SEQUENCE LISTING

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Visel, Meike
Byrne, Leah C.T.

<120> Adeno-Associated Virus Virions with Variant Capsid and Methods of Use Thereof

<130> BERK-160WO

<150> 61/478,355
<151> 2011-04-22

<160> 64

<170> PatentIn version 3.5

<210> 1
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<212> PRT
<213> Adeno-associated virus-2

<400> 1

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Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
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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
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Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
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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
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Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
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Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
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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
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Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
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Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
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<212> PRT
<213> Adeno-associated virus-2

<400> 2

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Gly Asn Arg Gln Ala Ala Thr Ala Asp Val Asn Thr Gln Gly Val Leu
            20                  25                  30


Pro Gly Met Val Trp Gln Asp Arg Asp Val
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<210> 3
<211> 42
<212> PRT
<213> Adeno-associated virus-AAV-1

<400> 3

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


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


Pro Gly Met Val Trp Gln Asp Arg Asp Val
        35                  40
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<210> 4
<211> 42
<212> PRT
<213> Adeno-associated virus-5

<400> 4

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Arg Val Ala Tyr Asn Val Gly Gly Gln Met Ala Thr Asn Asn Gln Ser
1               5                   10                  15


Ser Thr Thr Ala Pro Ala Thr Gly Thr Tyr Asn Leu Gln Glu Ile Val
            20                  25                  30


Pro Gly Ser Val Trp Met Glu Arg Asp Val
        35                  40
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<211> 42

<212> PRT
<213> Adeno-associated virus-AAV-6

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Pro Val Ala Thr Glu Arg Phe Gly Thr Val Ala Val Asn Leu Gln Ser
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Ser Ser Thr Asp Pro Ala Thr Gly Asp Val His Val Met Gly Ala Leu
20 25 30

Pro Gly Met Val Trp Gln Asp Arg Asp Val
35 40

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<212> PRT
<213> Adeno-associated virus-AAV-

<400> 6

Pro Val Ala Thr Glu Glu Tyr Gly Ile Val Ser Ser Asn Leu Gln Ala
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Ala Asn Thr Ala Ala Gln Thr Gln Val Val Asn Asn Gln Gly Ala Leu
20 25 30

Pro Gly Met Val Trp Gln Asn Arg Asp Val
35 40

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<211> 42
<212> PRT
<213> Adeno-associated virus-AAV-8

<400> 7

Pro Val Ala Thr Glu Glu Tyr Gly Ile Val Ala Asp Asn Leu Gln Gln
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Gln Asn Thr Ala Pro Gln Ile Gly Thr Val Asn Ser Gln Gly Ala Leu
20 25 30

Pro Gly Met Val Trp Gln Asn Arg Asp Val
35 40

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<211> 42
<212> PRT
<213> Adeno-associated virus-AAV-9

<400> 8

Pro Val Ala Thr Glu Ser Tyr Gly Gln Val Ala Thr Asn His Gln Ser
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Ala Gln Ala Gln Ala Gln Thr Gly Trp Val Gln Asn Gln Gly Ile Leu
20 25 30

Pro Gly Met Val Trp Gln Asp Arg Asp Val
35 40

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<212> PRT
<213> Adeno-associated virus-AAV-10

<400> 9

Pro Val Ala Thr Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln
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Ala Asn Thr Gly Pro Ile Val Gly Asn Val Asn Ser Gln Gly Ala Leu
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Pro Gly Met Val Trp Gln Asn Arg Asp Val
35 40

<210> 10
<211> 224
<212> PRT
<213> Homo sapiens

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Met Ser Arg Lys Ile Glu Gly Phe Leu Leu Leu Leu Leu Phe Gly Tyr
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Glu Ala Thr Leu Gly Leu Ser Ser Thr Glu Asp Glu Gly Glu Asp Pro
20 25 30

Trp Tyr Gln Lys Ala Cys Lys Cys Asp Cys Gln Gly Gly Pro Asn Ala
35 40 45

Leu Trp Ser Ala Gly Ala Thr Ser Leu Asp Cys Ile Pro Glu Cys Pro
50 55 60

Tyr His Lys Pro Leu Gly Phe Glu Ser Gly Glu Val Thr Pro Asp Gln
65 70 75 80

Ile Thr Cys Ser Asn Pro Glu Gln Tyr Val Gly Trp Tyr Ser Ser Trp
85 90 95

Thr Ala Asn Lys Ala Arg Leu Asn Ser Gln Gly Phe Gly Cys Ala Trp
100 105 110

Leu Ser Lys Phe Gln Asp Ser Ser Gln Trp Leu Gln Ile Asp Leu Lys
115 120 125

Glu Ile Lys Val Ile Ser Gly Ile Leu Thr Gln Gly Arg Cys Asp Ile
130 135 140

Asp Glu Trp Met Thr Lys Tyr Ser Val Gln Tyr Arg Thr Asp Glu Arg
145 150 155 160

Leu Asn Trp Ile Tyr Tyr Lys Asp Gln Thr Gly Asn Asn Arg Val Phe
165 170 175

Tyr Gly Asn Ser Asp Arg Thr Ser Thr Val Gln Asn Leu Leu Arg Pro
180 185 190

Pro Ile Ile Ser Arg Phe Ile Arg Leu Ile Pro Leu Gly Trp His Val
195 200 205

Arg Ile Ala Ile Arg Met Glu Leu Leu Glu Cys Val Ser Lys Cys Ala
210 215 220

<210> 11
<211> 247
<212> PRT
<213> Homo sapiens

<400> 11

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Lys Ala Ala Pro Met Lys Glu Ala Asn Ile Arg Gly Gln Gly Gly Leu
20 25 30

