

## SEQUENCE LISTING

<110> JIN, Xiaoying  
O'RIORDAN, Catherine  
LIU, Ling  
Zhang, Kate

<120> METHODS FOR DETECTING AAV

<130> 159792014140

<140> Not Yet Assigned

<141> Concurrently Herewith

<150> 62/375,314

<151> 2016-08-15

<160> 40

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 33

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 1

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Thr | Gly | Gly | Cys | Thr | Ala | Cys | Ala | Gly | Gly | Cys | Ala | Gly | Thr | Gly |
| 1   |     |     |     | 5   |     |     |     | 10  |     |     |     |     | 15  |     |     |
| Gly | Cys | Gly | Cys | Ala | Cys | Cys | Ala | Ala | Thr | Gly | Gly | Cys | Ala | Gly | Ala |
|     |     |     | 20  |     |     |     | 25  |     |     |     |     | 30  |     |     |     |
| Cys |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

<210> 2

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 2

|     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Thr | Gly | Ser | Gly | Ala | Pro | Met | Ala | Asp |
| 1   |     |     |     | 5   |     |     |     | 10  |     |     |

## 159792014140SEQLIST.TXT

&lt;210&gt; 3

&lt;211&gt; 735

&lt;212&gt; PRT

&lt;213&gt; Adeno-associated virus 2

&lt;400&gt; 3

```

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
 1          5          10          15
Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
          20          25          30
Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
          35          40          45
Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
          50          55          60
Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65          70          75          80
Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
          85          90          95
Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
          100          105          110
Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
          115          120          125
Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
          130          135          140
Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145          150          155          160
Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
          165          170          175
Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
          180          185          190
Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
          195          200          205
Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
          210          215          220
Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225          230          235          240
Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
          245          250          255
Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
          260          265          270
Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
          275          280          285
Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
          290          295          300
Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305          310          315          320
Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
          325          330          335
Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
          340          345          350
Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp

```

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```

      355      360      365
Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
      370      375      380
Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385      390      395      400
Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
      405      410      415
Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
      420      425      430
Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
      435      440      445
Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
      450      455      460
Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465      470      475      480
Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
      485      490      495
Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
      500      505      510
Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
      515      520      525
Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
      530      535      540
Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545      550      555      560
Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
      565      570      575
Gly Ser Val Ser Thr Asn Leu Gln Arg Gly Asn Arg Gln Ala Ala Thr
      580      585      590
Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
      595      600      605
Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
      610      615      620
Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625      630      635      640
His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
      645      650      655
Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
      660      665      670
Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
      675      680      685
Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
      690      695      700
Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705      710      715      720
Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
      725      730      735

```

<210> 4  
 <211> 19  
 <212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<220>

<221> ACETYLTATION

<222> 1

<400> 4

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Ala | Asp | Gly | Tyr | Leu | Pro | Asp | Trp | Leu | Glu | Asp | Thr | Leu | Ser | Glu |
| 1   |     |     |     | 5   |     |     |     | 10  |     |     |     |     | 15  |     |     |
| Gly | Ile | Arg |     |     |     |     |     |     |     |     |     |     |     |     |     |

<210> 5

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<220>

<221> ACETYLTATION

<222> 1

<400> 5

|     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Thr | Gly | Ser | Gly | Ala | Pro | Met |
| 1   |     |     |     | 5   |     |     |     |

<210> 6

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 6

|     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Ala | Asp | Gly | Tyr | Leu | Pro | Asp | Trp | Leu | Glu | Asp |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |

<210> 7

<211> 39

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 7

```

Gly Thr Gly Gly Cys Thr Gly Cys Ala Gly Gly Cys Gly Gly Thr Gly
 1           5           10           15
Gly Cys Gly Cys Ala Cys Cys Ala Ala Thr Gly Gly Cys Ala Gly Ala
 20           25           30
Cys Ala Ala Thr Ala Ala Cys
 35

```

<210> 8

<211> 78

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 8

```

Cys Ala Cys Thr Cys Cys Cys Thr Cys Thr Cys Thr Gly Cys Gly Cys
 1           5           10           15
Gly Cys Thr Cys Gly Cys Thr Cys Gly Cys Thr Cys Ala Cys Thr Gly
 20           25           30
Ala Gly Gly Cys Cys Gly Gly Gly Cys Gly Ala Cys Cys Ala Ala Ala
 35           40           45
Gly Gly Thr Cys Gly Cys Cys Cys Ala Cys Gly Cys Cys Cys Gly Gly
 50           55           60
Gly Cys Thr Thr Thr Gly Cys Cys Cys Gly Gly Gly Cys Gly
 65           70           75

```

<210> 9

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 9

