SEQUENCE LISTING

<110> UNIVERSITE DE MONTREAL
BOUVIER, Michel
LE GOUILL, Christian
HOGUE, Mireille
LUKASHOVA, Viktoriya

<120> BIOSENSOR BASED ON Gbeta-gamma-INTERACTING PROTEINS TO MONITOR G-PROTEIN ACTIVATION

<130> 782/15691.82

<150> US 62/063,622
<151> 2014-10-14

<160> 53

<170> PatentIn version 3.5

<210> 1
<211> 55
<212> PRT
<213> Homo sapiens

<400> 1

Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr Phe
1 5 10 15

Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu Asp
20 25 30

Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala Met
35 40 45

Gln Ala Met Ile Arg Ala Met
50 55

<210> 2
<211> 55
<212> PRT
<213> Homo sapiens

<400> 2

Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr Phe
1 5 10 15

Ile Lys Gln Met Arg Ile Ile His Gly Ala Gly Tyr Ser Glu Glu Asp
20 25 30

Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala Met
35 40 45

Gln Ala Met Ile Arg Ala Met
50 55

<210> 3
<211> 55
<212> PRT
<213> Homo sapiens

<400> 3

Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr Phe
1 5 10 15

Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu Asp
20 25 30

Arg Lys Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala Met
35 40 45

Gln Ala Met Ile Arg Ala Met
50 55

<210> 4
<211> 55
<212> PRT
<213> Homo sapiens

<400> 4

```
Leu Lys Leu Leu Leu Leu Gly Pro Gly Glu Ser Gly Lys Ser Thr Phe
1               5                   10                  15


Ile Lys Gln Met Arg Ile Ile His Gly Ala Gly Tyr Ser Glu Glu Glu
            20                  25                  30


Arg Lys Gly Phe Arg Pro Leu Val Tyr Gln Asn Ile Phe Val Ser Met
        35                  40                  45


Arg Ala Met Ile Glu Ala Met
    50                  55
```

<210> 5
<211> 55
<212> PRT
<213> Homo sapiens

<400> 5

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


Val Lys Gln Met Lys Ile Ile His Glu Asp Gly Phe Ser Gly Glu Asp
            20                  25                  30


Val Lys Gln Tyr Lys Pro Val Val Tyr Ser Asn Thr Ile Gln Ser Leu
        35                  40                  45


Ala Ala Ile Val Arg Ala Met
    50                  55
```

<210> 6
<211> 55
<212> PRT
<213> Homo sapiens

<400> 6

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

```
Val Lys Gln Met Lys Ile Ile His Glu Asp Gly Phe Ser Gly Glu Asp
            20                  25                  30


Val Lys Gln Tyr Lys Pro Val Val Tyr Ser Asn Thr Ile Gln Ser Leu
        35                  40                  45


Ala Ala Ile Val Arg Ala Met
    50                  55
```

<210> 7
<211> 55
<212> PRT
<213> Homo sapiens

<400> 7

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


Val Lys Gln Met Lys Ile Ile His Gln Asp Gly Tyr Ser Leu Glu Glu
            20                  25                  30


Cys Leu Glu Phe Ile Ala Ile Ile Tyr Gly Asn Thr Leu Gln Ser Ile
        35                  40                  45


Leu Ala Ile Val Arg Ala Met
    50                  55
```

<210> 8
<211> 55
<212> PRT
<213> Homo sapiens

<400> 8

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

Val Lys Gln Met Lys Ile Ile His Gln Asp Gly Tyr Ser Pro Glu Glu
20 25 30

Cys Leu Glu Phe Lys Ala Ile Ile Tyr Gly Asn Val Leu Gln Ser Ile
35 40 45

Leu Ala Ile Ile Arg Ala Met
50 55

<210> 9
<211> 55
<212> PRT
<213> Homo sapiens

<400> 9

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

Val Lys Gln Met Lys Ile Ile His Lys Asn Gly Tyr Ser Glu Gln Glu
20 25 30

Cys Met Glu Phe Lys Ala Val Ile Tyr Ser Asn Thr Leu Gln Ser Ile
35 40 45

Leu Ala Ile Val Lys Ala Met
50 55

<210> 10
<211> 55
<212> PRT
<213> Homo sapiens

<400> 10

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

Val Lys Gln Met Lys Ile Ile His Glu Ala Gly Tyr Ser Glu Glu Glu
20 25 30

```
Cys Lys Gln Tyr Lys Ala Val Val Tyr Ser Asn Thr Ile Gln Ser Ile
        35                  40                  45


Ile Ala Ile Ile Arg Ala Met
    50                  55


<210>  11
<211>  55
<212>  PRT
<213>  Homo sapiens

<400>  11

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


Val Lys Gln Met Lys Ile Ile His Glu Asp Gly Tyr Ser Glu Glu Glu
            20                  25                  30


Cys Arg Gln Tyr Arg Ala Val Val Tyr Ser Asn Thr Ile Gln Ser Ile
        35                  40                  45


Met Ala Ile Val Lys Ala Met
    50                  55


<210>  12
<211>  55
<212>  PRT
<213>  Homo sapiens

<400>  12

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


Val Lys Gln Met Lys Ile Ile His Glu Asp Gly Tyr Ser Glu Asp Glu
            20                  25                  30
```

```
Cys Lys Gln Tyr Lys Val Val Val Tyr Ser Asn Thr Ile Gln Ser Ile
        35                  40                  45


Ile Ala Ile Ile Arg Ala Met
    50                  55
```

<210> 13
<211> 55
<212> PRT
<213> Homo sapiens

<400> 13

```
Ile Lys Leu Leu Leu Leu Gly Thr Ser Asn Ser Gly Lys Ser Thr Ile
1               5                   10                  15


Val Lys Gln Met Lys Ile Ile His Ser Gly Gly Phe Asn Leu Glu Ala
            20                  25                  30


Cys Lys Glu Tyr Lys Pro Leu Ile Ile Tyr Asn Ala Ile Asp Ser Leu
        35                  40                  45


Thr Arg Ile Ile Arg Ala Leu
    50                  55
```