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

Pro Lys Ala Gly Ser Arg Gly Leu Thr Ser Leu Ala Asp Thr Phe Glu
50 55 60

His Val Ile Glu Glu Leu Leu Asp Glu Asp His Lys Val Arg Pro Asn
65 70 75 80

Glu Glu Asn Asn Lys Asp Ala Asp Leu Tyr Thr Ser Arg Val Met Leu
85 90 95

Ser Ser Gln Val Pro Leu Glu Pro Pro Leu Leu Phe Leu Leu Glu Glu
100 105 110

Tyr Lys Asn Tyr Leu Asp Ala Ala Asn Met Ser Met Met Val Leu Arg
115 120 125

His Ser Asp Pro Ala Arg Arg Gly Glu Leu Ser Val Cys Asp Ser Ile
130 135 140

Ser Glu Trp Val Thr Ala Ala Asp Lys Lys Thr Ala Val Asp Met Ser
145 150 155 160

Gly Gly Thr Val Thr Val Leu Glu Lys Val Pro Val Ser Lys Gly Gln

165 170 175

Leu Lys Gln Tyr Phe Tyr Glu Thr Lys Cys Asn Pro Met Gly Tyr Thr
180 185 190

Lys Glu Gly Cys Arg Gly Ile Asp Lys Arg His Trp Asn Ser Gln Cys
195 200 205

Arg Thr Thr Gln Ser Tyr Val Arg Ala Leu Thr Met Asp Ser Lys Lys
210 215 220

Arg Ile Gly Trp Arg Phe Ile Arg Ile Asp Thr Ser Cys Val Cys Thr
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Leu Thr Ile Lys Arg Gly Arg
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<210> 12
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<212> PRT
<213> Homo sapiens

<400> 12

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20 25 30

Arg Ile Pro Leu Trp Leu Thr Gly Ser Leu Leu Arg Cys Gly Pro Gly
35 40 45

Leu Phe Glu Val Gly Ser Glu Pro Phe Tyr His Leu Phe Asp Gly Gln
50 55 60

Ala Leu Leu His Lys Phe Asp Phe Lys Glu Gly His Val Thr Tyr His
65 70 75 80

Arg Arg Phe Ile Arg Thr Asp Ala Tyr Val Arg Ala Met Thr Glu Lys
85 90 95

Arg Ile Val Ile Thr Glu Phe Gly Thr Cys Ala Phe Pro Asp Pro Cys
100 105 110

Lys Asn Ile Phe Ser Arg Phe Phe Ser Tyr Phe Arg Gly Val Glu Val
115 120 125

Thr Asp Asn Ala Leu Val Asn Val Tyr Pro Val Gly Glu Asp Tyr Tyr
130 135 140

Ala Cys Thr Glu Thr Asn Phe Ile Thr Lys Ile Asn Pro Glu Thr Leu
145 150 155 160

```
Glu Thr Ile Lys Gln Val Asp Leu Cys Asn Tyr Val Ser Val Asn Gly
                165                 170                 175

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

Gly Asn Cys Phe Gly Lys Asn Phe Ser Ile Ala Tyr Asn Ile Val Lys
        195                 200                 205

Ile Pro Pro Leu Gln Ala Asp Lys Glu Asp Pro Ile Ser Lys Ser Glu
    210                 215                 220

Ile Val Val Gln Phe Pro Cys Ser Asp Arg Phe Lys Pro Ser Tyr Val
225                 230                 235                 240

His Ser Phe Gly Leu Thr Pro Asn Tyr Ile Val Phe Val Glu Thr Pro
                245                 250                 255

Val Lys Ile Asn Leu Phe Lys Phe Leu Ser Ser Trp Ser Leu Trp Gly
            260                 265                 270

Ala Asn Tyr Met Asp Cys Phe Glu Ser Asn Glu Thr Met Gly Val Trp
        275                 280                 285

Leu His Ile Ala Asp Lys Lys Arg Lys Lys Tyr Leu Asn Asn Lys Tyr
    290                 295                 300

Arg Thr Ser Pro Phe Asn Leu Phe His His Ile Asn Thr Tyr Glu Asp
305                 310                 315                 320

Asn Gly Phe Leu Ile Val Asp Leu Cys Cys Trp Lys Gly Phe Glu Phe
                325                 330                 335

Val Tyr Asn Tyr Leu Tyr Leu Ala Asn Leu Arg Glu Asn Trp Glu Glu
            340                 345                 350

Val Lys Lys Asn Ala Arg Lys Ala Pro Gln Pro Glu Val Arg Arg Tyr
        355                 360                 365

Val Leu Pro Leu Asn Ile Asp Lys Ala Asp Thr Gly Lys Asn Leu Val
    370                 375                 380

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

Ile Trp Leu Glu Pro Glu Val Leu Phe Ser Gly Pro Arg Gln Ala Phe
                405                 410                 415

Glu Phe Pro Gln Ile Asn Tyr Gln Lys Tyr Cys Gly Lys Pro Tyr Thr
            420                 425                 430
```

```
Tyr Ala Tyr Gly Leu Gly Leu Asn His Phe Val Pro Asp Arg Leu Cys
        435                 440                 445

Lys Leu Asn Val Lys Thr Lys Glu Thr Trp Val Trp Gln Glu Pro Asp
    450                 455                 460

Ser Tyr Pro Ser Glu Pro Ile Phe Val Ser His Pro Asp Ala Leu Glu
465                 470                 475                 480

Glu Asp Asp Gly Val Val Leu Ser Val Val Val Ser Pro Gly Ala Gly
                485                 490                 495

Gln Lys Pro Ala Tyr Leu Leu Ile Leu Asn Ala Lys Asp Leu Ser Glu
            500                 505                 510

Val Ala Arg Ala Glu Val Glu Ile Asn Ile Pro Val Thr Phe His Gly
        515                 520                 525

Leu Phe Lys Lys Ser
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<212> PRT
<213> Artificial sequence

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<223> Synthetic peptide

<400> 13

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<210> 14
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic peptide

<400> 14

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<210> 15
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic peptide

<400> 15

Lys Ala Gly Gln Ala Asn Asn
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<210> 16
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic peptide

<400> 16

Lys Asp Pro Lys Thr Thr Asn
1 5

<210> 17
<211> 27
<212> RNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 17
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<210> 18
<211> 5541
<212> DNA
<213> Artificial sequence

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<223> Synthetic construct

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gcgtcagcaa gtgtgcctga a 5541

<210> 19
<211> 346
<212> PRT
<213> Homo sapiens

<400> 19

Met Ala Leu Leu Lys Val Lys Phe Asp Gln Lys Lys Arg Val Lys Leu
1 5 10 15

Ala Gln Gly Leu Trp Leu Met Asn Trp Phe Ser Val Leu Ala Gly Ile
20 25 30

Ile Ile Phe Ser Leu Gly Leu Phe Leu Lys Ile Glu Leu Arg Lys Arg
35 40 45

Ser Asp Val Met Asn Asn Ser Glu Ser His Phe Val Pro Asn Ser Leu
50 55 60

Ile Gly Met Gly Val Leu Ser Cys Val Phe Asn Ser Leu Ala Gly Lys
65 70 75 80

Ile Cys Tyr Asp Ala Leu Asp Pro Ala Lys Tyr Ala Arg Trp Lys Pro
85 90 95

Trp Leu Lys Pro Tyr Leu Ala Ile Cys Val Leu Phe Asn Ile Ile Leu
100 105 110

Phe Leu Val Ala Leu Cys Cys Phe Leu Leu Arg Gly Ser Leu Glu Asn
115 120 125

Thr Leu Gly Gln Gly Leu Lys Asn Gly Met Lys Tyr Tyr Arg Asp Thr
130 135 140

Asp Thr Pro Gly Arg Cys Phe Met Lys Lys Thr Ile Asp Met Leu Gln
145 150 155 160