```

Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys
 1           5           10

```

<210> 10

<211> 83

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

159792014140SEQLIST.TXT

<400> 10

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Val | Thr | Gln | Asn | Asp | Gly | Thr | Thr | Thr | Ile | Ala | Asn | Asn | Leu | Thr |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Ser | Thr | Val | Gln | Val | Phe | Thr | Asp | Ser | Glu | Tyr | Gln | Leu | Pro | Tyr | Val |
|     |     | 20  |     |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Leu | Gly | Ser | Ala | His | Gln | Gly | Cys | Leu | Pro | Pro | Phe | Pro | Ala | Asp | Val |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Phe | Met | Val | Pro | Gln | Tyr | Gly | Tyr | Leu | Thr | Leu | Asn | Asn | Gly | Ser | Gln |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Ala | Val | Gly | Arg | Ser | Ser | Phe | Tyr | Cys | Leu | Glu | Tyr | Phe | Pro | Ser | Gln |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Met | Leu | Arg |     |     |     |     |     |     |     |     |     |     |     |     |     |

<210> 11

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 11

|     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|
| Tyr | Asn | Leu | Asn | Gly | Arg |
| 1   |     |     | 5   |     |     |

<210> 12

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 12

|     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|
| Tyr | His | Leu | Asn | Gly | Arg |
| 1   |     |     | 5   |     |     |

<210> 13

<211> 18

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 13

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Ala | Asn | Val | Asp | Phe | Thr | Val | Asp | Asn | Asn | Gly | Leu | Tyr | Thr | Glu |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

## 159792014140SEQLIST.TXT

1                    5                    10                    15  
Pro Arg

<210> 14  
<211> 18  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Synthetic Construct

<400> 14  
Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr Ser Glu  
1                    5                    10                    15  
Pro Arg

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

<220>  
<223> Synthetic Construct

<400> 15  
Ala Pro Gly Lys Lys Arg Pro Val Glu His Ser Pro Val Glu Pro  
1                    5                    10                    15

<210> 16  
<211> 735  
<212> PRT  
<213> Adeno-associated virus 2

<400> 16  
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser  
1                    5                    10                    15  
Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro  
20                    25                    30  
Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro  
35                    40                    45  
Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro  
50                    55                    60  
Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp  
65                    70                    75                    80  
Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala  
85                    90                    95  
Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly

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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |  |
| Asn | Leu | Gly | Arg | Ala | Val | Phe | Gln | Ala | Lys | Lys | Arg | Val | Leu | Glu | Pro |  |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |  |
| Leu | Gly | Leu | Val | Glu | Glu | Pro | Val | Lys | Thr | Ala | Pro | Gly | Lys | Lys | Arg |  |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |  |
| Pro | Val | Glu | His | Ser | Pro | Val | Glu | Pro | Asp | Ser | Ser | Ser | Gly | Thr | Gly |  |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |  |
| Lys | Ala | Gly | Gln | Gln | Pro | Ala | Arg | Lys | Arg | Leu | Asn | Phe | Gly | Gln | Thr |  |
|     |     |     | 165 |     |     |     |     |     | 170 |     |     |     |     | 175 |     |  |
| Gly | Asp | Ala | Asp | Ser | Val | Pro | Asp | Pro | Gln | Pro | Leu | Gly | Gln | Pro | Pro |  |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |  |
| Ala | Ala | Pro | Ser | Gly | Leu | Gly | Thr | Asn | Thr | Met | Ala | Thr | Gly | Ser | Gly |  |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |  |
| Ala | Pro | Met | Ala | Asp | Asn | Asn | Glu | Gly | Ala | Asp | Gly | Val | Gly | Asn | Ser |  |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |  |
| Ser | Gly | Asn | Trp | His | Cys | Asp | Ser | Thr | Trp | Met | Gly | Asp | Arg | Val | Ile |  |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |  |
| Thr | Thr | Ser | Thr | Arg | Thr | Trp | Ala | Leu | Pro | Thr | Tyr | Asn | Asn | His | Leu |  |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |  |
| Tyr | Lys | Gln | Ile | Ser | Ser | Gln | Ser | Gly | Ala | Ser | Asn | Asp | Asn | His | Tyr |  |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |  |
| Phe | Gly | Tyr | Ser | Thr | Pro | Trp | Gly | Tyr | Phe | Asp | Phe | Asn | Arg | Phe | His |  |
|     |     | 275 |     |     |     |     | 280 |     |     |     |     | 285 |     |     |     |  |
| Cys | His | Phe | Ser | Pro | Arg | Asp | Trp | Gln | Arg | Leu | Ile | Asn | Asn | Asn | Trp |  |
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |  |
| Gly | Phe | Arg | Pro | Lys | Arg | Leu | Asn | Phe | Lys | Leu | Phe | Asn | Ile | Gln | Val |  |
| 305 |     |     |     |     | 310 |     |     |     |     | 315 |     |     |     |     | 320 |  |
| Lys | Glu | Val | Thr | Gln | Asn | Asp | Gly | Thr | Thr | Thr | Ile | Ala | Asn | Asn | Leu |  |
|     |     |     |     | 325 |     |     |     |     | 330 |     |     |     |     | 335 |     |  |
| Thr | Ser | Thr | Val | Gln | Val | Phe | Thr | Asp | Ser | Glu | Tyr | Gln | Leu | Pro | Tyr |  |
|     |     |     | 340 |     |     |     |     | 345 |     |     |     |     | 350 |     |     |  |
| Val | Leu | Gly | Ser | Ala | His | Gln | Gly | Cys | Leu | Pro | Pro | Phe | Pro | Ala | Asp |  |
|     |     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |  |
| Val | Phe | Met | Val | Pro | Gln | Tyr | Gly | Tyr | Leu | Thr | Leu | Asn | Asn | Gly | Ser |  |
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |  |
| Gln | Ala | Val | Gly | Arg | Ser | Ser | Phe | Tyr | Cys | Leu | Glu | Tyr | Phe | Pro | Ser |  |
| 385 |     |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     | 400 |  |
| Gln | Met | Leu | Arg | Thr | Gly | Asn | Asn | Phe | Thr | Phe | Ser | Tyr | Thr | Phe | Glu |  |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |  |
| Asp | Val | Pro | Phe | His | Ser | Ser | Tyr | Ala | His | Ser | Gln | Ser | Leu | Asp | Arg |  |
|     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |  |
| Leu | Met | Asn | Pro | Leu | Ile | Asp | Gln | Tyr | Leu | Tyr | Tyr | Leu | Ser | Arg | Thr |  |
|     |     | 435 |     |     |     | 440 |     |     |     |     |     | 445 |     |     |     |  |
| Asn | Thr | Pro | Ser | Gly | Thr | Thr | Thr | Gln | Ser | Arg | Leu | Gln | Phe | Ser | Gln |  |
|     | 450 |     |     |     |     | 455 |     |     |     |     |     |     |     |     |     |  |

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|                                                                 |     |     |
|-----------------------------------------------------------------|-----|-----|
| 515                                                             | 520 | 525 |
| Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys |     |     |
| 530                                                             | 535 | 540 |
| Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr |     |     |
| 545                                                             | 550 | 555 |
| Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr |     |     |
| 565                                                             | 570 | 575 |
| Gly Ser Val Ser Thr Asn Leu Gln Arg Gly Asn Arg Gln Ala Ala Thr |     |     |
| 580                                                             | 585 | 590 |
| Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp |     |     |
| 595                                                             | 600 | 605 |
| Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr |     |     |
| 610                                                             | 615 | 620 |
| Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys |     |     |
| 625                                                             | 630 | 635 |
| His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn |     |     |
| 645                                                             | 650 | 655 |
| Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln |     |     |
| 660                                                             | 665 | 670 |
| Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys |     |     |
| 675                                                             | 680 | 685 |
| Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr |     |     |
| 690                                                             | 695 | 700 |
| Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr |     |     |
| 705                                                             | 710 | 715 |
| Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu     |     |     |
| 725                                                             | 730 | 735 |

<210> 17

<211> 239

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 17

|                                                                 |     |
|-----------------------------------------------------------------|-----|
| Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser |     |
| 1                                                               | 15  |
| Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro |     |
| 20                                                              | 30  |
| Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro |     |
| 35                                                              | 45  |
| Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro |     |
| 50                                                              | 60  |
| Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp |     |
| 65                                                              | 75  |
| Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala |     |
| 85                                                              | 95  |
| Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly |     |
| 100                                                             | 110 |

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```

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
  115                      120                      125
Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
  130                      135                      140
Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
  145                      150                      155                      160
Gly Lys Lys Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln
                      165                      170                      175
Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
                      180                      185                      190
Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
                      195                      200                      205
Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
  210                      215                      220
Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg
  225                      230                      235

