SEQUENCE LISTING

<110> REGENERON PHARMACEUTICALS, INC.

<120> APELIN FUSION PROTEINS AND USES THEREOF

<130> 8050WO

<150> US 61/786,172
<151> 2013-03-14

<150> US 61/906,567
<151> 2013-11-20

<160> 44

<170> PatentIn version 3.5

<210> 1
<211> 293
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 1

Met His Arg Pro Arg Arg Arg Gly Thr Arg Pro Pro Pro Leu Ala Leu
1 5 10 15

Leu Ala Ala Leu Leu Leu Ala Ala Arg Gly Ala Asp Ala Arg Ser Thr
20 25 30

Gly Ser Pro Gly Ser Gly Asp Lys Thr His Thr Cys Pro Pro Cys Pro
35 40 45

Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys
50 55 60

Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
65 70 75 80

Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr
85 90 95

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

Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
115 120 125

```
Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
    130                 135                 140

Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln
145                 150                 155                 160

Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu
                165                 170                 175

Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro
            180                 185                 190

Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn
        195                 200                 205

Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu
    210                 215                 220

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

Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln
                245                 250                 255

Lys Ser Leu Ser Leu Ser Pro Gly Lys Gly Gly Gly Gly Ser Gly Gly
            260                 265                 270

Gly Gly Ser Gly Gly Gly Gly Ser Gln Arg Pro Arg Leu Ser His Lys
        275                 280                 285

Gly Pro Met Pro Phe
    290
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<210> 2
<211> 255
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 2

```
Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
1               5                   10                  15
```

```
Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
            20                  25                  30

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
        35                  40                  45

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
    50                  55                  60

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
65                  70                  75                  80

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
                85                  90                  95

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
            100                 105                 110

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
        115                 120                 125

Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
    130                 135                 140

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

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
                165                 170                 175

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
            180                 185                 190

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
        195                 200                 205

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
    210                 215                 220

Pro Gly Lys Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly
225                 230                 235                 240
```

```
Gly Ser Gln Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro Phe
                245                 250                 255


<210>  3
<211>  284
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic

<400>  3

Met His Arg Pro Arg Arg Arg Gly Thr Arg Pro Pro Pro Leu Ala Leu
1               5                   10                  15


Leu Ala Ala Leu Leu Leu Ala Ala Arg Gly Ala Asp Ala Gln Arg Pro
            20                  25                  30


Arg Leu Ser His Lys Gly Pro Met Pro Phe Gly Gly Gly Gly Ser Gly
        35                  40                  45


Gly Gly Gly Ser Gly Gly Gly Gly Ser Asp Lys Thr His Thr Cys Pro
    50                  55                  60


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


Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val
                85                  90                  95


Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe
            100                 105                 110


Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro
        115                 120                 125


Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr
    130                 135                 140


Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val
145                 150                 155                 160


Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala
                165                 170                 175
```

```
Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg
            180                 185                 190

Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly
        195                 200                 205

Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro
    210                 215                 220

Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser
225                 230                 235                 240

Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln
                245                 250                 255

Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His
            260                 265                 270

Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
        275                 280
```

<210> 4
<211> 255
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 4

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Gln Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro Phe Gly Gly Gly
1               5                   10                  15

Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Asp Lys Thr His
            20                  25                  30

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

Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr
    50                  55                  60

Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu
65                  70                  75                  80
```

```
Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys
                85                  90                  95

Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser
            100                 105                 110

Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys
        115                 120                 125

Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile
    130                 135                 140

Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro
145                 150                 155                 160

Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu
                165                 170                 175

Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn
            180                 185                 190

Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser
        195                 200                 205

Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg
    210                 215                 220

Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu
225                 230                 235                 240

His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
                245                 250                 255
```

