Gly Asn His Ala Gln Cys Pro Tyr Gly Val Leu Leu
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<400> 441

Asn His Ala Gln Cys Pro Tyr Gly Val Leu Leu Lys Thr His Cys
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<400> 442

Cys Pro Tyr Gly Val Leu Leu Lys Thr His Cys Pro Leu Arg Ala
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<400> 443

Val Leu Leu Lys Thr His Cys Pro Leu Arg Ala Ala Val Thr Pro
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<400> 444

Thr His Cys Pro Leu Arg Ala Ala Val Thr Pro Ala Ala Gly Val
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<400> 445

Leu Arg Ala Ala Val Thr Pro Ala Ala Gly Val Cys Ala Arg Glu
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<400> 446

Val Thr Pro Ala Ala Gly Val Cys Ala Arg Glu Lys Pro Gln Gly
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<400> 447

Ala Gly Val Cys Ala Arg Glu Lys Pro Gln Gly Ser Val Ala Ala
1   5   10   15

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<400> 448

Ala Arg Glu Lys Pro Gln Gly Ser Val Ala Ala Pro Glu Glu Glu
1   5   10   15

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<400> 449

Pro Gln Gly Ser Val Ala Ala Pro Glu Glu Glu Asp Thr Asp Pro
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<400> 450

Val Ala Ala Pro Glu Glu Glu Asp Thr Asp Pro Arg Arg Leu Val
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<400> 451

Glu Glu Glu Asp Thr Asp Pro Arg Arg Leu Val Gln Leu Leu Arg
1 5 10 15

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<400> 452

Thr Asp Pro Arg Arg Leu Val Gln Leu Leu Arg Gln His Ser Ser
1 5 10 15

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<400> 453

Arg Leu Val Gln Leu Leu Arg Gln His Ser Ser Pro Trp Gln Val
1 5 10 15

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<400> 454

Leu Leu Arg Gln His Ser Ser Pro Trp Gln Val Tyr Gly Phe Val
1 5 10 15

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<400> 455

His Ser Ser Pro Trp Gln Val Tyr Gly Phe Val Arg Ala Cys Leu
1 5 10 15

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<400> 456

Trp Gln Val Tyr Gly Phe Val Arg Ala Cys Leu Arg Arg Leu Val
1 5 10 15

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<400> 457

Gly Phe Val Arg Ala Cys Leu Arg Arg Leu Val Pro Pro Gly Leu
1   5   10   15

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<400> 458

Ala Cys Leu Arg Arg Leu Val Pro Pro Gly Leu Trp Gly Ser Arg
1   5   10   15

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<400> 459

Arg Leu Val Pro Pro Gly Leu Trp Gly Ser Arg His Asn Glu Arg
1   5   10   15

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<400> 460

Pro Gly Leu Trp Gly Ser Arg His Asn Glu Arg Arg Phe Leu Arg

1 5 10 15

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<400> 461

Gly Ser Arg His Asn Glu Arg Arg Phe Leu Arg Asn Thr Lys Lys
1 5 10 15

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<400> 462

Asn Glu Arg Arg Phe Leu Arg Asn Thr Lys Lys Phe Ile Ser Leu
1 5 10 15

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<400> 463

Phe Leu Arg Asn Thr Lys Lys Phe Ile Ser Leu Gly Lys His Ala
1 5 10 15

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<400> 464

Thr Lys Lys Phe Ile Ser Leu Gly Lys His Ala Lys Leu Ser Leu
1 5 10 15

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<400> 465

Ile Ser Leu Gly Lys His Ala Lys Leu Ser Leu Gln Glu Leu Thr
1 5 10 15

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<400> 466

Lys His Ala Lys Leu Ser Leu Gln Glu Leu Thr Trp Lys Met Ser
1 5 10 15

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<400> 467

Leu Ser Leu Gln Glu Leu Thr Trp Lys Met Ser Val Arg Asp Cys
1 5 10 15

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<400> 468

Glu Leu Thr Trp Lys Met Ser Val Arg Asp Cys Ala Trp Leu Arg
1 5 10 15

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<400> 469

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

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<400> 470

Arg Asp Cys Ala Trp Leu Arg Arg Ser Pro Gly Val Gly Cys Val
1 5 10 15

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<400> 471

Trp Leu Arg Arg Ser Pro Gly Val Gly Cys Val Pro Ala Ala Glu
1 5 10 15

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<400> 472

Ser Pro Gly Val Gly Cys Val Pro Ala Ala Glu His Arg Leu Arg
1   5   10   15

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<400> 473

Gly Cys Val Pro Ala Ala Glu His Arg Leu Arg Glu Glu Ile Leu
1   5   10   15

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<220>
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<400> 474