```

&lt;210&gt; 18

&lt;211&gt; 239

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Construct

&lt;400&gt; 18

```

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
  1           5           10           15
Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
          20           25           30
Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
          35           40           45
Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
          50           55           60
Val Asn Ala Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
          65           70           75           80
Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
          85           90           95
Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
          100          105          110
Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
          115          120          125
Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
          130          135          140
Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
          145          150          155          160
Gly Lys Lys Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln
          165          170          175
Thr Gly Glu Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
          180          185          190
Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly

```

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|     |     | 195 |     |     |     | 200 |     |     |     |     | 205 |     |     |     |     |
| Gly | Ala | Pro | Met | Ala | Asp | Asn | Asn | Glu | Gly | Ala | Asp | Gly | Val | Gly | Ser |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Ser | Ser | Gly | Asn | Trp | His | Cys | Asp | Ser | Thr | Trp | Leu | Gly | Asp | Arg |     |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     |     |

<220>  
<223> Synthetic Construct

|          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <400> 19 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Met      | Ala | Ala | Asp | Gly | Tyr | Leu | Pro | Asp | Trp | Leu | Glu | Asp | Asn | Leu | Ser |
| 1        |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Glu      | Gly | Ile | Arg | Glu | Trp | Trp | Ala | Leu | Lys | Pro | Gly | Ala | Pro | Lys | Pro |
|          |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Lys      | Ala | Asn | Gln | Gln | Lys | Gln | Asp | Asp | Gly | Arg | Gly | Leu | Val | Leu | Pro |
|          |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Gly      | Tyr | Lys | Tyr | Leu | Gly | Pro | Phe | Asn | Gly | Leu | Asp | Lys | Gly | Glu | Pro |
|          | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Val      | Asn | Ala | Ala | Asp | Ala | Ala | Ala | Leu | Glu | His | Asp | Lys | Ala | Tyr | Asp |
| 65       |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Gln      | Gln | Leu | Gln | Ala | Gly | Asp | Asn | Pro | Tyr | Leu | Arg | Tyr | Asn | His | Ala |
|          |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Asp      | Ala | Glu | Phe | Gln | Glu | Arg | Leu | Gln | Glu | Asp | Thr | Ser | Phe | Gly | Gly |
|          |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Asn      | Leu | Gly | Arg | Ala | Val | Phe | Gln | Ala | Lys | Lys | Arg | Val | Leu | Glu | Pro |
|          |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Leu      | Gly | Leu | Val | Glu | Glu | Gly | Ala | Lys | Thr | Ala | Pro | Gly | Lys | Lys | Arg |
|          | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Pro      | Val | Glu | Pro | Ser | Pro | Gln | Arg | Ser | Pro | Asp | Ser | Ser | Thr | Gly | Ile |
| 145      |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Gly      | Lys | Lys | Gly | Gln | Gln | Pro | Ala | Arg | Lys | Arg | Leu | Asn | Phe | Gly | Gln |
|          |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Thr      | Gly | Asp | Ser | Glu | Ser | Val | Pro | Asp | Pro | Gln | Pro | Leu | Gly | Glu | Pro |
|          |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Pro      | Ala | Ala | Pro | Ser | Gly | Val | Gly | Pro | Asn | Thr | Met | Ala | Ala | Gly | Gly |
|          |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Gly      | Ala | Pro | Met | Ala | Asp | Asn | Asn | Glu | Gly | Ala | Asp | Gly | Val | Gly | Ser |
|          | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Ser      | Ser | Gly | Asn | Trp | His | Cys | Asp | Ser | Thr | Trp | Leu | Gly | Asp | Arg |     |
| 225      |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     |     |