<210> 14
<211> 55
<212> PRT
<213> Homo sapiens

<400> 14

```
Val Lys Ile Leu Leu Leu Gly Ala Gly Glu Ser Gly Lys Ser Thr Phe
1               5                   10                  15


Leu Lys Gln Met Arg Ile Ile His Gly Arg Glu Phe Asp Gln Lys Ala
            20                  25                  30


Leu Leu Glu Phe Arg Asp Thr Ile Phe Asp Asn Ile Leu Lys Gly Ser
        35                  40                  45
```

Arg Val Leu Val Asp Ala Arg
    50   55

<210> 15
<211> 55
<212> PRT
<213> Homo sapiens

<400> 15

Val Lys Ile Leu Leu Leu Gly Ala Gly Glu Ser Gly Lys Ser Thr Phe
1   5   10   15

Leu Lys Gln Met Arg Ile Ile His Gly Gln Asp Phe Asp Gln Arg Ala
            20   25   30

Arg Glu Glu Phe Arg Pro Thr Ile Tyr Ser Asn Val Ile Lys Gly Met
        35   40   45

Arg Val Leu Val Asp Ala Arg
    50   55

<210> 16
<211> 56
<212> PRT
<213> Homo sapiens

<400> 16

His Arg Leu Leu Leu Leu Gly Ala Gly Glu Ser Gly Lys Ser Thr Ile
1   5   10   15

Val Lys Gln Met Arg Ile Leu His Val Asn Gly Phe Asn Gly Asp Ser
            20   25   30

Glu Lys Ala Thr Lys Val Gln Asp Ile Lys Asn Asn Leu Lys Glu Ala
        35   40   45

Ile Glu Thr Ile Val Ala Ala Met
    50   55

<210> 17
<211> 55
<212> PRT
<213> Homo sapiens

<400> 17

His Arg Leu Leu Leu Leu Gly Ala Gly Glu Ser Gly Lys Ser Thr Ile
1   5   10   15

Val Lys Gln Met Arg Ile Leu His Val Asn Gly Phe Asn Pro Glu Glu
            20   25   30

Lys Lys Gln Lys Ile Leu Asp Ile Arg Lys Asn Val Lys Asp Ala Ile
        35   40   45

Val Thr Ile Val Ser Ala Met
    50   55

<210> 18
<211> 689
<212> PRT
<213> Homo sapiens

<400> 18

Met Ala Asp Leu Glu Ala Val Leu Ala Asp Val Ser Tyr Leu Met Ala
1   5   10   15

Met Glu Lys Ser Lys Ala Thr Pro Ala Ala Arg Ala Ser Lys Lys Ile
            20   25   30

Leu Leu Pro Glu Pro Ser Ile Arg Ser Val Met Gln Lys Tyr Leu Glu
        35   40   45

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

```
Tyr Leu Leu Phe Arg Asp Phe Cys Leu Asn His Leu Glu Glu Ala Arg
65                  70                  75                  80

Pro Leu Val Glu Phe Tyr Glu Glu Ile Lys Lys Tyr Glu Lys Leu Glu
                85                  90                  95

Thr Glu Glu Glu Arg Val Ala Arg Ser Arg Glu Ile Phe Asp Ser Tyr
            100                 105                 110

Ile Met Lys Glu Leu Leu Ala Cys Ser His Pro Phe Ser Lys Ser Ala
        115                 120                 125

Thr Glu His Val Gln Gly His Leu Gly Lys Lys Gln Val Pro Pro Asp
    130                 135                 140

Leu Phe Gln Pro Tyr Ile Glu Glu Ile Cys Gln Asn Leu Arg Gly Asp
145                 150                 155                 160

Val Phe Gln Lys Phe Ile Glu Ser Asp Lys Phe Thr Arg Phe Cys Gln
                165                 170                 175

Trp Lys Asn Val Glu Leu Asn Ile His Leu Thr Met Asn Asp Phe Ser
            180                 185                 190

Val His Arg Ile Ile Gly Arg Gly Gly Phe Gly Glu Val Tyr Gly Cys
        195                 200                 205

Arg Lys Ala Asp Thr Gly Lys Met Tyr Ala Met Lys Cys Leu Asp Lys
    210                 215                 220

Lys Arg Ile Lys Met Lys Gln Gly Glu Thr Leu Ala Leu Asn Glu Arg
225                 230                 235                 240

Ile Met Leu Ser Leu Val Ser Thr Gly Asp Cys Pro Phe Ile Val Cys
                245                 250                 255
```

```
Met Ser Tyr Ala Phe His Thr Pro Asp Lys Leu Ser Phe Ile Leu Asp
            260                 265                 270

Leu Met Asn Gly Gly Asp Leu His Tyr His Leu Ser Gln His Gly Val
        275                 280                 285

Phe Ser Glu Ala Asp Met Arg Phe Tyr Ala Ala Glu Ile Ile Leu Gly
    290                 295                 300

Leu Glu His Met His Asn Arg Phe Val Val Tyr Arg Asp Leu Lys Pro
305                 310                 315                 320

Ala Asn Ile Leu Leu Asp Glu His Gly His Val Arg Ile Ser Asp Leu
                325                 330                 335

Gly Leu Ala Cys Asp Phe Ser Lys Lys Lys Pro His Ala Ser Val Gly
            340                 345                 350

Thr His Gly Tyr Met Ala Pro Glu Val Leu Gln Lys Gly Val Ala Tyr
        355                 360                 365

Asp Ser Ser Ala Asp Trp Phe Ser Leu Gly Cys Met Leu Phe Lys Leu
    370                 375                 380

Leu Arg Gly His Ser Pro Phe Arg Gln His Lys Thr Lys Asp Lys His
385                 390                 395                 400

Glu Ile Asp Arg Met Thr Leu Thr Met Ala Val Glu Leu Pro Asp Ser
                405                 410                 415

Phe Ser Pro Glu Leu Arg Ser Leu Leu Glu Gly Leu Leu Gln Arg Asp
            420                 425                 430

Val Asn Arg Arg Leu Gly Cys Leu Gly Arg Gly Ala Gln Glu Val Lys
        435                 440                 445
```

```
Glu Ser Pro Phe Phe Arg Ser Leu Asp Trp Gln Met Val Phe Leu Gln
    450                 455                 460

Lys Tyr Pro Pro Pro Leu Ile Pro Pro Arg Gly Glu Val Asn Ala Ala
465                 470                 475                 480

Asp Ala Phe Asp Ile Gly Ser Phe Asp Glu Glu Asp Thr Lys Gly Ile
                485                 490                 495

Lys Leu Leu Asp Ser Asp Gln Glu Leu Tyr Arg Asn Phe Pro Leu Thr
            500                 505                 510

Ile Ser Glu Arg Trp Gln Gln Glu Val Ala Glu Thr Val Phe Asp Thr
        515                 520                 525

Ile Asn Ala Glu Thr Asp Arg Leu Glu Ala Arg Lys Lys Ala Lys Asn
    530                 535                 540

Lys Gln Leu Gly His Glu Glu Asp Tyr Ala Leu Gly Lys Asp Cys Ile
545                 550                 555                 560

Met His Gly Tyr Met Ser Lys Met Gly Asn Pro Phe Leu Thr Gln Trp
                565                 570                 575

Gln Arg Arg Tyr Phe Tyr Leu Phe Pro Asn Arg Leu Glu Trp Arg Gly
            580                 585                 590

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

Val Glu Glu Thr Gln Ile Lys Glu Arg Lys Cys Leu Leu Leu Lys Ile
    610                 615                 620

Arg Gly Gly Lys Gln Phe Ile Leu Gln Cys Asp Ser Asp Pro Glu Leu
625                 630                 635                 640
```

```
Val Gln Trp Lys Lys Glu Leu Arg Asp Ala Tyr Arg Glu Ala Gln Gln
                645                 650                 655


Leu Val Gln Arg Val Pro Lys Met Lys Asn Lys Pro Arg Ser Pro Val
            660                 665                 670


Val Glu Leu Ser Lys Val Pro Leu Val Gln Arg Gly Ser Ala Asn Gly
        675                 680                 685


Leu
```