```
Ile Glu Phe Lys Cys Cys Gly Asn Asn Gly Phe Arg Asp Trp Phe Glu
                165                 170                 175

Ile Gln Trp Ile Ser Asn Arg Tyr Leu Asp Phe Ser Ser Lys Glu Val
            180                 185                 190

Lys Asp Arg Ile Lys Ser Asn Val Asp Gly Arg Tyr Leu Val Asp Gly
        195                 200                 205

Val Pro Phe Ser Cys Cys Asn Pro Ser Ser Pro Arg Pro Cys Ile Gln
    210                 215                 220

Tyr Gln Ile Thr Asn Asn Ser Ala His Tyr Ser Tyr Asp His Gln Thr
225                 230                 235                 240

Glu Glu Leu Asn Leu Trp Val Arg Gly Cys Arg Ala Ala Leu Leu Ser
                245                 250                 255

Tyr Tyr Ser Ser Leu Met Asn Ser Met Gly Val Val Thr Leu Leu Ile
            260                 265                 270

Trp Leu Phe Glu Val Thr Ile Thr Ile Gly Leu Arg Tyr Leu Gln Thr
        275                 280                 285

Ser Leu Asp Gly Val Ser Asn Pro Glu Glu Ser Glu Ser Glu Ser Gln
    290                 295                 300

Gly Trp Leu Leu Glu Arg Ser Val Pro Glu Thr Trp Lys Ala Phe Leu
305                 310                 315                 320

Glu Ser Val Lys Lys Leu Gly Lys Gly Asn Gln Val Glu Ala Glu Gly
                325                 330                 335

Ala Asp Ala Gly Gln Ala Pro Glu Ala Gly
            340                 345


<210>  20
<211>  470
<212>  PRT
<213>  Homo sapiens

<400>  20

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

Tyr Arg Arg Thr Phe Gly Pro Pro Pro Ser Leu Ser Pro Gly Ala Phe
            20                  25                  30

Ser Tyr Ser Ser Ser Ser Arg Phe Ser Ser Ser Arg Leu Leu Gly Ser
        35                  40                  45
```

```
Ala Ser Pro Ser Ser Ser Val Arg Leu Gly Ser Phe Arg Ser Pro Arg
    50                  55                  60

Ala Gly Ala Gly Ala Leu Leu Arg Leu Pro Ser Glu Arg Leu Asp Phe
65                  70                  75                  80

Ser Met Ala Glu Ala Leu Asn Gln Glu Phe Leu Ala Thr Arg Ser Asn
                85                  90                  95

Glu Lys Gln Glu Leu Gln Glu Leu Asn Asp Arg Phe Ala Asn Phe Ile
            100                 105                 110

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

Leu Ser Gln Ala Arg Gly Gln Glu Pro Ala Arg Ala Asp Gln Leu Cys
    130                 135                 140

Gln Gln Glu Leu Arg Glu Leu Arg Arg Glu Leu Glu Leu Leu Gly Arg
145                 150                 155                 160

Glu Arg Asp Arg Val Gln Val Glu Arg Asp Gly Leu Ala Glu Asp Leu
                165                 170                 175

Ala Ala Leu Lys Gln Arg Leu Glu Glu Glu Thr Arg Lys Arg Glu Asp
            180                 185                 190