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<220>

<223> Synthetic Construct

<400> 20

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Ala | Asp | Gly | Tyr | Leu | Pro | Asp | Trp | Leu | Glu | Asp | Asn | Leu | Ser | 1   | 5   | 10  | 15  |
| Glu | Gly | Ile | Arg | Glu | Trp | Trp | Asp | Leu | Lys | Pro | Gly | Ala | Pro | Lys | Pro | 20  | 25  | 30  |     |
| Lys | Ala | Asn | Gln | Gln | Lys | Gln | Asp | Asn | Gly | Arg | Gly | Leu | Val | Leu | Pro | 35  | 40  | 45  |     |
| Gly | Tyr | Lys | Tyr | Leu | Gly | Pro | Phe | Asn | Gly | Leu | Asp | Lys | Gly | Glu | Pro | 50  | 55  | 60  |     |
| Val | Asn | Ala | Ala | Asp | Ala | Ala | Ala | Leu | Glu | His | Asp | Lys | Ala | Tyr | Asp | 65  | 70  | 75  | 80  |
| Gln | Gln | Leu | Lys | Ala | Gly | Asp | Asn | Pro | Tyr | Leu | Arg | Tyr | Asn | His | Ala | 85  | 90  | 95  |     |
| Asp | Ala | Glu | Phe | Gln | Glu | Arg | Leu | Gln | Glu | Asp | Thr | Ser | Phe | Gly | Gly | 100 | 105 | 110 |     |
| Asn | Leu | Gly | Arg | Ala | Val | Phe | Gln | Ala | Lys | Lys | Arg | Val | Leu | Glu | Pro | 115 | 120 | 125 |     |
| Leu | Gly | Leu | Val | Glu | Glu | Gly | Ala | Lys | Thr | Ala | Pro | Ala | Lys | Lys | Arg | 130 | 135 | 140 |     |
| Pro | Val | Glu | Pro | Ser | Pro | Gln | Arg | Ser | Pro | Asp | Ser | Ser | Thr | Gly | Ile | 145 | 150 | 155 | 160 |
| Gly | Lys | Lys | Gly | Gln | Gln | Pro | Ala | Arg | Lys | Arg | Leu | Asn | Phe | Gly | Gln | 165 | 170 | 175 |     |
| Thr | Gly | Asp | Ser | Glu | Ser | Val | Pro | Asp | Pro | Gln | Pro | Leu | Gly | Glu | Pro | 180 | 185 | 190 |     |
| Pro | Ala | Ala | Pro | Ser | Ser | Val | Gly | Ser | Gly | Thr | Val | Ala | Ala | Gly | Gly | 195 | 200 | 205 |     |
| Gly | Ala | Pro | Met | Ala | Asp | Asn | Asn | Glu | Gly | Ala | Asp | Gly | Val | Gly | Asn | 210 | 215 | 220 |     |
| Ala | Ser | Gly | Asn | Trp | His | Cys | Asp | Ser | Thr | Trp | Leu | Gly | Asp | Arg |     | 225 | 230 | 235 |     |

<210> 21

<211> 238

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 21

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|
| Met | Ala | Ala | Asp | Gly | Tyr | Leu | Pro | Asp | Trp | Leu | Glu | Asp | Asn | Leu | Ser | 1  | 5  | 10 | 15 |
| Glu | Gly | Ile | Arg | Glu | Trp | Trp | Asp | Leu | Lys | Pro | Gly | Ala | Pro | Lys | Pro | 20 | 25 | 30 |    |
| Lys | Ala | Asn | Gln | Gln | Lys | Gln | Asp | Asp | Gly | Arg | Gly | Leu | Val | Leu | Pro | 35 | 40 | 45 |    |

## 159792014140SEQLIST.TXT

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro  
 50 55 60  
 Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp  
 65 70 75 80  
 Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala  
 85 90 95  
 Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly  
 100 105 110  
 Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro  
 115 120 125  
 Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg  
 130 135 140  
 Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Ile Gly  
 145 150 155 160  
 Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr  
 165 170 175  
 Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro  
 180 185 190  
 Ala Thr Pro Ala Ala Val Gly Pro Thr Thr Met Ala Ser Gly Gly Gly  
 195 200 205  
 Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala  
 210 215 220  
 Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg  
 225 230 235