<210> 5
<211> 77
<212> PRT
<213> Homo sapiens

<400> 5

```
Met Asn Leu Arg Leu Cys Val Gln Ala Leu Leu Leu Leu Trp Leu Ser
1               5                   10                  15

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

Gly Leu Glu Asp Gly Asn Val Arg His Leu Val Gln Pro Arg Gly Ser
35 40 45

Arg Asn Gly Pro Gly Pro Trp Gln Gly Gly Arg Arg Lys Phe Arg Arg
50 55 60

Gln Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro Phe
65 70 75

<210> 6
<211> 13
<212> PRT
<213> Homo sapiens

<400> 6

Gln Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro Phe
1 5 10

<210> 7
<211> 17
<212> PRT
<213> Homo sapiens

<400> 7

Lys Phe Arg Arg Gln Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro
1 5 10 15

Phe

<210> 8
<211> 36
<212> PRT
<213> Homo sapiens

<400> 8

Leu Val Gln Pro Arg Gly Ser Arg Asn Gly Pro Gly Pro Trp Gln Gly
1 5 10 15

Gly Arg Arg Lys Phe Arg Arg Gln Arg Pro Arg Leu Ser His Lys Gly
20 25 30

Pro Met Pro Phe
35

<210> 9
<211> 29
<212> PRT
<213> Mus musculus

<400> 9

Met His Arg Pro Arg Arg Arg Gly Thr Arg Pro Pro Pro Leu Ala Leu
1 5 10 15

Leu Ala Ala Leu Leu Leu Ala Ala Arg Gly Ala Asp Ala
20 25

<210> 10
<211> 937
<212> PRT
<213> Mus musculus

<400> 10

Met His Arg Pro Arg Arg Arg Gly Thr Arg Pro Pro Pro Leu Ala Leu
1 5 10 15

Leu Ala Ala Leu Leu Leu Ala Ala Arg Gly Ala Asp Ala Gln Glu Thr
20 25 30

Glu Leu Ser Val Ser Ala Glu Leu Val Pro Thr Ser Ser Trp Asn Thr
35 40 45

Ser Ser Glu Ile Asp Lys Gly Ser Tyr Leu Thr Leu Asp Glu Pro Met
50 55 60

Asn Asn Ile Thr Thr Ser Leu Gly Gln Thr Ala Glu Leu His Cys Lys
65 70 75 80

Val Ser Gly Asn Pro Pro Pro Ser Ile Arg Trp Phe Lys Asn Asp Ala
85 90 95

Pro Val Val Gln Glu Pro Arg Arg Ile Ser Phe Arg Ala Thr Asn Tyr
100 105 110

Gly Ser Arg Leu Arg Ile Arg Asn Leu Asp Thr Thr Asp Thr Gly Tyr
115 120 125

Phe Gln Cys Val Ala Thr Asn Gly Lys Lys Val Val Ser Thr Thr Gly
130 135 140

```
Val Leu Phe Val Lys Phe Gly Pro Pro Pro Thr Ala Ser Pro Gly Ser
145                 150                 155                 160

Ser Asp Glu Tyr Glu Glu Asp Gly Phe Cys Gln Pro Tyr Arg Gly Ile
                165                 170                 175

Ala Cys Ala Arg Phe Ile Gly Asn Arg Thr Val Tyr Met Glu Ser Leu
            180                 185                 190

His Met Gln Gly Glu Ile Glu Asn Gln Ile Thr Ala Ala Phe Thr Met
        195                 200                 205

Ile Gly Thr Ser Ser His Leu Ser Asp Lys Cys Ser Gln Phe Ala Ile
    210                 215                 220

Pro Ser Leu Cys His Tyr Ala Phe Pro Tyr Cys Asp Glu Thr Ser Ser
225                 230                 235                 240

Val Pro Lys Pro Arg Asp Leu Cys Arg Asp Glu Cys Glu Val Leu Glu
                245                 250                 255

Asn Val Leu Cys Gln Thr Glu Tyr Ile Phe Ala Arg Ser Asn Pro Met
            260                 265                 270

Ile Leu Met Arg Leu Lys Leu Pro Asn Cys Glu Asp Leu Pro Gln Pro
        275                 280                 285

Glu Ser Pro Glu Ala Ala Asn Cys Ile Arg Ile Gly Ile Pro Met Ala
    290                 295                 300

Asp Pro Ile Asn Lys Asn His Lys Cys Tyr Asn Ser Thr Gly Val Asp
305                 310                 315                 320

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

Trp Asn Ser Gln Tyr Pro His Thr His Ser Phe Thr Ala Leu Arg Phe
            340                 345                 350