Ala Glu His Asn Leu Val Leu Phe Arg Lys Asp Val Asp Asp Ala Thr
        195                 200                 205

Leu Ser Arg Leu Glu Leu Glu Arg Lys Ile Glu Ser Leu Met Asp Glu
    210                 215                 220

Ile Glu Phe Leu Lys Lys Leu His Glu Glu Glu Leu Arg Asp Leu Gln
225                 230                 235                 240

Val Ser Val Glu Ser Gln Gln Val Gln Gln Val Glu Val Glu Ala Thr
                245                 250                 255

Val Lys Pro Glu Leu Thr Ala Ala Leu Arg Asp Ile Arg Ala Gln Tyr
            260                 265                 270

Glu Ser Ile Ala Ala Lys Asn Leu Gln Glu Ala Glu Glu Trp Tyr Lys
        275                 280                 285

Ser Lys Tyr Ala Asp Leu Ser Asp Ala Ala Asn Arg Asn His Glu Ala
    290                 295                 300

Leu Arg Gln Ala Lys Gln Glu Met Asn Glu Ser Arg Arg Gln Ile Gln
305                 310                 315                 320
```

```
Ser Leu Thr Cys Glu Val Asp Gly Leu Arg Gly Thr Asn Glu Ala Leu
                325                 330                 335

Leu Arg Gln Leu Arg Glu Leu Glu Glu Gln Phe Ala Leu Glu Ala Gly
            340                 345                 350

Gly Tyr Gln Ala Gly Ala Ala Arg Leu Glu Glu Glu Leu Arg Gln Leu
        355                 360                 365

Lys Glu Glu Met Ala Arg His Leu Arg Glu Tyr Gln Glu Leu Leu Asn
    370                 375                 380

Val Lys Met Ala Leu Asp Ile Glu Ile Ala Thr Tyr Arg Lys Leu Leu
385                 390                 395                 400

Glu Gly Glu Glu Ser Arg Ile Ser Val Pro Val His Ser Phe Ala Ser
                405                 410                 415

Leu Asn Ile Lys Thr Thr Val Pro Glu Val Glu Pro Pro Gln Asp Ser
            420                 425                 430

His Ser Arg Lys Thr Val Leu Ile Lys Thr Ile Glu Thr Arg Asn Gly
        435                 440                 445

Glu Val Val Thr Glu Ser Gln Lys Glu Gln Arg Ser Glu Leu Asp Lys
    450                 455                 460

Ser Ser Ala His Ser Tyr
465                 470


<210>  21
<211>  1286
<212>  PRT
<213>  Homo sapiens

<400>  21

Met Ser His Leu Val Asp Pro Thr Ser Gly Asp Leu Pro Val Arg Asp
1               5                   10                  15

Ile Asp Ala Ile Pro Leu Val Leu Pro Ala Ser Lys Gly Lys Asn Met
            20                  25                  30

Lys Thr Gln Pro Pro Leu Ser Arg Met Asn Arg Glu Glu Leu Glu Asp
        35                  40                  45

Ser Phe Phe Arg Leu Arg Glu Asp His Met Leu Val Lys Glu Leu Ser
    50                  55                  60

Trp Lys Gln Gln Asp Glu Ile Lys Arg Leu Arg Thr Thr Leu Leu Arg
65                  70                  75                  80

Leu Thr Ala Ala Gly Arg Asp Leu Arg Val Ala Glu Glu Ala Ala Pro
```

85 90 95

Leu Ser Glu Thr Ala Arg Arg Gly Gln Lys Ala Gly Trp Arg Gln Arg
100 105 110

Leu Ser Met His Gln Arg Pro Gln Met His Arg Leu Gln Gly His Phe
115 120 125

His Cys Val Gly Pro Ala Ser Pro Arg Arg Ala Gln Pro Arg Val Gln
130 135 140

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

Pro Lys Arg Gly Pro Arg Asp Arg Leu Ser Tyr Thr Ala Pro Pro Ser
165 170 175

Phe Lys Glu His Ala Thr Asn Glu Asn Arg Gly Glu Val Ala Ser Lys
180 185 190

Pro Ser Glu Leu Val Ser Gly Ser Asn Ser Ile Ile Ser Phe Ser Ser
195 200 205

Val Ile Ser Met Ala Lys Pro Ile Gly Leu Cys Met Pro Asn Ser Ala
210 215 220

His Ile Met Ala Ser Asn Thr Met Gln Val Glu Glu Pro Pro Lys Ser
225 230 235 240

Pro Glu Lys Met Trp Pro Lys Asp Glu Asn Phe Glu Gln Arg Ser Ser
245 250 255

Leu Glu Cys Ala Gln Lys Ala Ala Glu Leu Arg Ala Ser Ile Lys Glu
260 265 270

Lys Val Glu Leu Ile Arg Leu Lys Lys Leu Leu His Glu Arg Asn Ala
275 280 285

Ser Leu Val Met Thr Lys Ala Gln Leu Thr Glu Val Gln Glu Ala Tyr
290 295 300

Glu Thr Leu Leu Gln Lys Asn Gln Gly Ile Leu Ser Ala Ala His Glu
305 310 315 320

Ala Leu Leu Lys Gln Val Asn Glu Leu Arg Ala Glu Leu Lys Glu Glu
325 330 335

Ser Lys Lys Ala Val Ser Leu Lys Ser Gln Leu Glu Asp Val Ser Ile
340 345 350

Leu Gln Met Thr Leu Lys Glu Phe Gln Glu Arg Val Glu Asp Leu Glu