<210> 19
<211> 688
<212> PRT
<213> Homo sapiens

<400> 19

```
Met Ala Asp Leu Glu Ala Val Leu Ala Asp Val Ser Tyr Leu Met Ala
1               5                   10                  15


Met Glu Lys Ser Lys Ala Thr Pro Ala Ala Arg Ala Ser Lys Lys Ile
            20                  25                  30


Val Leu Pro Glu Pro Ser Ile Arg Ser Val Met Gln Lys Tyr Leu Glu
        35                  40                  45


Glu Arg His Glu Ile Thr Phe Asp Lys Ile Phe Asn Gln Arg Ile Gly
    50                  55                  60


Phe Leu Leu Phe Lys Asp Phe Cys Leu Asn Glu Ile Asn Glu Ala Val
65                  70                  75                  80


Pro Gln Val Lys Phe Tyr Glu Glu Ile Lys Glu Tyr Glu Lys Leu Glu
                85                  90                  95
```

```
Asn Glu Glu Asp Arg Leu Cys Arg Ser Arg Gln Ile Tyr Asp Thr Tyr
            100                 105                 110

Ile Met Lys Glu Leu Leu Ser Cys Ser His Pro Phe Ser Lys Gln Ala
        115                 120                 125

Val Glu His Val Gln Ser His Leu Ser Lys Lys Gln Val Thr Ser Thr
    130                 135                 140

Leu Phe Gln Pro Tyr Ile Glu Glu Ile Cys Glu Ser Leu Arg Gly Ser
145                 150                 155                 160

Ile Phe Gln Lys Phe Met Glu Ser Asp Lys Phe Thr Arg Phe Cys Gln
                165                 170                 175

Trp Lys Asn Val Glu Leu Asn Ile His Leu Thr Met Asn Asp Phe Ser
            180                 185                 190

Val His Arg Ile Ile Gly Arg Gly Gly Phe Gly Glu Val Tyr Gly Cys
        195                 200                 205

Arg Lys Ala Asp Thr Gly Lys Met Tyr Ala Met Lys Cys Leu Asp Lys
    210                 215                 220

Lys Arg Ile Lys Met Lys Gln Gly Glu Thr Leu Ala Leu Asn Glu Arg
225                 230                 235                 240

Ile Met Leu Ser Leu Val Ser Thr Gly Asp Cys Pro Phe Ile Val Cys
                245                 250                 255

Met Thr Tyr Ala Phe His Thr Pro Asp Lys Leu Cys Phe Ile Leu Asp
            260                 265                 270

Leu Met Asn Gly Gly Asp Leu His Tyr His Leu Ser Gln His Gly Val
        275                 280                 285
```

```
Phe Ser Glu Lys Glu Met Arg Phe Tyr Ala Thr Glu Ile Ile Leu Gly
    290                 295                 300

Leu Glu His Met His Asn Arg Phe Val Val Tyr Arg Asp Leu Lys Pro
305                 310                 315                 320

Ala Asn Ile Leu Leu Asp Glu His Gly His Val Arg Ile Ser Asp Leu
                325                 330                 335

Gly Leu Ala Cys Asp Phe Ser Lys Lys Lys Pro His Ala Ser Val Gly
            340                 345                 350

Thr His Gly Tyr Met Ala Pro Glu Val Leu Gln Lys Gly Thr Ala Tyr
        355                 360                 365

Asp Ser Ser Ala Asp Trp Phe Ser Leu Gly Cys Met Leu Phe Lys Leu
    370                 375                 380

Leu Arg Gly His Ser Pro Phe Arg Gln His Lys Thr Lys Asp Lys His
385                 390                 395                 400

Glu Ile Asp Arg Met Thr Leu Thr Met Asn Val Glu Leu Pro Asp Val
                405                 410                 415

Phe Ser Pro Glu Leu Lys Ser Leu Leu Glu Gly Leu Leu Gln Arg Asp
            420                 425                 430

Val Ser Lys Arg Leu Gly Cys His Gly Gly Ser Ala Gln Glu Leu Lys
        435                 440                 445

Thr His Asp Phe Phe Arg Gly Ile Asp Trp Gln His Val Tyr Leu Gln
    450                 455                 460

Lys Tyr Pro Pro Pro Leu Ile Pro Pro Arg Gly Glu Val Asn Ala Ala
465                 470                 475                 480
```

```
Asp Ala Phe Asp Ile Gly Ser Phe Asp Glu Glu Asp Thr Lys Gly Ile
                485                 490                 495

Lys Leu Leu Asp Cys Asp Gln Glu Leu Tyr Lys Asn Phe Pro Leu Val
            500                 505                 510

Ile Ser Glu Arg Trp Gln Gln Glu Val Ala Glu Thr Val Tyr Glu Ala
        515                 520                 525

Val Asn Ala Asp Thr Asp Lys Ile Glu Ala Arg Lys Arg Ala Lys Asn
    530                 535                 540

Lys Gln Leu Gly His Glu Glu Asp Tyr Ala Leu Gly Arg Asp Cys Ile
545                 550                 555                 560

Val His Gly Tyr Met Leu Lys Leu Gly Asn Pro Phe Leu Thr Gln Trp
                565                 570                 575

Gln Arg Arg Tyr Phe Tyr Leu Phe Pro Asn Arg Leu Glu Trp Arg Gly
            580                 585                 590

Glu Gly Glu Ser Arg Gln Ser Leu Leu Thr Met Glu Gln Ile Val Ser
        595                 600                 605

Val Glu Glu Thr Gln Ile Lys Asp Lys Lys Cys Ile Leu Leu Arg Ile
    610                 615                 620

Lys Gly Gly Lys Gln Phe Val Leu Gln Cys Glu Ser Asp Pro Glu Phe
625                 630                 635                 640

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

Leu Leu Arg Arg Ala Pro Lys Phe Leu Asn Lys Ser Arg Ser Ala Val
            660                 665                 670
```