&lt;210&gt; 22

&lt;211&gt; 238

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Construct

&lt;400&gt; 22

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser  
 1 5 10 15  
 Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro  
 20 25 30  
 Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro  
 35 40 45  
 Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro  
 50 55 60  
 Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp  
 65 70 75 80  
 Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala  
 85 90 95  
 Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly  
 100 105 110  
 Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro  
 115 120 125  
 Phe Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |     |
| Pro | Val | Glu | Gln | Ser | Pro | Gln | Glu | Pro | Asp | Ser | Ser | Ser | Gly | Ile | Gly |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     |     |
| Lys | Thr | Gly | Gln | Gln | Pro | Ala | Lys | Lys | Arg | Leu | Asn | Phe | Gly | Gln | Thr |
| 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |     |     |     |     |
| Gly | Asp | Ser | Glu | Ser | Val | Pro | Asp | Pro | Gln | Pro | Leu | Gly | Glu | Pro | Pro |
| 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |     |     |     |
| Ala | Thr | Pro | Ala | Ala | Val | Gly | Pro | Thr | Thr | Met | Ala | Ser | Gly | Gly | Gly |
| 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |     |     |
| Ala | Pro | Met | Ala | Asp | Asn | Asn | Glu | Gly | Ala | Asp | Gly | Val | Gly | Asn | Ala |
| 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |     |
| Ser | Gly | Asn | Trp | His | Cys | Asp | Ser | Thr | Trp | Leu | Gly | Asp | Arg |     |     |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     |     |

```
<210> 23
<211> 238
<212> PRT
<213> Artificial Sequence
```

<220>  
<223> Synthetic Construct

|          |         |         |         |         |         |        |         |         |         |         |         |         |         |         |     |
|----------|---------|---------|---------|---------|---------|--------|---------|---------|---------|---------|---------|---------|---------|---------|-----|
| <400> 23 |         |         |         |         |         |        |         |         |         |         |         |         |         |         |     |
| Met 1    | Ala     | Ala     | Asp     | Gly 5   | Tyr     | Leu    | Pro     | Asp     | Trp 10  | Leu     | Glu     | Asp     | Thr     | Leu 15  | Ser |
| Glu      | Gly     | Ile     | Arg 20  | Gln     | Trp     | Trp    | Lys     | Leu 25  | Lys     | Pro     | Gly     | Pro     | Pro 30  | Pro     | Pro |
| Lys      | Pro     | Ala 35  | Glu     | Arg     | His     | Lys    | Asp 40  | Asp     | Ser     | Arg     | Gly     | Leu 45  | Val     | Leu     | Pro |
| Gly      | Tyr 50  | Lys     | Tyr     | Leu     | Gly     | Pro 55 | Phe     | Asn     | Gly     | Leu     | Asp 60  | Lys     | Gly     | Glu     | Pro |
| Val 65   | Asn     | Glu     | Ala     | Asp     | Ala 70  | Ala    | Ala     | Leu     | Glu     | His 75  | Asp     | Lys     | Ala     | Tyr 80  | Asp |
| Arg      | Gln     | Leu     | Asp     | Ser 85  | Gly     | Asp    | Asn     | Pro     | Tyr 90  | Leu     | Lys     | Tyr     | Asn 95  | His     | Ala |
| Asp      | Ala     | Glu     | Phe 100 | Gln     | Glu     | Arg    | Leu     | Lys 105 | Glu     | Asp     | Thr     | Ser     | Phe 110 | Gly     | Gly |
| Asn      | Leu     | Gly 115 | Arg     | Ala     | Val     | Phe    | Gln 120 | Ala     | Lys     | Lys     | Arg     | Val 125 | Leu     | Glu     | Pro |
| Leu      | Gly 130 | Leu     | Val     | Glu     | Glu 135 | Pro    | Val     | Lys     | Thr     | Ala     | Pro 140 | Gly     | Lys     | Lys     | Arg |
| Pro 145  | Val     | Glu     | His     | Ser 150 | Pro     | Val    | Glu     | Pro     | Asp     | Ser 155 | Ser     | Ser     | Gly     | Thr 160 | Gly |
| Lys      | Ala     | Gly     | Gln 165 | Gln     | Pro     | Ala    | Arg     | Lys     | Arg 170 | Leu     | Asn     | Phe     | Gly 175 | Gln     | Thr |
| Gly      | Asp     | Ala     | Asp 180 | Ser     | Val     | Pro    | Asp     | Pro 185 | Gln     | Pro     | Leu     | Gly     | Gln 190 | Pro     | Pro |
| Ala      | Ala     | Pro 195 | Ser     | Gly     | Leu     | Gly    | Thr 200 | Asn     | Thr     | Met     | Ala     | Thr 205 | Gly     | Ser     | Gly |
| Ala      | Pro 210 | Met     | Ala     | Asp     | Asn 215 | Asn    | Glu     | Gly     | Ala     | Asp     | Gly 220 | Val     | Gly     | Asn     | Ser |

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Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg  
 225 230 235

<210> 24  
 <211> 238  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Construct