```
        355                 360                 365

Lys Glu Arg Lys Leu Leu Asn Asp Asn Tyr Asp Lys Leu Leu Glu Ser
    370                 375                 380

Met Leu Asp Ser Ser Asp Ser Ser Ser Gln Pro His Trp Ser Asn Glu
385                 390                 395                 400

Leu Ile Ala Glu Gln Leu Gln Gln Gln Val Ser Gln Leu Gln Asp Gln
                405                 410                 415

Leu Asp Ala Glu Leu Glu Asp Lys Arg Lys Val Leu Leu Glu Leu Ser
            420                 425                 430

Arg Glu Lys Ala Gln Asn Glu Asp Leu Lys Leu Glu Val Thr Asn Ile
        435                 440                 445

Leu Gln Lys His Lys Gln Glu Val Glu Leu Leu Gln Asn Ala Ala Thr
    450                 455                 460

Ile Ser Gln Pro Pro Asp Arg Gln Ser Glu Pro Ala Thr His Pro Ala
465                 470                 475                 480

Val Leu Gln Glu Asn Thr Gln Ile Glu Pro Ser Glu Pro Lys Asn Gln
                485                 490                 495

Glu Glu Lys Lys Leu Ser Gln Val Leu Asn Glu Leu Gln Val Ser His
            500                 505                 510

Ala Glu Thr Thr Leu Glu Leu Glu Lys Thr Arg Asp Met Leu Ile Leu
        515                 520                 525

Gln Arg Lys Ile Asn Val Cys Tyr Gln Glu Glu Leu Glu Ala Met Met
    530                 535                 540

Thr Lys Ala Asp Asn Asp Asn Arg Asp His Lys Glu Lys Leu Glu Arg
545                 550                 555                 560

Leu Thr Arg Leu Leu Asp Leu Lys Asn Asn Arg Ile Lys Gln Leu Glu
                565                 570                 575

Gly Ile Leu Arg Ser His Asp Leu Pro Thr Ser Glu Gln Leu Lys Asp
            580                 585                 590

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

Ala His Gly Asp Glu Asp Lys Val Asp Ile Ser Leu Leu His Gln Gly
    610                 615                 620

Glu Asn Leu Phe Glu Leu His Ile His Gln Ala Phe Leu Thr Ser Ala
```

625 630 635 640

Ala Leu Ala Gln Ala Gly Asp Thr Gln Pro Thr Thr Phe Cys Thr Tyr
645 650 655

Ser Phe Tyr Asp Phe Glu Thr His Cys Thr Pro Leu Ser Val Gly Pro
660 665 670

Gln Pro Leu Tyr Asp Phe Thr Ser Gln Tyr Val Met Glu Thr Asp Ser
675 680 685

Leu Phe Leu His Tyr Leu Gln Glu Ala Ser Ala Arg Leu Asp Ile His
690 695 700

Gln Ala Met Ala Ser Glu His Ser Thr Leu Ala Ala Gly Trp Ile Cys
705 710 715 720

Phe Asp Arg Val Leu Glu Thr Val Glu Lys Val His Gly Leu Ala Thr
725 730 735

Leu Ile Gly Ala Gly Gly Glu Glu Phe Gly Val Leu Glu Tyr Trp Met
740 745 750

Arg Leu Arg Phe Pro Ile Lys Pro Ser Leu Gln Ala Cys Asn Lys Arg
755 760 765

Lys Lys Ala Gln Val Tyr Leu Ser Thr Asp Val Leu Gly Gly Arg Lys
770 775 780

Ala Gln Glu Glu Glu Phe Arg Ser Glu Ser Trp Glu Pro Gln Asn Glu
785 790 795 800

Leu Trp Ile Glu Ile Thr Lys Cys Cys Gly Leu Arg Ser Arg Trp Leu
805 810 815

Gly Thr Gln Pro Ser Pro Tyr Ala Val Tyr Arg Phe Phe Thr Phe Ser
820 825 830

Asp His Asp Thr Ala Ile Ile Pro Ala Ser Asn Asn Pro Tyr Phe Arg
835 840 845

Asp Gln Ala Arg Phe Pro Val Leu Val Thr Ser Asp Leu Asp His Tyr
850 855 860

Leu Arg Arg Glu Ala Leu Ser Ile His Val Phe Asp Asp Glu Asp Leu
865 870 875 880

Glu Pro Gly Ser Tyr Leu Gly Arg Ala Arg Val Pro Leu Leu Pro Leu
885 890 895

Ala Lys Asn Glu Ser Ile Lys Gly Asp Phe Asn Leu Thr Asp Pro Ala

900 905 910

Glu Lys Pro Asn Gly Ser Ile Gln Val Gln Leu Asp Trp Lys Phe Pro
915 920 925

Tyr Ile Pro Pro Glu Ser Phe Leu Lys Pro Glu Ala Gln Thr Lys Gly
930 935 940

Lys Asp Thr Lys Asp Ser Ser Lys Ile Ser Ser Glu Glu Glu Lys Ala
945 950 955 960

Ser Phe Pro Ser Gln Asp Gln Met Ala Ser Pro Glu Val Pro Ile Glu
965 970 975

Ala Gly Gln Tyr Arg Ser Lys Arg Lys Pro Pro His Gly Gly Glu Arg
980 985 990

Lys Glu Lys Glu His Gln Val Val Ser Tyr Ser Arg Arg Lys His Gly
995 1000 1005

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

Leu Asn Ile Leu Asn Gly Asn Thr Pro Glu Gln Val Asn Tyr Thr
1025 1030 1035

Glu Trp Lys Phe Ser Glu Thr Asn Ser Phe Ile Gly Asp Gly Phe
1040 1045 1050

Lys Asn Gln His Glu Glu Glu Glu Met Thr Leu Ser His Ser Ala
1055 1060 1065

Leu Lys Gln Lys Glu Pro Leu His Pro Val Asn Asp Lys Glu Ser
1070 1075 1080

Ser Glu Gln Gly Ser Glu Val Ser Glu Ala Gln Thr Thr Asp Ser
1085 1090 1095

Asp Asp Val Ile Val Pro Pro Met Ser Gln Lys Tyr Pro Lys Ala
1100 1105 1110

Asp Ser Glu Lys Met Cys Ile Glu Ile Val Ser Leu Ala Phe Tyr
1115 1120 1125

Pro Glu Ala Glu Val Met Ser Asp Glu Asn Ile Lys Gln Val Tyr
1130 1135 1140

Val Glu Tyr Lys Phe Tyr Asp Leu Pro Leu Ser Glu Thr Glu Thr
1145 1150 1155

Pro Val Ser Leu Arg Lys Pro Arg Ala Gly Glu Glu Ile His Phe

1160 1165 1170

His Phe Ser Lys Val Ile Asp Leu Asp Pro Gln Glu Gln Gln Gly
1175 1180 1185

Arg Arg Arg Phe Leu Phe Asp Met Leu Asn Gly Gln Asp Pro Asp
1190 1195 1200

Gln Gly His Leu Lys Phe Thr Val Val Ser Asp Pro Leu Asp Glu
1205 1210 1215

Glu Lys Lys Glu Cys Glu Glu Val Gly Tyr Ala Tyr Leu Gln Leu
1220 1225 1230

Trp Gln Ile Leu Glu Ser Gly Arg Asp Ile Leu Glu Gln Glu Leu
1235 1240 1245

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

Lys Val Ser Leu Gln Ala Ala Ala Val Leu His Ala Ile Tyr Lys
1265 1270 1275

Glu Met Thr Glu Asp Leu Phe Ser
1280 1285

<210> 22
<211> 240
<212> PRT
<213> Adeno-associated virus-1

<400> 22

Thr Phe Ser Tyr Thr Phe Glu Glu Val Pro Phe His Ser Ser Tyr Ala
1 5 10 15

His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr
20 25 30

Leu Tyr Tyr Leu Asn Arg Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn
35 40 45

Lys Asp Leu Leu Phe Ser Arg Gly Ser Pro Ala Gly Met Ser Val Gln
50 55 60

Pro Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser
65 70 75 80

Lys Thr Lys Thr Asp Asn Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala
85 90 95

Ser Lys Tyr Asn Leu Asn Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr
100 105 110