Pro Glu Leu Asn Gly Gly His Ser Tyr Cys Arg Asn Pro Gly Asn Gln
        355                 360                 365

Lys Glu Ala Pro Trp Cys Phe Thr Leu Asp Glu Asn Phe Lys Ser Asp
    370                 375                 380
```

```
Leu Cys Asp Ile Pro Ala Cys Asp Ser Lys Asp Ser Lys Glu Lys Asn
385                 390                 395                 400

Lys Met Glu Ile Leu Tyr Ile Leu Val Pro Ser Val Ala Ile Pro Leu
                405                 410                 415

Ala Ile Ala Phe Leu Phe Phe Phe Ile Cys Val Cys Arg Asn Asn Gln
            420                 425                 430

Lys Ser Ser Ser Pro Pro Val Gln Arg Gln Pro Lys Pro Val Arg Gly
        435                 440                 445

Gln Asn Val Glu Met Ser Met Leu Asn Ala Tyr Lys Pro Lys Ser Lys
    450                 455                 460

Ala Lys Glu Leu Pro Leu Ser Ala Val Arg Phe Met Glu Glu Leu Gly
465                 470                 475                 480

Glu Cys Thr Phe Gly Lys Ile Tyr Lys Gly His Leu Tyr Leu Pro Gly
                485                 490                 495

Met Asp His Ala Gln Leu Val Ala Ile Lys Thr Leu Lys Asp Tyr Asn
            500                 505                 510

Asn Pro Gln Gln Trp Thr Glu Phe Gln Gln Glu Ala Ser Leu Met Ala
        515                 520                 525

Glu Leu His His Pro Asn Ile Val Cys Leu Leu Gly Ala Val Thr Gln
    530                 535                 540

Glu Gln Pro Val Cys Met Leu Phe Glu Tyr Met Asn Gln Gly Asp Leu
545                 550                 555                 560

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

Ser Asp Glu Asp Gly Thr Val Lys Ser Ser Leu Asp His Gly Asp Phe
            580                 585                 590

Leu His Ile Ala Ile Gln Ile Ala Ala Gly Met Glu Tyr Leu Ser Ser
        595                 600                 605
```

```
His Phe Phe Val His Lys Asp Leu Ala Ala Arg Asn Ile Leu Ile Gly
    610                 615                 620

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

Tyr Ser Ala Asp Tyr Tyr Arg Val Gln Ser Lys Ser Ser Leu Pro Ile
                645                 650                 655

Arg Trp Met Pro Pro Glu Ala Ile Met Tyr Gly Lys Phe Ser Ser Asp
            660                 665                 670

Ser Asp Ile Trp Ser Phe Gly Val Val Leu Trp Glu Ile Phe Ser Phe
        675                 680                 685

Gly Leu Gln Pro Tyr Tyr Gly Phe Ser Asn Gln Glu Val Ile Glu Met
    690                 695                 700

Val Arg Lys Arg Gln Leu Leu Pro Cys Ser Glu Asp Cys Pro Pro Arg
705                 710                 715                 720

Met Tyr Ser Leu Met Thr Glu Cys Trp Asn Glu Ile Pro Ser Arg Arg
                725                 730                 735

Pro Arg Phe Lys Asp Ile His Val Arg Leu Arg Ser Trp Glu Gly Leu
            740                 745                 750

Ser Ser His Thr Ser Ser Thr Thr Pro Ser Gly Gly Asn Ala Thr Thr
        755                 760                 765

Gln Thr Thr Ser Leu Ser Ala Ser Pro Val Ser Asn Leu Ser Asn Pro
    770                 775                 780

Arg Phe Pro Asn Tyr Met Phe Pro Ser Gln Gly Ile Thr Pro Gln Gly
785                 790                 795                 800

Gln Ile Ala Gly Phe Ile Gly Pro Ala Ile Pro Gln Asn Gln Arg Phe
                805                 810                 815

Ile Pro Ile Asn Gly Tyr Pro Ile Pro Pro Gly Tyr Ala Ala Phe Pro
            820                 825                 830

Ala Ala His Tyr Gln Pro Ala Gly Pro Pro Arg Val Ile Gln His Cys
        835                 840                 845
```