Val Glu Leu Ser Lys Pro Pro Leu Cys His Arg Asn Ser Asn Gly Leu
675 680 685

<210> 20
<211> 1386
<212> PRT
<213> Homo sapiens

<400> 20

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

Leu Gly Cys Gly Arg Arg Gly Glu Val Cys Asp Cys Gly Thr Val Cys
20 25 30

Glu Thr Arg Thr Ala Pro Ala Ala Pro Thr Met Ala Ser Pro Arg Gly
35 40 45

Ser Gly Ser Ser Thr Ser Leu Ser Thr Val Gly Ser Glu Gly Asp Pro
50 55 60

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

Pro Gly Pro Pro Ile Arg Leu His Leu Ser Pro Val Gly Ile Pro Gly
85 90 95

Ser Ala Arg Pro Ser Arg Leu Glu Arg Val Ala Arg Glu Ile Val Glu
100 105 110

Thr Glu Arg Ala Tyr Val Arg Asp Leu Arg Ser Ile Val Glu Asp Tyr
115 120 125

Leu Gly Pro Leu Leu Asp Gly Gly Val Leu Gly Leu Ser Val Glu Gln
130 135 140

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


Glu Leu Leu Glu Asp Leu Glu Asn Ser Ser Ser Ala Gly Gly Ile Ala
                165                 170                 175


Glu Cys Phe Val Gln Arg Ser Glu Asp Phe Asp Ile Tyr Thr Leu Tyr
            180                 185                 190


Cys Met Asn Tyr Pro Ser Ser Leu Ala Leu Leu Arg Glu Leu Ser Leu
        195                 200                 205


Ser Pro Pro Ala Ala Leu Trp Leu Gln Glu Arg Gln Ala Gln Leu Arg
    210                 215                 220


His Ser Leu Pro Leu Gln Ser Phe Leu Leu Lys Pro Val Gln Arg Ile
225                 230                 235                 240


Leu Lys Tyr His Leu Leu Leu Gln Glu Leu Gly Lys His Trp Ala Glu
                245                 250                 255


Gly Pro Gly Thr Gly Gly Arg Glu Met Val Glu Glu Ala Ile Val Ser
            260                 265                 270


Met Thr Ala Val Ala Trp Tyr Ile Asn Asp Met Lys Arg Lys Gln Glu
        275                 280                 285


His Ala Ala Arg Leu Gln Glu Val Gln Arg Arg Leu Gly Gly Trp Thr
    290                 295                 300


Gly Pro Glu Leu Ser Ala Phe Gly Glu Leu Val Leu Glu Gly Ala Phe
305                 310                 315                 320


Arg Gly Gly Gly Gly Gly Gly Pro Arg Leu Arg Gly Gly Glu Arg Leu
                325                 330                 335
```

```
Leu Phe Leu Phe Ser Arg Met Leu Leu Val Ala Lys Arg Arg Gly Leu
            340                 345                 350

Glu Tyr Thr Tyr Lys Gly His Ile Phe Cys Cys Asn Leu Ser Val Ser
        355                 360                 365

Glu Ser Pro Arg Asp Pro Leu Gly Phe Lys Val Ser Asp Leu Thr Ile
    370                 375                 380