```
Ala Met Ala Ser His Lys Asp Asp Glu Asp Lys Phe Phe Pro Met Ser
        115                 120                 125

Gly Val Met Ile Phe Gly Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala
    130                 135                 140

Leu Asp Asn Val Met Ile Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn
145                 150                 155                 160

Pro Val Ala Thr Glu Arg Phe Gly Thr Val Ala Val Asn Phe Gln Ser
                165                 170                 175

Ser Ser Thr Asp Pro Ala Thr Gly Asp Val His Ala Met Gly Ala Leu
            180                 185                 190

Pro Gly Met Val Trp Gln Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile
        195                 200                 205

Trp Ala Lys Ile Pro His Thr Asp Gly His Phe His Pro Ser Pro Leu
    210                 215                 220

Met Gly Gly Phe Gly Leu Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys
225                 230                 235                 240
```

<210> 23
<211> 240
<212> PRT
<213> Adeno-associated virus-6

<400> 23

```
Thr Phe Ser Tyr Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala
1               5                   10                  15

His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr
            20                  25                  30

Leu Tyr Tyr Leu Asn Arg Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn
        35                  40                  45

Lys Asp Leu Leu Phe Ser Arg Gly Ser Pro Ala Gly Met Ser Val Gln
    50                  55                  60

Pro Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser
65                  70                  75                  80

Lys Thr Lys Thr Asp Asn Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala
                85                  90                  95

Ser Lys Tyr Asn Leu Asn Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr
            100                 105                 110
```

Ala Met Ala Ser His Lys Asp Asp Lys Asp Lys Phe Phe Pro Met Ser
115 120 125

Gly Val Met Ile Phe Gly Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala
130 135 140

Leu Asp Asn Val Met Ile Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn
145 150 155 160

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

Ser Ser Thr Asp Pro Ala Thr Gly Asp Val His Val Met Gly Ala Leu
180 185 190

Pro Gly Met Val Trp Gln Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile
195 200 205

Trp Ala Lys Ile Pro His Thr Asp Gly His Phe His Pro Ser Pro Leu
210 215 220

Met Gly Gly Phe Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys
225 230 235 240

<210> 24
<211> 240
<212> PRT
<213> Adeno-associated virus-3

<400> 24

Phe Ser Tyr Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His
1 5 10 15

Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu
20 25 30

Tyr Tyr Leu Asn Arg Thr Gln Gly Thr Thr Ser Gly Thr Thr Asn Gln
35 40 45

Ser Arg Leu Leu Phe Ser Gln Ala Gly Pro Gln Ser Met Ser Leu Gln
50 55 60

Ala Arg Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Leu Ser
65 70 75 80

Lys Thr Ala Asn Asp Asn Asn Asn Ser Asn Phe Pro Trp Thr Ala Ala
85 90 95

Ser Lys Tyr His Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Pro
100 105 110

```
Ala Met Ala Ser His Lys Asp Asp Glu Glu Lys Phe Phe Pro Met His
        115                 120                 125