```
Pro Pro Pro Lys Ser Arg Ser Pro Ser Ser Ala Arg Gly Ser Thr Ser
    850                 855                 860

Thr Gly His Val Ala Ser Leu Pro Ser Ser Gly Ser Asn Gln Glu Ala
865                 870                 875                 880

Asn Val Pro Leu Leu Pro His Met Ser Ile Pro Asn His Pro Gly Gly
                885                 890                 895

Met Gly Ile Thr Val Phe Gly Asn Lys Ser Gln Lys Pro Tyr Lys Ile
            900                 905                 910

Asp Ser Lys Gln Ser Ser Leu Leu Gly Asp Ser His Ile His Gly His
        915                 920                 925

Thr Glu Ser Met Ile Ser Ala Glu Val
    930                 935
```

<210> 11
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 11

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Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1               5                   10                  15
```

<210> 12
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 12

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Arg Ser Thr Gly Ser Pro Gly Ser Gly
1               5
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<210> 13
<211> 227
<212> PRT
<213> Homo sapiens

<400> 13

```
Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
1               5                  10                  15

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
            20                  25                  30

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
        35                  40                  45

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
    50                  55                  60

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
65                  70                  75                  80

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
                85                  90                  95

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
            100                 105                 110

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
        115                 120                 125

Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
    130                 135                 140

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

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
                165                 170                 175

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
            180                 185                 190

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
        195                 200                 205

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
    210                 215                 220
```

Pro Gly Lys
225

<210> 14
<211> 16
<212> PRT
<213> Homo sapiens

<400> 14

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
1 5 10 15

<210> 15
<211> 104
<212> PRT
<213> Homo sapiens

<400> 15

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
1 5 10 15

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
20 25 30

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
35 40 45

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
50 55 60

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
65 70 75 80

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
85 90 95

Glu Lys Thr Ile Ser Lys Ala Lys
100

<210> 16
<211> 107
<212> PRT
<213> Homo sapiens

<400> 16

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Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp
1               5                   10                  15

Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe
            20                  25                  30

Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu
        35                  40                  45

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

Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly
65                  70                  75                  80

Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr
                85                  90                  95

Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
            100                 105
```

<210> 17
<211> 17
<212> PRT
<213> Homo sapiens

<400> 17

```
Glu Arg Lys Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val
1               5                   10                  15

Ala
```

<210> 18
<211> 10
<212> PRT
<213> Homo sapiens

<400> 18

```
Cys Pro Pro Cys Pro Ala Pro Pro Val Ala
1               5                   10
```

<210> 19
<211> 104
<212> PRT
<213> Homo sapiens

<400> 19

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
1 5 10 15

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
20 25 30

Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val
35 40 45

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe
50 55 60

Arg Val Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu Asn Gly
65 70 75 80

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile
85 90 95

Glu Lys Thr Ile Ser Lys Thr Lys
100

<210> 20
<211> 107
<212> PRT
<213> Homo sapiens

<400> 20

Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu
1 5 10 15

Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe
20 25 30

Tyr Pro Ser Asp Ile Ser Val Glu Trp Glu Ser Asn Gly Gln Pro Glu
35 40 45

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

Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly
65 70 75 80

```
Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr
                85                  90                  95

Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
            100                 105
```

<210> 21
<211> 18
<212> PRT
<213> Homo sapiens

<400> 21

```
Glu Ser Lys Tyr Gly Pro Pro Cys Pro Ser Cys Pro Ala Pro Glu Phe
1               5                   10                  15

Leu Gly
```

<210> 22
<211> 13
<212> PRT
<213> Homo sapiens

<400> 22

```
Pro Pro Cys Pro Ser Cys Pro Ala Pro Glu Phe Leu Gly
1               5                   10
```

<210> 23
<211> 104
<212> PRT
<213> Homo sapiens

<400> 23

```
Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
1               5                   10                  15

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln
            20                  25                  30

Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val
        35                  40                  45

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr
    50                  55                  60