<400> 24  
 Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser  
 1 5 10 15  
 Glu Gly Ile Arg Glu Trp Trp Ala Leu Lys Pro Gly Val Pro Gln Pro  
 20 25 30  
 Lys Ala Asn Gln Gln His Gln Asp Asn Arg Arg Gly Leu Val Leu Pro  
 35 40 45  
 Gly Tyr Lys Tyr Leu Gly Pro Gly Asn Gly Leu Asp Lys Gly Glu Pro  
 50 55 60  
 Val Asn Glu Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp  
 65 70 75 80  
 Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala  
 85 90 95  
 Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly  
 100 105 110  
 Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Ile Leu Glu Pro  
 115 120 125  
 Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Gly  
 130 135 140  
 Ala Val Asp Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Val Gly  
 145 150 155 160  
 Lys Ser Gly Lys Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr  
 165 170 175  
 Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro  
 180 185 190  
 Ala Ala Pro Thr Ser Leu Gly Ser Asn Thr Met Ala Ser Gly Gly Gly  
 195 200 205  
 Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser  
 210 215 220  
 Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg  
 225 230 235

<210> 25  
 <211> 232  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Construct

## 159792014140SEQLIST.TXT

&lt;400&gt; 25

```

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
 1           5           10           15
Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
 20           25           30
Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
 35           40           45
Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
 50           55           60
Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
 65           70           75           80
Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
 85           90           95
Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
100          105          110
Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
115          120          125
Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
130          135          140
Pro Leu Glu Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Ile Gly Lys
145          150          155          160
Lys Gly Lys Gln Pro Ala Arg Lys Arg Leu Asn Phe Glu Glu Asp Thr
165          170          175
Gly Ala Gly Asp Gly Pro Pro Glu Gly Ser Asp Thr Ser Ala Met Ser
180          185          190
Ser Asp Ile Glu Met Arg Ala Ala Pro Gly Gly Asn Ala Val Asp Ala
195          200          205
Gly Gln Gly Ser Asp Gly Val Gly Asn Ala Ser Gly Asp Trp His Cys
210          215          220
Asp Ser Thr Trp Ser Glu Gly Lys
225          230

```

&lt;210&gt; 26

&lt;211&gt; 241

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Construct

&lt;400&gt; 26

```

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
 1           5           10           15
Glu Gly Ile Arg Glu Trp Trp Ala Leu Lys Pro Gly Ala Pro Gln Pro
 20           25           30
Lys Ala Asn Gln Gln His Gln Asp Asn Gly Arg Gly Leu Val Leu Pro
 35           40           45
Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
 50           55           60
Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp

```

159792014140SEQLIST.TXT

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     | 80  |     |
| Lys | Gln | Leu | Glu | Gln | Gly | Asp | Asn | Pro | Tyr | Leu | Lys | Tyr | Asn | His | Ala |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Asp | Ala | Glu | Phe | Gln | Gln | Arg | Leu | Ala | Thr | Asp | Thr | Ser | Phe | Gly | Gly |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Asn | Leu | Gly | Arg | Ala | Val | Phe | Gln | Ala | Lys | Lys | Arg | Ile | Leu | Glu | Pro |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |
| Leu | Gly | Leu | Val | Glu | Glu | Gly | Val | Lys | Thr | Ala | Pro | Gly | Lys | Lys | Arg |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Pro | Leu | Glu | Lys | Thr | Pro | Asn | Arg | Pro | Thr | Asn | Pro | Asp | Ser | Gly | Lys |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     | 160 |     |
| Ala | Pro | Ala | Lys | Lys | Lys | Gln | Lys | Asp | Gly | Glu | Pro | Ala | Asp | Ser | Ala |
|     |     |     |     | 165 |     |     |     | 170 |     |     |     |     | 175 |     |     |
| Arg | Arg | Thr | Leu | Asp | Phe | Glu | Asp | Ser | Gly | Ala | Gly | Asp | Gly | Pro | Pro |
|     |     |     | 180 |     |     |     | 185 |     |     |     |     | 190 |     |     |     |
| Glu | Gly | Ser | Ser | Ser | Gly | Glu | Met | Ser | His | Asp | Ala | Glu | Met | Arg | Ala |
|     |     | 195 |     |     |     |     | 200 |     |     |     | 205 |     |     |     |     |
| Ala | Pro | Gly | Gly | Asn | Ala | Val | Glu | Ala | Gly | Gln | Gly | Ala | Asp | Gly | Val |
|     | 210 |     |     |     |     | 215 |     |     |     | 220 |     |     |     |     |     |
| Gly | Asn | Ala | Ser | Gly | Asp | Trp | His | Cys | Asp | Ser | Thr | Trp | Ser | Glu | Gly |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     | 240 |     |
| Arg |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

<210> 27  
 <211> 232  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Construct