Gly Asn Leu Ile Phe Gly Lys Glu Gly Thr Thr Ala Ser Asn Ala Glu
    130                 135                 140

Leu Asp Asn Val Met Ile Thr Asp Glu Glu Glu Ile Arg Thr Thr Asn
145                 150                 155                 160

Pro Val Ala Thr Glu Gln Tyr Gly Thr Val Ala Asn Asn Leu Gln Ser
                165                 170                 175

Ser Asn Thr Ala Pro Thr Thr Gly Thr Val Asn His Gln Gly Ala Leu
            180                 185                 190

Pro Gly Met Val Trp Gln Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile
        195                 200                 205

Trp Ala Lys Ile Pro His Thr Asp Gly His Phe His Pro Ser Pro Leu
    210                 215                 220

Met Gly Gly Phe Gly Leu Lys His Pro Pro Pro Gln Ile Met Ile Lys
225                 230                 235                 240
```

<210> 25
<211> 240
<212> PRT
<213> Adeno-associated virus-2

<400> 25

```
Phe Ser Tyr Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His
1               5                   10                  15

Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu
            20                  25                  30

Tyr Tyr Leu Ser Arg Thr Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser
        35                  40                  45

Arg Leu Gln Phe Ser Gln Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser
    50                  55                  60

Arg Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys
65                  70                  75                  80

Thr Ser Ala Asp Asn Asn Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr
                85                  90                  95

Lys Tyr His Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Pro Ala
            100                 105                 110

Met Ala Ser His Lys Asp Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly
```

115 120 125

Val Leu Ile Phe Gly Lys Gln Gly Ser Glu Lys Thr Asn Val Asp Ile
130 135 140

Glu Lys Val Met Ile Thr Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro
145 150 155 160

Val Ala Thr Glu Gln Tyr Gly Ser Val Ser Thr Asn Leu Gln Arg Gly
165 170 175

Asn Arg Gln Ala Ala Thr Ala Asp Val Asn Thr Gln Gly Val Leu Pro
180 185 190

Gly Met Val Trp Gln Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp
195 200 205

Ala Lys Ile Pro His Thr Asp Gly His Phe His Pro Ser Pro Leu Met
210 215 220

Gly Gly Phe Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn
225 230 235 240

<210> 26
<211> 243
<212> PRT
<213> Adeno-associated virus-8

<400> 26

Asn Phe Gln Phe Thr Tyr Thr Phe Glu Asp Val Pro Phe His Ser Ser
1 5 10 15

Tyr Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp
20 25 30

Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr Gln Thr Thr Gly Gly Thr Ala
35 40 45

Asn Thr Gln Thr Leu Gly Phe Ser Gln Gly Gly Pro Asn Thr Met Ala
50 55 60

Asn Gln Ala Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg
65 70 75 80

Val Ser Thr Thr Thr Gly Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr
85 90 95

Ala Gly Thr Lys Tyr His Leu Asn Gly Arg Asn Ser Leu Ala Asn Pro
100 105 110

Gly Ile Ala Met Ala Thr His Lys Asp Asp Glu Glu Arg Phe Phe Pro
115 120 125

```
Ser Asn Gly Ile Leu Ile Phe Gly Lys Gln Asn Ala Ala Arg Asp Asn
    130                 135                 140

Ala Asp Tyr Ser Asp Val Met Leu Thr Ser Glu Glu Glu Ile Lys Thr
145                 150                 155                 160

Thr Asn Pro Val Ala Thr Glu Glu Tyr Gly Ile Val Ala Asp Asn Leu
                165                 170                 175

Gln Gln Gln Asn Thr Ala Pro Gln Ile Gly Thr Val Asn Ser Gln Gly
            180                 185                 190

Ala Leu Pro Gly Met Val Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly
        195                 200                 205

Pro Ile Trp Ala Lys Ile Pro His Thr Asp Gly Asn Phe His Pro Ser
    210                 215                 220

Pro Leu Met Gly Gly Phe Gly Leu Lys His Pro Pro Pro Gln Ile Leu
225                 230                 235                 240

Ile Lys Asn
```

<210> 27
<211> 243
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 27

```
Asn Phe Gln Phe Thr Tyr Thr Phe Glu Asp Val Pro Phe His Ser Ser
1               5                   10                  15

Tyr Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp
            20                  25                  30

Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr Gln Thr Thr Gly Gly Thr Ala
        35                  40                  45

Asn Thr Gln Thr Leu Gly Phe Ser Gln Gly Gly Pro Asn Thr Met Ala
    50                  55                  60

Asn Gln Ala Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg
65                  70                  75                  80