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

65 70 75 80

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile
85 90 95

Glu Lys Thr Ile Ser Lys Ala Lys
100

<210> 24
<211> 107
<212> PRT
<213> Homo sapiens

<400> 24

Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu
1 5 10 15

Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe
20 25 30

Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu
35 40 45

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

Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly
65 70 75 80

Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr
85 90 95

Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys
100 105

<210> 25
<211> 882
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 25
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ctcctggctg cacgtggtgc tgatgcaaga tctaccggta gcccgggctc cggagacaaa 120

actcacacat gcccaccgtg cccagcacct gaactcctgg ggggaccgtc agtcttcctc 180

ttccccccaa aacccaagga caccctcatg atctcccgga cccctgaggt cacatgcgtg 240

gtggtggacg tgagccacga agaccctgag gtcaagttca actggtacgt ggacggcgtg 300

gaggtgcata atgccaagac aaagccgcgg gaggagcagt acaacagcac gtaccgtgtg 360

gtcagcgtcc tcaccgtcct gcaccaggac tggctgaatg gcaaggagta caagtgcaag 420

gtctccaaca aagccctccc agcccccatc gagaaaacca tctccaaagc caaagggcag 480

ccccgagaac cacaggtgta caccctgccc ccatcccggg atgagctgac caagaaccag 540

gtcagcctga cctgcctggt caaaggcttc tatcccagcg acatcgccgt ggagtgggag 600

agcaatgggc agccggagaa caactacaag accacgcctc ccgtgctgga ctccgacggc 660

tccttcttcc tctacagcaa gctcaccgtg gacaagagca ggtggcagca ggggaacgtc 720

ttctcatgct ccgtgatgca tgaggctctg cacaaccact acacgcagaa gtccctctcc 780

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<210> 26
<211> 855
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 26
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ctcctggctg cacgtggtgc tgatgcacag aggcccaggc tgagccacaa gggccccatg 120

cccttcggtg gaggcggttc aggcggaggt ggctctggcg gtggcggatc ggacaaaact 180

cacacatgcc caccgtgccc agcacctgaa ctcctggggg gaccgtcagt cttcctcttc 240

cccccaaaac ccaaggacac cctcatgatc tcccggaccc ctgaggtcac atgcgtggtg 300

gtggacgtga gccacgaaga ccctgaggtc aagttcaact ggtacgtgga cggcgtggag 360

gtgcataatg ccaagacaaa gccgcgggag gagcagtaca acagcacgta ccgtgtggtc 420

agcgtcctca ccgtcctgca ccaggactgg ctgaatggca aggagtacaa gtgcaaggtc 480

tccaacaaag ccctcccagc ccccatcgag aaaaccatct ccaaagccaa agggcagccc 540

cgagaaccac aggtgtacac cctgccccca tcccgggatg agctgaccaa gaaccaggtc 600

agcctgacct gcctggtcaa aggcttctat cccagcgaca tcgccgtgga gtgggagagc 660

aatgggcagc cggagaacaa ctacaagacc acgcctcccg tgctggactc cgacggctcc 720

ttcttcctct acagcaagct caccgtggac aagagcaggt ggcagcaggg gaacgtcttc 780

tcatgctccg tgatgcatga ggctctgcac aaccactaca cgcagaagtc cctctccctg 840

tctccgggta aatag 855

<210> 27
<211> 768
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 27
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tgcgtggtgg tggacgtgag ccacgaagac cctgaggtca agttcaactg gtacgtggac 180

ggcgtggagg tgcataatgc caagacaaag ccgcgggagg agcagtacaa cagcacgtac 240

cgtgtggtca gcgtcctcac cgtcctgcac caggactggc tgaatggcaa ggagtacaag 300

tgcaaggtct ccaacaaagc cctcccagcc cccatcgaga aaaccatctc caaagccaaa 360

gggcagcccc gagaaccaca ggtgtacacc ctgcccccat cccgggatga gctgaccaag 420

aaccaggtca gcctgacctg cctggtcaaa ggcttctatc ccagcgacat cgccgtggag 480

tgggagagca atgggcagcc ggagaacaac tacaagacca cgcctcccgt gctggactcc 540

gacggctcct tcttcctcta cagcaagctc accgtggaca agagcaggtg gcagcagggg 600

aacgtcttct catgctccgt gatgcatgag gctctgcaca accactacac gcagaagtcc 660

ctctccctgt ctccgggtaa aggtggaggc ggttcaggcg gaggtggctc tggcggtggc 720

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<210> 28
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<220>
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gaactcctgg ggggaccgtc agtcttcctc ttcccccaa aacccaagga caccctcatg 180