Ala Ala Glu His Arg Leu Arg Glu Glu Ile Leu Ala Lys Phe Leu
1   5   10   15

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<400> 475

Arg Leu Arg Glu Glu Ile Leu Ala Lys Phe Leu His Trp Leu Met
1   5   10   15

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<400> 476

Glu Ile Leu Ala Lys Phe Leu His Trp Leu Met Ser Val Tyr Val
1 5 10 15

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<400> 477

Lys Phe Leu His Trp Leu Met Ser Val Tyr Val Val Glu Leu Leu
1 5 10 15

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<400> 478

Trp Leu Met Ser Val Tyr Val Val Glu Leu Leu Arg Ser Phe Phe
1 5 10 15

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<400> 479

Val Tyr Val Val Glu Leu Leu Arg Ser Phe Phe Tyr Val Thr Glu
1 5 10 15

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<400> 480

Glu Leu Leu Arg Ser Phe Phe Tyr Val Thr Glu Thr Thr Phe Gln
1 5 10 15

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<400> 481

Ser Phe Phe Tyr Val Thr Glu Thr Thr Phe Gln Lys Asn Arg Leu
1 5 10 15

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<400> 482

Val Thr Glu Thr Thr Phe Gln Lys Asn Arg Leu Phe Phe Tyr Arg
1 5 10 15

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<400> 483

Thr Phe Gln Lys Asn Arg Leu Phe Phe Tyr Arg Lys Ser Val Trp
1 5 10 15

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<400> 484

Asn Arg Leu Phe Phe Tyr Arg Lys Ser Val Trp Ser Lys Leu Gln
1 5 10 15

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<400> 485

Phe Tyr Arg Lys Ser Val Trp Ser Lys Leu Gln Ser Ile Gly Ile
1 5 10 15

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<400> 486

Ser Val Trp Ser Lys Leu Gln Ser Ile Gly Ile Arg Gln His Leu
1 5 10 15

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<400> 487

Lys Leu Gln Ser Ile Gly Ile Arg Gln His Leu Lys Arg Val Gln

1 5 10 15

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<400> 488

Ile Gly Ile Arg Gln His Leu Lys Arg Val Gln Leu Arg Glu Leu
1 5 10 15

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<400> 489

Gln His Leu Lys Arg Val Gln Leu Arg Glu Leu Ser Glu Ala Glu
1 5 10 15

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<400> 490

Arg Val Gln Leu Arg Glu Leu Ser Glu Ala Glu Val Arg Gln His
1 5 10 15

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<400> 491

Arg Glu Leu Ser Glu Ala Glu Val Arg Gln His Arg Glu Ala Arg
1 5 10 15

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<400> 492

Glu Ala Glu Val Arg Gln His Arg Glu Ala Arg Pro Ala Leu Leu
1 5 10 15

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<400> 493

Arg Gln His Arg Glu Ala Arg Pro Ala Leu Leu Thr Ser Arg Leu
1 5 10 15

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<400> 494

Glu Ala Arg Pro Ala Leu Leu Thr Ser Arg Leu Arg Phe Ile Pro
1 5 10 15

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<400> 495

Ala Leu Leu Thr Ser Arg Leu Arg Phe Ile Pro Lys Pro Asp Gly
1 5 10 15

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<400> 496

Ser Arg Leu Arg Phe Ile Pro Lys Pro Asp Gly Leu Arg Pro Ile
1 5 10 15

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<400> 497

Phe Ile Pro Lys Pro Asp Gly Leu Arg Pro Ile Val Asn Met Asp
1 5 10 15

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<400> 498

Pro Asp Gly Leu Arg Pro Ile Val Asn Met Asp Tyr Val Val Gly
1 5 10 15

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<400> 499

Arg Pro Ile Val Asn Met Asp Tyr Val Val Gly Ala Arg Thr Phe
1   5   10   15

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<400> 500

Asn Met Asp Tyr Val Val Gly Ala Arg Thr Phe Arg Arg Glu Lys
1   5   10   15

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<400> 501

Val Val Gly Ala Arg Thr Phe Arg Arg Glu Lys Arg Ala Glu Arg
1   5   10   15

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<400> 502

Arg Thr Phe Arg Arg Glu Lys Arg Ala Glu Arg Leu Thr Ser Arg
1   5   10   15

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<400> 503

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

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<400> 504

Ala Glu Arg Leu Thr Ser Arg Val Lys Ala Leu Phe Ser Val Leu
1 5 10 15

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<400> 505

Thr Ser Arg Val Lys Ala Leu Phe Ser Val Leu Asn Tyr Glu Arg
1 5 10 15

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<400> 506

Lys Ala Leu Phe Ser Val Leu Asn Tyr Glu Arg Ala Arg Arg Pro
1 5 10 15

<210> 507

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<400> 507

Ser Val Leu Asn Tyr Glu Arg Ala Arg Arg Pro Gly Leu Leu Gly
1 5 10 15

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<400> 508

Tyr Glu Arg Ala Arg Arg Pro Gly Leu Leu Gly Ala Ser Val Leu
1 5 10 15

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<400> 509

Arg Arg Pro Gly Leu Leu Gly Ala Ser Val Leu Gly Leu Asp Asp
1 5 10 15

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<220>
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<400> 510