Pro Lys His Arg His Leu Leu Gln Ala Lys Asn Gln Glu Glu Lys Arg
385                 390                 395                 400

Leu Trp Ile His Cys Leu Gln Arg Leu Phe Phe Glu Asn His Pro Ala
                405                 410                 415

Ser Ile Pro Ala Lys Ala Lys Gln Val Leu Leu Glu Asn Ser Leu His
            420                 425                 430

Cys Ala Pro Lys Ser Lys Pro Val Leu Glu Pro Leu Thr Pro Pro Leu
        435                 440                 445

Gly Ser Pro Arg Pro Arg Asp Ala Arg Ser Phe Thr Pro Gly Arg Arg
    450                 455                 460

Asn Thr Ala Pro Ser Pro Gly Pro Ser Val Ile Arg Arg Gly Arg Arg
465                 470                 475                 480

Gln Ser Glu Pro Val Lys Asp Pro Tyr Val Met Phe Pro Gln Asn Ala
                485                 490                 495

Lys Pro Gly Phe Lys His Ala Gly Ser Glu Gly Glu Leu Tyr Pro Pro
            500                 505                 510

Glu Ser Gln Pro Pro Val Ser Gly Ser Ala Pro Pro Glu Asp Leu Glu
        515                 520                 525
```

```
Asp Ala Gly Pro Pro Thr Leu Asp Pro Ser Gly Thr Ser Ile Thr Glu
    530                 535                 540

Glu Ile Leu Glu Leu Leu Asn Gln Arg Gly Leu Arg Asp Pro Gly Pro
545                 550                 555                 560

Ser Thr His Asp Ile Pro Lys Phe Pro Gly Asp Ser Gln Val Pro Gly
                565                 570                 575

Asp Ser Glu Thr Leu Thr Phe Gln Ala Leu Pro Ser Arg Asp Ser Ser
            580                 585                 590

Glu Glu Glu Glu Glu Glu Glu Glu Gly Leu Glu Met Asp Glu Arg Gly
        595                 600                 605

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

Glu Met Pro Ser Ile Pro Cys Leu Thr Lys Ile Pro Asp Val Pro Asn
625                 630                 635                 640

Leu Pro Glu Ile Pro Ser Arg Cys Glu Ile Pro Glu Gly Ser Arg Leu
                645                 650                 655

Pro Ser Leu Ser Asp Ile Ser Asp Val Phe Glu Met Pro Cys Leu Pro
            660                 665                 670

Ala Ile Pro Ser Val Pro Asn Thr Pro Ser Leu Ser Ser Thr Pro Thr
        675                 680                 685

Leu Ser Cys Asp Ser Trp Leu Gln Gly Pro Leu Gln Glu Pro Ala Glu
    690                 695                 700

Ala Pro Ala Thr Arg Arg Glu Leu Phe Ser Gly Ser Asn Pro Gly Lys
705                 710                 715                 720
```

```
Leu Gly Glu Pro Pro Ser Gly Gly Lys Ala Gly Pro Glu Glu Asp Glu
                725                 730                 735

Glu Gly Val Ser Phe Thr Asp Phe Gln Pro Gln Asp Val Thr Gln His
            740                 745                 750

Gln Gly Phe Pro Asp Glu Leu Ala Phe Arg Ser Cys Ser Glu Ile Arg
        755                 760                 765

Ser Ala Trp Gln Ala Leu Glu Gln Gly Gln Leu Ala Arg Pro Gly Phe
    770                 775                 780

Pro Glu Pro Leu Leu Ile Leu Glu Asp Ser Asp Leu Gly Gly Asp Ser
785                 790                 795                 800

Gly Ser Gly Lys Ala Gly Ala Pro Ser Ser Glu Arg Thr Ala Ser Arg
                805                 810                 815

Val Arg Glu Leu Ala Arg Leu Tyr Ser Glu Arg Ile Gln Gln Met Gln
            820                 825                 830

Arg Ala Glu Thr Arg Ala Ser Ala Asn Ala Pro Arg Arg Arg Pro Arg
        835                 840                 845

Val Leu Ala Gln Pro Gln Pro Ser Pro Cys Leu Pro Gln Glu Gln Ala
    850                 855                 860

Glu Pro Gly Leu Leu Pro Ala Phe Gly His Val Leu Val Cys Glu Leu
865                 870                 875                 880

Ala Phe Pro Leu Thr Cys Ala Gln Glu Ser Val Pro Leu Gly Pro Ala
                885                 890                 895

Val Trp Val Gln Ala Ala Ile Pro Leu Ser Lys Gln Gly Gly Ser Pro
            900                 905                 910
```

```
Asp Gly Gln Gly Leu His Val Ser Asn Leu Pro Lys Gln Asp Leu Pro
        915                 920                 925


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


Arg His Val Gln Ala Pro Ala Ala Thr Pro Leu Pro Lys Gln Glu Gly
945                 950                 955                 960


Pro Leu His Leu Gln Val Pro Ala Leu Thr Thr Phe Ser Asp Gln Gly
                965                 970                 975


His Pro Glu Ile Gln Val Pro Ala Thr Thr Pro Leu Pro Glu His Arg
            980                 985                 990


Ser His Met Val Ile Pro Ala Pro  Ser Thr Ala Phe Cys  Pro Glu Gln
        995                 1000                1005


Gly His  Cys Ala Asp Ile His  Val Pro Thr Thr Pro  Ala Leu Pro
    1010                1015                1020


Lys Glu  Ile Cys Ser Asp Phe  Thr Val Ser Val Thr  Thr Pro Val
    1025                1030                1035


Pro Lys  Gln Glu Gly His Leu  Asp Ser Glu Ser Pro  Thr Asn Ile
    1040                1045                1050