atctcccgga cccctgaggt cacatgcgtg gtggtggacg tgagccacga agaccctgag 240

gtcaagttca actggtacgt ggacggcgtg gaggtgcata atgccaagac aaagccgcgg 300

gaggagcagt acaacagcac gtaccgtgtg gtcagcgtcc tcaccgtcct gcaccaggac 360

tggctgaatg gcaaggagta caagtgcaag gtctccaaca aagccctccc agcccccatc 420

gagaaaacca tctccaaagc caaagggcag ccccgagaac cacaggtgta caccctgccc 480

ccatcccggg atgagctgac caagaaccag gtcagcctga cctgcctggt caaaggcttc 540

tatcccagcg acatcgccgt ggagtgggag agcaatgggc agccggagaa caactacaag 600

accacgcctc ccgtgctgga ctccgacggc tccttcttcc tctacagcaa gctcaccgtg 660

gacaagagca ggtggcagca ggggaacgtc ttctcatgct ccgtgatgca tgaggctctg 720

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<210> 29
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<400> 29

Gln Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro Ala
1 5 10

<210> 30
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
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<400> 30

Gln Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro
1 5 10

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

<220>

<223> Synthetic

<400> 31

Gln Arg Pro Arg Leu Ser His Lys Gly Pro Met
1 5 10

<210> 32
<211> 12
<212> PRT
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<220>
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<400> 32

Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro Phe
1 5 10

<210> 33
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<212> PRT
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<220>
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<400> 33

Pro Arg Leu Ser His Lys Gly Pro Met Pro Phe
1 5 10

<210> 34
<211> 11
<212> PRT
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<220>
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<400> 34

Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro
1 5 10

<210> 35
<211> 10
<212> PRT
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<220>
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<400> 35

Pro Arg Leu Ser His Lys Gly Pro Met Pro
1 5 10

<210> 36
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 36

Arg Pro Arg Leu Ser His Lys Gly Pro Met
1 5 10

<210> 37
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
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<400> 37

Pro Arg Leu Ser His Lys Gly Pro Met
1 5

<210> 38
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 38

Gln Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro Phe Gly Gly Gly
1 5 10 15

Gly Gly

<210> 39
<211> 256
<212> PRT
<213> Artificial Sequence

<220>

<223> Synthetic

<400> 39

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Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
1               5                  10                  15

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
            20                  25                  30

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
        35                  40                  45

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
    50                  55                  60

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
65                  70                  75                  80

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
                85                  90                  95

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
            100                 105                 110

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
        115                 120                 125

Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
    130                 135                 140

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

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
                165                 170                 175

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
            180                 185                 190

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
        195                 200                 205

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
    210                 215                 220
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Pro Gly Lys Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly
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Gly Ser Gln Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro Phe Arg
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<210> 40
<211> 256
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 40

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
1 5 10 15

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
20 25 30

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
35 40 45

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
50 55 60

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
65 70 75 80

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
85 90 95

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
100 105 110

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
115 120 125

Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
130 135 140

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

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Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
                165                 170                 175

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
            180                 185                 190

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
        195                 200                 205

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
    210                 215                 220

Pro Gly Lys Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly
225                 230                 235                 240

Gly Ser Gln Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro Phe Ser
                245                 250                 255
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<210> 41
<211> 256
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 41

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Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly
1               5                   10                  15

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
            20                  25                  30

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
        35                  40                  45

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
    50                  55                  60

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
65                  70                  75                  80

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
                85                  90                  95
```

```
Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
            100                 105                 110

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
        115                 120                 125

Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
    130                 135                 140

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

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
                165                 170                 175

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
            180                 185                 190

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
        195                 200                 205

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
    210                 215                 220

Pro Gly Lys Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly
225                 230                 235                 240

Gly Ser Gln Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro Phe His
                245                 250                 255
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<210> 42
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 42

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Gln Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro Phe Arg
1               5                   10
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<210> 43
<211> 14

<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 43

Gln Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro Phe Ser
1 5 10

<210> 44
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 44

Gln Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro Phe His
1 5 10