Leu Leu Gly Ala Ser Val Leu Gly Leu Asp Asp Ile His Arg Ala
1 5 10 15

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<400> 511

Ser Val Leu Gly Leu Asp Asp Ile His Arg Ala Trp Arg Thr Phe
1 5 10 15

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<400> 512

Leu Asp Asp Ile His Arg Ala Trp Arg Thr Phe Val Leu Arg Val
1 5 10 15

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<400> 513

His Arg Ala Trp Arg Thr Phe Val Leu Arg Val Arg Ala Gln Asp
1 5 10 15

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<400> 514

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

1 5 10 15

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<400> 515

Leu Arg Val Arg Ala Gln Asp Pro Pro Pro Glu Leu Tyr Phe Val
1 5 10 15

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<400> 516

Ala Gln Asp Pro Pro Pro Glu Leu Tyr Phe Val Lys Val Asp Val
1 5 10 15

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<400> 517

Pro Pro Glu Leu Tyr Phe Val Lys Val Asp Val Thr Gly Ala Tyr
1 5 10 15

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<400> 518

Tyr Phe Val Lys Val Asp Val Thr Gly Ala Tyr Asp Thr Ile Pro
1 5 10 15

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<400> 519

Val Asp Val Thr Gly Ala Tyr Asp Thr Ile Pro Gln Asp Arg Leu
1 5 10 15

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<400> 520

Gly Ala Tyr Asp Thr Ile Pro Gln Asp Arg Leu Thr Glu Val Ile
1 5 10 15

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<400> 521

Thr Ile Pro Gln Asp Arg Leu Thr Glu Val Ile Ala Ser Ile Ile
1 5 10 15

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<400> 522

Asp Arg Leu Thr Glu Val Ile Ala Ser Ile Ile Lys Pro Gln Asn
1 5 10 15

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<400> 523

Glu Val Ile Ala Ser Ile Ile Lys Pro Gln Asn Thr Tyr Cys Val
1 5 10 15

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<400> 524

Ser Ile Ile Lys Pro Gln Asn Thr Tyr Cys Val Arg Arg Tyr Ala
1 5 10 15

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<400> 525

Pro Gln Asn Thr Tyr Cys Val Arg Arg Tyr Ala Val Val Gln Lys
1 5 10 15

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<400> 526

Tyr Cys Val Arg Arg Tyr Ala Val Val Gln Lys Ala Ala His Gly
1   5   10   15

<210> 527
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<400> 527

Arg Tyr Ala Val Val Gln Lys Ala Ala His Gly His Val Arg Lys
1   5   10   15

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<400> 528

Val Gln Lys Ala Ala His Gly His Val Arg Lys Ala Phe Lys Ser
1   5   10   15

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<400> 529

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

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<400> 530

Val Arg Lys Ala Phe Lys Ser His Val Ser Thr Leu Thr Asp Leu
1 5 10 15

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<400> 531

Phe Lys Ser His Val Ser Thr Leu Thr Asp Leu Gln Pro Tyr Met
1 5 10 15

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<400> 532

Val Ser Thr Leu Thr Asp Leu Gln Pro Tyr Met Arg Gln Phe Val
1 5 10 15

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<400> 533

Thr Asp Leu Gln Pro Tyr Met Arg Gln Phe Val Ala His Leu Gln
1 5 10 15

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<400> 534

Pro Tyr Met Arg Gln Phe Val Ala His Leu Gln Glu Thr Ser Pro
1 5 10 15

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<400> 535