Pro Leu  Thr Lys Gln Gly Gly  Ser Arg Asp Val Gln  Gly Pro Asp
    1055                1060                1065


Pro Val  Cys Ser Gln Pro Ile  Gln Pro Leu Ser Trp  His Gly Ser
    1070                1075                1080


Ser Leu  Asp Pro Gln Gly Pro  Gly Asp Thr Leu Pro  Pro Leu Pro
    1085                1090                1095
```

```
Cys His  Leu Pro Asp Leu Gln  Ile Pro Gly Thr Ser  Pro Leu Pro
    1100                1105                1110

Ala His  Gly Ser His Leu Asp  His Arg Ile Pro Ala  Asn Ala Pro
    1115                1120                1125

Leu Ser  Leu Ser Gln Glu Leu  Pro Asp Thr Gln Val  Pro Ala Thr
    1130                1135                1140

Thr Pro  Leu Pro Leu Pro Gln  Val Leu Thr Asp Ile  Trp Val Gln
    1145                1150                1155

Ala Leu  Pro Thr Ser Pro Lys  Gln Gly Ser Leu Pro  Asp Ile Gln
    1160                1165                1170

Gly Pro  Ala Ala Ala Pro Pro  Leu Pro Glu Pro Ser  Leu Thr Asp
    1175                1180                1185

Thr Gln  Val Gln Lys Leu Thr  Pro Ser Leu Glu Gln  Lys Ser Leu
    1190                1195                1200

Ile Asp  Ala His Val Pro Ala  Ala Thr Pro Leu Pro  Glu Arg Gly
    1205                1210                1215

Gly Ser  Leu Asp Ile Gln Gly  Leu Ser Pro Thr Pro  Val Gln Thr
    1220                1225                1230

Thr Met  Val Leu Ser Lys Pro  Gly Gly Ser Leu Ala  Ser His Val
    1235                1240                1245

Ala Arg  Leu Glu Ser Ser Asp  Leu Thr Pro Pro His  Ser Pro Pro
    1250                1255                1260

Pro Ser  Ser Arg Gln Leu Leu  Gly Pro Asn Ala Ala  Ala Leu Ser
    1265                1270                1275
```

Arg Tyr Leu Ala Ala Ser Tyr Ile Ser Gln Ser Leu Ala Arg Arg
1280 1285 1290

Gln Gly Pro Gly Gly Gly Ala Pro Ala Ala Ser Arg Gly Ser Trp
1295 1300 1305

Ser Ser Ala Pro Thr Ser Arg Ala Ser Ser Pro Pro Pro Gln Pro
1310 1315 1320

Gln Pro Pro Pro Pro Pro Ala Arg Arg Leu Ser Tyr Ala Thr Thr
1325 1330 1335

Val Asn Ile His Val Gly Gly Gly Gly Arg Leu Arg Pro Ala Lys
1340 1345 1350

Ala Gln Val Arg Leu Asn His Pro Ala Leu Leu Ala Ser Thr Gln
1355 1360 1365

Glu Ser Met Gly Leu His Arg Ala Gln Gly Ala Pro Asp Ala Pro
1370 1375 1380

Phe His Met
1385

<210> 21
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 21
gacctgcgct agcgtttaaa cttaagcttg gtaccaccat g 41

<210> 22
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 22
gtcatcccta ggctcgagtt agaccagatt gtactcctt 39

<210> 23
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 23
tgagaatcat ccatgggtca rawtactctg atgaagataa aag 43

<210> 24
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 24
cttttatctt catcagagta wtytgaccca tggatgattc tca 43

<210> 25
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 25
gaatcatcca tgggtcagga tkstctgatg aagataaaag ggg 43

<210> 26
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 26
aagccccttt tatcttcatc wtygtatcct gacccatgga tga 43

<210> 27
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 27
agaatcatcc atgggtcagg atcctctgat gaagataaaa gggg 44

<210> 28
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 28
ccccttttat cttcatcaga ggatcctgac ccatggatga ttct 44

<210> 29
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 29
agaatcatcc atgggtcagg aggctctgat gaagataaaa gggg 44

<210> 30
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 30
ccccttttat cttcatcaga gcctcctgac ccatggatga ttct 44

<210> 31
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 31
tctgatgaag ataaaagggg cggcaccaag ctggtgtatc agaa 44

<210> 32
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 32
ttctgataca ccagcttggt gccgcccctt ttatcttcat caga 44

<210> 33
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic linker

<400> 33

Gly Ser Ala Gly Thr
1 5

<210> 34
<211> 11

<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic linker

<400> 34

Gly Ser Ala Gly Thr Gly Lys Leu Pro Ala Thr
1 5 10

<210> 35
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic linker

<400> 35

Gly Ser Ala Gly Trp Gly Lys Leu Gly Ser Ala Gly Ser Gly Ser Ala
1 5 10 15

Gly Ser

<210> 36
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic linker

<400> 36

Gly Ser Ala Gly Thr Gly Ser Ala Gly Thr Thr
1 5 10

<210> 37
<211> 14
<212> PRT
<213> Homo sapiens

<400> 37

Lys Lys Lys Lys Lys Lys Ser Lys Thr Lys Cys Val Ile Met
1 5 10

<210> 38
<211> 239
<212> PRT
<213> Aequorea victoria

<400> 38

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

Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
20 25 30

Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
35 40 45

Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
50 55 60

Leu Ser Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65 70 75 80

Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
85 90 95

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

Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
115 120 125

Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
130 135 140

```
Asn Tyr Asn Pro His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160


Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175


Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190


Pro Val Leu Leu Pro Asp Asn His Tyr Leu Phe Thr Gln Ser Ala Leu
        195                 200                 205


Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                 215                 220


Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
225                 230                 235


<210>  39
<211>  311
<212>  PRT
<213>  Renilla reniformis

<400>  39

Met Thr Ser Lys Val Tyr Asp Pro Glu Gln Arg Lys Arg Met Ile Thr
1               5                   10                  15