<400> 27

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Thr | Asp | Gly | Tyr | Leu | Pro | Asp | Trp | Leu | Glu | Asp | Asn | Leu | Ser | Glu |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     | 15  |     |     |
| Gly | Val | Arg | Glu | Trp | Trp | Ala | Leu | Gln | Pro | Gly | Ala | Pro | Lys | Pro | Lys |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     | 30  |     |     |     |
| Ala | Asn | Gln | Gln | His | Gln | Asp | Asn | Ala | Arg | Gly | Leu | Val | Leu | Pro | Gly |
|     |     | 35  |     |     |     | 40  |     |     |     |     | 45  |     |     |     |     |
| Tyr | Lys | Tyr | Leu | Gly | Pro | Gly | Asn | Gly | Leu | Asp | Lys | Gly | Glu | Pro | Val |
|     | 50  |     |     |     | 55  |     |     |     | 60  |     |     |     |     |     |     |
| Asn | Ala | Ala | Asp | Ala | Ala | Ala | Leu | Glu | His | Asp | Lys | Ala | Tyr | Asp | Gln |
| 65  |     |     |     | 70  |     |     |     | 75  |     |     |     |     | 80  |     |     |
| Gln | Leu | Lys | Ala | Gly | Asp | Asn | Pro | Tyr | Leu | Lys | Tyr | Asn | His | Ala | Asp |
|     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |     |
| Ala | Glu | Phe | Gln | Gln | Arg | Leu | Gln | Gly | Asp | Thr | Ser | Phe | Gly | Gly | Asn |
|     |     | 100 |     |     |     |     |     | 105 |     |     |     | 110 |     |     |     |
| Leu | Gly | Arg | Ala | Val | Phe | Gln | Ala | Lys | Lys | Arg | Val | Leu | Glu | Pro | Leu |
|     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |     |
| Gly | Leu | Val | Glu | Gln | Ala | Gly | Glu | Thr | Ala | Pro | Gly | Lys | Lys | Arg | Pro |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |

159792014140SEQLIST.TXT

```

Leu Ile Glu Ser Pro Gln Gln Pro Asp Ser Ser Thr Gly Ile Gly Lys
145           150           155           160
Lys Gly Lys Gln Pro Ala Lys Lys Lys Leu Val Phe Glu Asp Glu Thr
           165           170           175
Gly Ala Gly Asp Gly Pro Pro Glu Gly Ser Thr Ser Gly Ala Met Ser
           180           185           190
Asp Asp Ser Glu Met Arg Ala Ala Ala Gly Gly Ala Ala Val Glu Gly
           195           200           205
Gly Gln Gly Ala Asp Gly Val Gly Asn Ala Ser Gly Asp Trp His Cys
           210           215           220
Asp Ser Thr Trp Ser Glu Gly His
225           230

```

<210> 28

<211> 228

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 28

```

Met Ser Phe Val Asp His Pro Pro Asp Trp Leu Glu Glu Val Gly Glu
1           5           10           15
Gly Leu Arg Glu Phe Leu Gly Leu Glu Ala Gly Pro Pro Lys Pro Lys
           20           25           30
Pro Asn Gln Gln His Gln Asp Gln Ala Arg Gly Leu Val Leu Pro Gly
           35           40           45
Tyr Asn Tyr Leu Gly Pro Gly Asn Gly Leu Asp Arg Gly Glu Pro Val
           50           55           60
Asn Arg Ala Asp Glu Val Ala Arg Glu His Asp Ile Ser Tyr Asn Glu
65           70           75           80
Gln Leu Glu Ala Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala Asp
           85           90           95
Ala Glu Phe Gln Glu Lys Leu Ala Asp Thr Ser Phe Gly Gly Asn
           100          105          110
Leu Gly Lys Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro Phe
           115          120          125
Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Thr Gly Lys Arg Ile
           130          135          140
Asp Asp His Phe Pro Lys Arg Lys Lys Ala Arg Thr Glu Glu Asp Ser
145          150          155          160
Lys Pro Ser Thr Ser Ser Asp Ala Glu Ala Gly Pro Ser Gly Ser Gln
           165          170          175
Gln Leu Gln Ile Pro Ala Gln Pro Ala Ser Ser Leu Gly Ala Asp Thr
           180          185          190
Met Ser Ala Gly Gly Gly Gly Pro Leu Gly Asp Asn Asn Gln Gly Ala
           195          200          205
Asp Gly Val Gly Asn Ala Ser Gly Asp Trp His Cys Asp Ser Thr Trp
           210          215          220
Met Gly Asp Arg

```

225

&lt;210&gt; 29

&lt;211&gt; 238

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Construct

&lt;400&gt; 29

```

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
 1           5           10           15
Glu Gly Ile Arg Glu Trp Trp Ala Leu Lys Pro Gly Ala Pro Gln Pro
          20           25           30
Lys Ala Asn Gln Gln His Gln Asp Asn Ala Arg Gly Leu Val Leu Pro
          35           40           45
Gly Tyr Lys Tyr Leu Gly Pro Gly Asn Gly Leu Asp Lys Gly Glu Pro
 50           55           60
Val Asn Ala Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65           70           75           80
Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
          85           90           95
Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
          100          105          110
Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Leu Leu Glu Pro
          115          120          125
Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
          130          135          140
Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ala Gly Ile Gly
145          150          155          160
Lys Ser Gly Ala Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr
          165          170          175
Gly Asp Thr Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro Pro
          180          185          190
Ala Ala Pro Ser Gly Val Gly Ser Leu Thr Met Ala Ser Gly Gly Gly
          195          200          205
Ala Pro Val Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser Ser
          210          215          220
Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg
225          230          235