Gln Phe Val Ala His Leu Gln Glu Thr Ser Pro Leu Arg Asp Ala
1 5 10 15

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<400> 536

His Leu Gln Glu Thr Ser Pro Leu Arg Asp Ala Val Val Ile Glu
1 5 10 15

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Thr Ser Pro Leu Arg Asp Ala Val Val Ile Glu Gln Ser Ser Ser
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<400> 538

Arg Asp Ala Val Val Ile Glu Gln Ser Ser Ser Leu Asn Glu Ala
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<400> 539

Val Ile Glu Gln Ser Ser Ser Leu Asn Glu Ala Ser Ser Gly Leu
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Ser Ser Ser Leu Asn Glu Ala Ser Ser Gly Leu Phe Asp Val Phe
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Asn Glu Ala Ser Ser Gly Leu Phe Asp Val Phe Leu Arg Phe Met

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Ser Gly Leu Phe Asp Val Phe Leu Arg Phe Met Cys His His Ala
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Asp Val Phe Leu Arg Phe Met Cys His His Ala Val Arg Ile Arg
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Arg Phe Met Cys His His Ala Val Arg Ile Arg Gly Lys Ser Tyr
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His His Ala Val Arg Ile Arg Gly Lys Ser Tyr Val Gln Cys Gln
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Arg Ile Arg Gly Lys Ser Tyr Val Gln Cys Gln Gly Ile Pro Gln
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Lys Ser Tyr Val Gln Cys Gln Gly Ile Pro Gln Gly Ser Ile Leu
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<400> 548

Gln Cys Gln Gly Ile Pro Gln Gly Ser Ile Leu Ser Thr Leu Leu
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<400> 549

Ile Pro Gln Gly Ser Ile Leu Ser Thr Leu Leu Cys Ser Leu Cys
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<400> 550

Ser Ile Leu Ser Thr Leu Leu Cys Ser Leu Cys Tyr Gly Asp Met
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<400> 551

Thr Leu Leu Cys Ser Leu Cys Tyr Gly Asp Met Glu Asn Lys Leu
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<400> 552

Ser Leu Cys Tyr Gly Asp Met Glu Asn Lys Leu Phe Ala Gly Ile
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<400> 553

Gly Asp Met Glu Asn Lys Leu Phe Ala Gly Ile Arg Arg Asp Gly
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<400> 554

Asn Lys Leu Phe Ala Gly Ile Arg Arg Asp Gly Leu Leu Leu Arg
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<400> 555

Ala Gly Ile Arg Arg Asp Gly Leu Leu Leu Arg Leu Val Asp Asp
1   5   10   15

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<400> 556

Arg Asp Gly Leu Leu Leu Arg Leu Val Asp Asp Phe Leu Leu Val
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<400> 557

Leu Leu Arg Leu Val Asp Asp Phe Leu Leu Val Thr Pro His Leu
1 5 10 15

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<400> 558

Val Asp Asp Phe Leu Leu Val Thr Pro His Leu Thr His Ala Lys
1 5 10 15

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<400> 559

Leu Leu Val Thr Pro His Leu Thr His Ala Lys Thr Phe Leu Arg
1 5 10 15

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Pro His Leu Thr His Ala Lys Thr Phe Leu Arg Thr Leu Val Arg
1 5 10 15

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His Ala Lys Thr Phe Leu Arg Thr Leu Val Arg Gly Val Pro Glu
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Phe Leu Arg Thr Leu Val Arg Gly Val Pro Glu Tyr Gly Cys Val
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<400> 563