Gly Pro Gln Trp Trp Ala Arg Cys Lys Gln Met Asn Val Leu Asp Ser
            20                  25                  30


Phe Ile Asn Tyr Tyr Asp Ser Glu Lys His Ala Glu Asn Ala Val Ile
        35                  40                  45


Phe Leu His Gly Asn Ala Thr Ser Ser Tyr Leu Trp Arg His Val Val
    50                  55                  60
```

```
Pro His Ile Glu Pro Val Ala Arg Cys Ile Ile Pro Asp Leu Ile Gly
65                  70                  75                  80

Met Gly Lys Ser Gly Lys Ser Gly Asn Gly Ser Tyr Arg Leu Leu Asp
                85                  90                  95

His Tyr Lys Tyr Leu Thr Ala Trp Phe Glu Leu Leu Asn Leu Pro Lys
            100                 105                 110

Lys Ile Ile Phe Val Gly His Asp Trp Gly Ala Ala Leu Ala Phe His
        115                 120                 125

Tyr Ser Tyr Glu His Gln Asp Lys Ile Lys Ala Ile Val His Ala Glu
    130                 135                 140

Ser Val Val Asp Val Ile Glu Ser Trp Asp Glu Trp Pro Asp Ile Glu
145                 150                 155                 160

Glu Asp Ile Ala Leu Ile Lys Ser Glu Glu Gly Glu Lys Met Val Leu
                165                 170                 175

Glu Asn Asn Phe Phe Val Glu Thr Val Leu Pro Ser Lys Ile Met Arg
            180                 185                 190

Lys Leu Glu Pro Glu Glu Phe Ala Ala Tyr Leu Glu Pro Phe Lys Glu
        195                 200                 205

Lys Gly Glu Val Arg Arg Pro Thr Leu Ser Trp Pro Arg Glu Ile Pro
    210                 215                 220

Leu Val Lys Gly Gly Lys Pro Asp Val Val Gln Ile Val Arg Asn Tyr
225                 230                 235                 240

Asn Ala Tyr Leu Arg Ala Ser Asp Asp Leu Pro Lys Met Phe Ile Glu
                245                 250                 255
```

```
Ser Asp Pro Gly Phe Phe Ser Asn Ala Ile Val Glu Gly Ala Lys Lys
            260                 265                 270


Phe Pro Asn Thr Glu Phe Val Lys Val Lys Gly Leu His Phe Ser Gln
        275                 280                 285


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


Arg Val Leu Lys Asn Glu Gln
305                 310


<210>  40
<211>  20
<212>  PRT
<213>  Homo sapiens

<400>  40

Lys Leu Asn Pro Pro Asp Glu Ser Gly Pro Gly Cys Met Ser Cys Lys
1               5                   10                  15


Cys Val Leu Ser
            20


<210>  41
<211>  20
<212>  PRT
<213>  Homo sapiens

<400>  41

Lys Leu Asn Ser Ser Asp Asp Gly Thr Gln Gly Cys Met Gly Leu Pro
1               5                   10                  15


Cys Val Val Met
            20


<210>  42
```

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

<400> 42

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

Cys Ile Ile Met
20

<210> 43
<211> 20
<212> PRT
<213> Homo sapiens

<400> 43

Lys Met Ser Lys Asp Gly Lys Lys Lys Lys Lys Ser Lys Thr Lys
1 5 10 15

Cys Val Ile Met
20

<210> 44
<211> 9
<212> PRT
<213> Homo sapiens

<400> 44

Cys Met Ser Cys Lys Cys Cys Ile Leu
1 5

<210> 45
<211> 21
<212> PRT
<213> Homo sapiens

<400> 45

Ser Pro Lys Lys Gly Leu Leu Gln Arg Leu Phe Lys Arg Gln His Gln

1 5 10 15

Asn Asn Ser Lys Ser
20

<210> 46
<211> 233
<212> PRT
<213> Renilla reniformis

<400> 46

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

Asn Leu Glu Gly Leu Val Gly Asp His Ala Phe Ser Met Glu Gly Val
20 25 30

Gly Glu Gly Asn Ile Leu Glu Gly Thr Gln Glu Val Lys Ile Ser Val
35 40 45

Thr Lys Gly Ala Pro Leu Pro Phe Ala Phe Asp Ile Val Ser Val Ala
50 55 60

Phe Ser Tyr Gly Asn Arg Ala Tyr Thr Gly Tyr Pro Glu Glu Ile Ser
65 70 75 80

Asp Tyr Phe Leu Gln Ser Phe Pro Glu Gly Phe Thr Tyr Glu Arg Asn
85 90 95

Ile Arg Tyr Gln Asp Gly Gly Thr Ala Ile Val Lys Ser Asp Ile Ser
100 105 110

Leu Glu Asp Gly Lys Phe Ile Val Asn Val Asp Phe Lys Ala Lys Asp
115 120 125

Leu Arg Arg Met Gly Pro Val Met Gln Gln Asp Ile Val Gly Met Gln
130 135 140

```
Pro Ser Tyr Glu Ser Met Tyr Thr Asn Val Thr Ser Val Ile Gly Glu
145                 150                 155                 160


Cys Ile Ile Ala Phe Lys Leu Gln Thr Gly Lys His Phe Thr Tyr His
                165                 170                 175


Met Arg Thr Val Tyr Lys Ser Lys Lys Pro Val Glu Thr Met Pro Leu
            180                 185                 190


Tyr His Phe Ile Gln His Arg Leu Val Lys Thr Asn Val Asp Thr Ala
        195                 200                 205


Ser Gly Tyr Val Val Gln His Glu Thr Ala Ile Ala Ala His Ser Thr
    210                 215                 220


Ile Lys Lys Ile Glu Gly Ser Leu Pro
225                 230


<210>  47
<211>  14
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  synthetic linker