```

&lt;210&gt; 30

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Construct

159792014140SEQLIST.TXT

<220>

<221> VARIANT

<222> 24, 148, 151, 152, 154, 155, 168, 169, 170, 171, 172, 208, 209

<223> Xaa = Any Amino Acid

<400> 30

```

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
 1           5           10           15
Glu Gly Ile Arg Glu Trp Trp Xaa Leu Lys Pro Gly Ala Pro Lys Pro
          20           25           30
Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
          35           40           45
Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
          50           55           60
Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65           70           75           80
Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
          85           90           95
Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
          100          105          110
Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
          115          120          125
Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
          130          135          140
Pro Val Glu Xaa Ser Pro Xaa Xaa Gln Xaa Xaa Pro Asp Ser Ser Ser
145          150          155          160
Gly Ile Gly Lys Lys Gly Gln Xaa Xaa Xaa Xaa Xaa Gln Pro Ala Lys
          165          170          175
Lys Arg Leu Asn Phe Gly Gln Thr Gly Asp Ser Glu Ser Val Pro Asp
          180          185          190
Pro Gln Pro Leu Gly Glu Pro Pro Ala Ala Pro Ser Gly Leu Gly Xaa
          195          200          205
Xaa Thr Met Ala Ala Gly Gly Gly Ala Pro Met Ala Asp Asn Asn Glu
          210          215          220
Gly Ala Asp Gly Val Gly Asn Ala Ser Gly Asn Trp His Cys Asp Ser
225          230          235          240
Thr Trp Leu Gly Asp Arg
          245

```

<210> 31

<211> 61

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 31

```

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
 1           5           10           15

```

159792014140SEQLIST.TXT

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro  
 20 25 30  
 Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro  
 35 40 45  
 Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys  
 50 55 60

<210> 32  
 <211> 61  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Construct

<400> 32  
 Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser  
 1 5 10 15  
 Glu Gly Ile Arg Glu Trp Trp Ala Leu Lys Pro Gly Ala Pro Lys Pro  
 20 25 30  
 Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro  
 35 40 45  
 Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys  
 50 55 60

<210> 33  
 <211> 61  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Construct

<400> 33  
 Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser  
 1 5 10 15  
 Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro  
 20 25 30  
 Lys Ala Asn Gln Gln Lys Gln Asp Asn Gly Arg Gly Leu Val Leu Pro  
 35 40 45  
 Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys  
 50 55 60

<210> 34  
 <211> 61  
 <212> PRT  
 <213> Artificial Sequence

<220>

&lt;223&gt; Synthetic Construct

&lt;400&gt; 34

```

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
 1           5           10           15
Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro
      20           25           30
Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
      35           40           45
Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys
 50           55           60

```

&lt;210&gt; 35

&lt;211&gt; 61

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Construct

&lt;400&gt; 35

```

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
 1           5           10           15
Glu Gly Ile Arg Glu Trp Trp Ala Leu Lys Pro Gly Val Pro Gln Pro
      20           25           30
Lys Ala Asn Gln Gln His Gln Asp Asn Arg Arg Gly Leu Val Leu Pro
      35           40           45
Gly Tyr Lys Tyr Leu Gly Pro Gly Asn Gly Leu Asp Lys
 50           55           60

```

&lt;210&gt; 36

&lt;211&gt; 61

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Synthetic Construct

&lt;400&gt; 36

```

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
 1           5           10           15
Glu Gly Ile Arg Glu Trp Trp Ala Leu Lys Pro Gly Ala Pro Gln Pro
      20           25           30
Lys Lys Ala Asn Gln Gln His Gln Asp Asn Gly Arg Gly Leu Val Leu
      35           40           45
Pro Gly Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys
 50           55           60

```

&lt;210&gt; 37

<211> 60  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Construct

<400> 37  
 Met Thr Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser Glu  
 1 5 10 15  
 Gly Val Arg Glu Trp Trp Ala Leu Gln Pro Gly Ala Pro Lys Pro Lys  
 20 25 30  
 Ala Asn Gln Gln His Gln Asp Asn Ala Arg Gly Leu Val Leu Pro Gly  
 35 40 45  
 Tyr Lys Tyr Leu Gly Pro Gly Asn Gly Leu Asp Lys  
 50 55 60

<210> 38  
 <211> 60  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Construct

<400> 38  
 Met Ser Phe Val Asp His Pro Pro Asp Trp Leu Glu Glu Val Gly Glu  
 1 5 10 15  
 Gly Leu Arg Glu Phe Leu Gly Leu Glu Ala Gly Pro Pro Lys Pro Lys  
 20 25 30  
 Pro Asn Gln Gln His Gln Asp Gln Ala Arg Gly Leu Val Leu Pro Gly  
 35 40 45  
 Tyr Asn Tyr Leu Gly Pro Gly Asn Gly Leu Asp Arg  
 50 55 60

<210> 39  
 <211> 61  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Synthetic Construct

<400> 39  
 Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser  
 1 5 10 15  
 Glu Gly Ile Arg Glu Trp Trp Ala Leu Lys Pro Gly Ala Pro Gln Pro  
 20 25 30  
 Lys Ala Asn Gln Gln His Gln Asp Asn Ala Arg Gly Leu Val Leu Pro  
 35 40 45

Gly Tyr Lys Tyr Leu Gly Pro Gly Asn Gly Leu Asp Lys  
 50 55 60

<210> 40

<211> 61

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<220>

<221> VARIANT

<222> 24

<223> Xaa = Any Amino Acid

<400> 40

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser  
 1 5 10 15  
 Glu Gly Ile Arg Glu Trp Trp Xaa Leu Lys Pro Gly Ala Pro Lys Pro  
 20 25 30  
 Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro  
 35 40 45  
 Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys  
 50 55 60