Leu Val Arg Gly Val Pro Glu Tyr Gly Cys Val Val Asn Leu Arg
1 5 10 15

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<400> 564

Val Pro Glu Tyr Gly Cys Val Val Asn Leu Arg Lys Thr Val Val
1 5 10 15

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<400> 565

Gly Cys Val Val Asn Leu Arg Lys Thr Val Val Asn Phe Pro Val
1 5 10 15

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<400> 566

Asn Leu Arg Lys Thr Val Val Asn Phe Pro Val Glu Asp Glu Ala
1 5 10 15

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<400> 567

Thr Val Val Asn Phe Pro Val Glu Asp Glu Ala Leu Gly Gly Thr
1 5 10 15

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<400> 568

Phe Pro Val Glu Asp Glu Ala Leu Gly Gly Thr Ala Phe Val Gln

1 5 10 15

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<400> 569

Asp Glu Ala Leu Gly Gly Thr Ala Phe Val Gln Met Pro Ala His
1 5 10 15

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<400> 570

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

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<400> 571

Phe Val Gln Met Pro Ala His Gly Leu Phe Pro Trp Cys Gly Leu
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<400> 572

Pro Ala His Gly Leu Phe Pro Trp Cys Gly Leu Leu Leu Asp Thr
1 5 10 15

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<400> 573

Leu Phe Pro Trp Cys Gly Leu Leu Leu Asp Thr Arg Thr Leu Glu
1 5 10 15

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<400> 574

Cys Gly Leu Leu Leu Asp Thr Arg Thr Leu Glu Val Gln Ser Asp
1 5 10 15

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<400> 575

Leu Asp Thr Arg Thr Leu Glu Val Gln Ser Asp Tyr Ser Ser Tyr
1 5 10 15

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<400> 576

Thr Leu Glu Val Gln Ser Asp Tyr Ser Ser Tyr Ala Arg Thr Ser
1 5 10 15

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<400> 577

Gln Ser Asp Tyr Ser Ser Tyr Ala Arg Thr Ser Ile Arg Ala Ser
1 5 10 15

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<400> 578

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

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<400> 579

Arg Thr Ser Ile Arg Ala Ser Leu Thr Phe Asn Arg Gly Phe Lys
1 5 10 15

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<400> 580

Arg Ala Ser Leu Thr Phe Asn Arg Gly Phe Lys Ala Gly Arg Asn
1   5   10   15

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<400> 581

Thr Phe Asn Arg Gly Phe Lys Ala Gly Arg Asn Met Arg Arg Lys
1   5   10   15

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<400> 582

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

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<400> 583

Gly Arg Asn Met Arg Arg Lys Leu Phe Gly Val Leu Arg Leu Lys
1   5   10   15

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<400> 584

Arg Arg Lys Leu Phe Gly Val Leu Arg Leu Lys Cys His Ser Leu
1 5 10 15

<210> 585
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<400> 585

Phe Gly Val Leu Arg Leu Lys Cys His Ser Leu Phe Leu Asp Leu
1 5 10 15

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<400> 586

Arg Leu Lys Cys His Ser Leu Phe Leu Asp Leu Gln Val Asn Ser
1 5 10 15

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<400> 587

His Ser Leu Phe Leu Asp Leu Gln Val Asn Ser Leu Gln Thr Val
1 5 10 15

<210> 588

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<400> 588

Leu Asp Leu Gln Val Asn Ser Leu Gln Thr Val Cys Thr Asn Ile
1 5 10 15

<210> 589
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<400> 589

Val Asn Ser Leu Gln Thr Val Cys Thr Asn Ile Tyr Lys Ile Leu
1 5 10 15

<210> 590
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<400> 590

Gln Thr Val Cys Thr Asn Ile Tyr Lys Ile Leu Leu Leu Gln Ala
1 5 10 15

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<400> 591

Thr Asn Ile Tyr Lys Ile Leu Leu Leu Gln Ala Tyr Arg Phe His
1 5 10 15

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<400> 592

Lys Ile Leu Leu Leu Gln Ala Tyr Arg Phe His Ala Cys Val Leu
1 5 10 15

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<400> 593