<400>  47

Gly Ser Ala Gly Thr Met Ala Ser Asn Asn Thr Ala Ser Gly
1               5                   10


<210>  48
<211>  9
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  synthetic linker
```

<400> 48

Gly Gly Ser Gly Ser Gly Ser Gly Ser
1 5

<210> 49
<211> 8
<212> PRT
<213> Homo sapiens

<400> 49

Asp Arg Val Tyr Ile His Pro Phe
1 5

<210> 50
<211> 194
<212> PRT
<213> Homo sapiens

<400> 50

Ile Lys Leu Leu Asp Ser Asp Gln Glu Leu Tyr Arg Asn Phe Pro Leu
1 5 10 15

Thr Ile Ser Glu Arg Trp Gln Gln Glu Val Ala Glu Thr Val Phe Asp
20 25 30

Thr Ile Asn Ala Glu Thr Asp Arg Leu Glu Ala Arg Lys Lys Ala Lys
35 40 45

Asn Lys Gln Leu Gly His Glu Glu Asp Tyr Ala Leu Gly Lys Asp Cys
50 55 60

Ile Met His Gly Tyr Met Ser Lys Met Gly Asn Pro Phe Leu Thr Gln
65 70 75 80

Trp Gln Arg Arg Tyr Phe Tyr Leu Phe Pro Asn Arg Leu Glu Trp Arg
85 90 95

Gly Glu Gly Glu Ala Pro Gln Ser Leu Leu Thr Met Glu Glu Ile Gln
100 105 110

Ser Val Glu Glu Thr Gln Ile Lys Glu Arg Lys Cys Leu Leu Leu Lys
115 120 125

Ile Arg Gly Gly Lys Gln Phe Ile Leu Gln Cys Asp Ser Asp Pro Glu
130 135 140

Leu Val Gln Trp Lys Lys Glu Leu Arg Asp Ala Tyr Arg Glu Ala Gln
145 150 155 160

Gln Leu Val Gln Arg Val Pro Lys Met Lys Asn Lys Pro Arg Ser Pro
165 170 175

Val Val Glu Leu Ser Lys Val Pro Leu Val Gln Arg Gly Ser Ala Asn
180 185 190

Gly Leu

<210> 51
<211> 193
<212> PRT
<213> Homo sapiens

<400> 51

Ile Lys Leu Leu Asp Cys Asp Gln Glu Leu Tyr Lys Asn Phe Pro Leu
1 5 10 15

Val Ile Ser Glu Arg Trp Gln Gln Glu Val Thr Glu Thr Val Tyr Glu
20 25 30

Ala Val Asn Ala Asp Thr Asp Lys Ile Glu Ala Arg Lys Arg Ala Lys
35 40 45

Asn Lys Gln Leu Gly His Glu Glu Asp Tyr Ala Leu Gly Lys Asp Cys

50 55 60

Ile Met His Gly Tyr Met Leu Lys Leu Gly Asn Pro Phe Leu Thr Gln
65 70 75 80

Trp Gln Arg Arg Tyr Phe Tyr Leu Phe Pro Asn Arg Leu Glu Trp Arg
85 90 95

Gly Glu Gly Glu Ser Arg Gln Asn Leu Leu Thr Met Glu Gln Ile Leu
100 105 110

Ser Val Glu Glu Thr Gln Ile Lys Asp Lys Lys Cys Ile Leu Phe Arg
115 120 125

Ile Lys Gly Gly Lys Gln Phe Val Leu Gln Cys Glu Ser Asp Pro Glu
130 135 140

Phe Val Gln Trp Lys Lys Glu Leu Asn Glu Thr Phe Lys Glu Ala Gln
145 150 155 160

Arg Leu Leu Arg Arg Ala Pro Lys Phe Leu Asn Lys Pro Arg Ser Gly
165 170 175

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

Leu

<210> 52
<211> 7
<212> PRT
<213> Homo sapiens

<400> 52

Gly Ser Ala Gly Thr Gly Gly
1 5

<210> 53
<211> 200
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic linker

<400> 53

```
Ser Asn Ser Glu Glu Gly Pro Ala Arg Gly Lys Pro Ala Pro Glu Glu
1               5                  10                  15


Pro Asp Glu Gln Leu Gly Glu Pro Glu Glu Ala Gln Gly Glu His Ala
            20                  25                  30


Asp Glu Pro Ala Pro Ser Lys Pro Ser Glu Lys His Met Val Pro Gln
        35                  40                  45


Met Ala Glu Pro Glu Lys Gly Glu Glu Ala Arg Glu Pro Gln Gly Ala
    50                  55                  60


Glu Asp Lys Pro Ala Pro Val His Lys Pro Lys Lys Glu Glu Pro Gln
65                  70                  75                  80


Arg Pro Asn Glu Glu Lys Ala Pro Lys Pro Lys Gly Arg His Val Gly
                85                  90                  95


Arg Gln Glu Asn Asp Asp Ser Ala Gly Lys Pro Glu Pro Gly Arg Pro
            100                 105                 110


Asp Arg Lys Gly Lys Glu Lys Glu Pro Glu Glu Glu Pro Ala Gln Gly
        115                 120                 125


His Ser Leu Pro Gln Glu Pro Glu Pro Met Pro Arg Pro Lys Pro Glu
    130                 135                 140
```

```
Val Arg Lys Lys Pro His Pro Gly Ala Ser Pro His Gln Val Ser Asp
145                 150                 155                 160


Val Glu Asp Ala Lys Gly Pro Glu Arg Lys Val Asn Pro Met Glu Gly
                165                 170                 175


Glu Glu Ser Ala Lys Gln Ala Gln Gln Glu Gly Pro Ala Glu Asn Asp
            180                 185                 190


Glu Ala Glu Arg Pro Glu Arg Pro
        195                 200
```