Leu Gln Ala Tyr Arg Phe His Ala Cys Val Leu Gln Leu Pro Phe
1 5 10 15

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<400> 594

Arg Phe His Ala Cys Val Leu Gln Leu Pro Phe His Gln Gln Val
1 5 10 15

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<400> 595

Cys Val Leu Gln Leu Pro Phe His Gln Gln Val Trp Lys Asn Pro

1 5 10 15

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<400> 596

Leu Pro Phe His Gln Gln Val Trp Lys Asn Pro Thr Phe Phe Leu
1 5 10 15

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<400> 597

Gln Gln Val Trp Lys Asn Pro Thr Phe Phe Leu Arg Val Ile Ser
1 5 10 15

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<400> 598

Lys Asn Pro Thr Phe Phe Leu Arg Val Ile Ser Asp Thr Ala Ser
1 5 10 15

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<400> 599

Phe Phe Leu Arg Val Ile Ser Asp Thr Ala Ser Leu Cys Tyr Ser
1 5 10 15

<210> 600
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<400> 600

Val Ile Ser Asp Thr Ala Ser Leu Cys Tyr Ser Ile Leu Lys Ala
1 5 10 15

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<400> 601

Thr Ala Ser Leu Cys Tyr Ser Ile Leu Lys Ala Lys Asn Ala Gly
1 5 10 15

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<400> 602

Cys Tyr Ser Ile Leu Lys Ala Lys Asn Ala Gly Met Ser Leu Gly
1 5 10 15

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<400> 603

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

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<400> 604

Asn Ala Gly Met Ser Leu Gly Ala Lys Gly Ala Ala Gly Pro Leu
1 5 10 15

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<400> 605

Ser Leu Gly Ala Lys Gly Ala Ala Gly Pro Leu Pro Ser Glu Ala
1 5 10 15

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<400> 606

Lys Gly Ala Ala Gly Pro Leu Pro Ser Glu Ala Val Gln Trp Leu
1 5 10 15

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<400> 607

Gly Pro Leu Pro Ser Glu Ala Val Gln Trp Leu Cys His Gln Ala
1   5   10   15

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<400> 608

Ser Glu Ala Val Gln Trp Leu Cys His Gln Ala Phe Leu Leu Lys
1   5   10   15

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<400> 609

Gln Trp Leu Cys His Gln Ala Phe Leu Leu Lys Leu Thr Arg His
1   5   10   15

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<400> 610

His Gln Ala Phe Leu Leu Lys Leu Thr Arg His Arg Val Thr Tyr
1   5   10   15

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Leu Leu Lys Leu Thr Arg His Arg Val Thr Tyr Val Pro Leu Leu
1 5 10 15

<210> 612
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<400> 612

Thr Arg His Arg Val Thr Tyr Val Pro Leu Leu Gly Ser Leu Arg
1 5 10 15

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<400> 613

Val Thr Tyr Val Pro Leu Leu Gly Ser Leu Arg Thr Ala Gln Thr
1 5 10 15

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<400> 614

Pro Leu Leu Gly Ser Leu Arg Thr Ala Gln Thr Gln Leu Ser Arg
1 5 10 15

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<400> 615

Ser Leu Arg Thr Ala Gln Thr Gln Leu Ser Arg Lys Leu Pro Gly
1 5 10 15

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<400> 616

Ala Gln Thr Gln Leu Ser Arg Lys Leu Pro Gly Thr Thr Leu Thr
1 5 10 15

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<400> 617

Leu Ser Arg Lys Leu Pro Gly Thr Thr Leu Thr Ala Leu Glu Ala
1 5 10 15

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<400> 618

Leu Pro Gly Thr Thr Leu Thr Ala Leu Glu Ala Ala Ala Asn Pro
1 5 10 15

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<400> 619

Thr Leu Thr Ala Leu Glu Ala Ala Ala Asn Pro Ala Leu Pro Ser
1   5   10   15

<210> 620
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<220>
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<400> 620

Leu Glu Ala Ala Ala Asn Pro Ala Leu Pro Ser Asp Phe Lys Thr
1   5   10   15

<210> 621
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<220>
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<400> 621

Ala Ala Asn Pro Ala Leu Pro Ser Asp Phe Lys Thr Ile Leu Asp
1   5   10   15