Val Ser Thr Thr Thr Gly Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr
                85                  90                  95
```

Ala Gly Thr Lys Tyr His Leu Asn Gly Arg Asn Ser Leu Ala Asn Pro
100 105 110

Gly Ile Ala Met Ala Thr His Lys Asp Asp Glu Glu Arg Phe Phe Pro
115 120 125

Ser Asn Gly Ile Leu Ile Phe Gly Lys Gln Asn Ala Ala Arg Asp Asn
130 135 140

Ala Asp Tyr Ser Asp Val Met Leu Thr Ser Glu Glu Glu Ile Lys Thr
145 150 155 160

Thr Asn Pro Val Ala Thr Glu Glu Tyr Gly Ile Val Ala Asp Asn Leu
165 170 175

Gln Gly Gln Arg Gln Ala Ala Gln Ile Gly Thr Val Asn Ser Gln Gly
180 185 190

Ala Leu Pro Gly Met Val Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly
195 200 205

Pro Ile Trp Ala Lys Ile Pro His Thr Asp Gly Asn Phe His Pro Ser
210 215 220

Pro Leu Met Gly Gly Phe Gly Leu Lys His Pro Pro Pro Gln Ile Leu
225 230 235 240

Ile Lys Asn

<210> 28
<211> 241
<212> PRT
<213> Adeno-associated virus-rh8

<400> 28

Phe Gln Phe Ser Tyr Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr
1 5 10 15

Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln
20 25 30

Tyr Leu Tyr Tyr Leu Val Arg Thr Gln Thr Thr Gly Thr Gly Gly Thr
35 40 45

Gln Thr Leu Ala Phe Ser Gln Ala Gly Pro Ser Ser Met Ala Asn Gln
50 55 60

Ala Arg Asn Trp Val Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser
65 70 75 80

Thr Thr Thr Asn Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala

85 90 95

Ala Lys Phe Lys Leu Asn Gly Arg Asp Ser Leu Met Asn Pro Gly Val
100 105 110

Ala Met Ala Ser His Lys Asp Asp Asp Asp Arg Phe Phe Pro Ser Ser
115 120 125

Gly Val Leu Ile Phe Gly Lys Gln Gly Ala Gly Asn Asp Gly Val Asp
130 135 140

Tyr Ser Gln Val Leu Ile Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn
145 150 155 160

Pro Val Ala Thr Glu Glu Tyr Gly Ala Val Ala Ile Asn Asn Gln Ala
165 170 175

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

Pro Gly Met Val Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile
195 200 205

Trp Ala Lys Ile Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu
210 215 220

Met Gly Gly Phe Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys
225 230 235 240

Asn

<210> 29
<211> 243
<212> PRT
<213> Adeno-associated virus-10

<400> 29

Asn Phe Glu Phe Ser Tyr Thr Phe Glu Asp Val Pro Phe His Ser Ser
1 5 10 15

Tyr Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp
20 25 30

Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr Gln Ser Thr Gly Gly Thr Gln
35 40 45

Gly Thr Gln Gln Leu Leu Phe Ser Gln Ala Gly Pro Ala Asn Met Ser
50 55 60

Ala Gln Ala Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg
65 70 75 80

```
Val Ser Thr Thr Leu Ser Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr
                85                  90                  95

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

Gly Val Ala Met Ala Thr His Lys Asp Asp Glu Glu Arg Phe Phe Pro
        115                 120                 125

Ser Ser Gly Val Leu Met Phe Gly Lys Gln Gly Ala Gly Arg Asp Asn
    130                 135                 140

Val Asp Tyr Ser Ser Val Met Leu Thr Ser Glu Glu Glu Ile Lys Thr
145                 150                 155                 160

Thr Asn Pro Val Ala Thr Glu Gln Tyr Gly Val Val Ala Asp Asn Leu
                165                 170                 175

Gln Gln Ala Asn Thr Gly Pro Ile Val Gly Asn Val Asn Ser Gln Gly
            180                 185                 190

Ala Leu Pro Gly Met Val Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly
        195                 200                 205

Pro Ile Trp Ala Lys Ile Pro His Thr Asp Gly Asn Phe His Pro Ser
    210                 215                 220

Pro Leu Met Gly Gly Phe Gly Leu Lys His Pro Pro Pro Gln Ile Leu
225                 230                 235                 240

Ile Lys Asn
```

<210> 30
<211> 242
<212> PRT
<213> Adeno-associated virus-7

<400> 30

```
Phe Glu Phe Ser Tyr Ser Phe Glu Asp Val Pro Phe His Ser Ser Tyr
1               5                   10                  15

Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln
            20                  25                  30

Tyr Leu Tyr Tyr Leu Ala Arg Thr Gln Ser Asn Pro Gly Gly Thr Ala
        35                  40                  45

Gly Asn Arg Glu Leu Gln Phe Tyr Gln Gly Gly Pro Ser Thr Met Ala
    50                  55                  60
```

```
Glu Gln Ala Lys Asn Trp Leu Pro Gly Pro Cys Phe Arg Gln Gln Arg
65                  70                  75                  80

Val Ser Lys Thr Leu Asp Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr
                85                  90                  95

Gly Ala Thr Lys Tyr His Leu Asn Gly Arg Asn Ser Leu Val Asn Pro
            100                 105                 110

Gly Val Ala Met Ala Thr His Lys Asp Asp Glu Asp Arg Phe Phe Pro
        115                 120                 125

Ser Ser Gly Val Leu Ile Phe Gly Lys Thr Gly Ala Thr Asn Lys Thr
    130                 135                 140

Thr Leu Glu Asn Val Leu Met Thr Asn Glu Glu Glu Ile Arg Pro Thr
145                 150                 155                 160

Asn Pro Val Ala Thr Glu Glu Tyr Gly Ile Val Ser Ser Asn Leu Gln
                165                 170                 175

Ala Ala Asn Thr Ala Ala Gln Thr Gln Val Val Asn Asn Gln Gly Ala
            180                 185                 190

Leu Pro Gly Met Val Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro
        195                 200                 205

Ile Trp Ala Lys Ile Pro His Thr Asp Gly Asn Phe His Pro Ser Pro
    210                 215                 220

Leu Met Gly Gly Phe Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile
225                 230                 235                 240

Lys Asn
```

<210> 31
<211> 240
<212> PRT
<213> Adeno-associated virus-9

<400> 31

```
Phe Gln Phe Ser Tyr Glu Phe Glu Asn Val Pro Phe His Ser Ser Tyr
1               5                   10                  15

Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln
            20                  25                  30

Tyr Leu Tyr Tyr Leu Ser Lys Thr Ile Asn Gly Ser Gly Gln Asn Gln
        35                  40                  45
```

```
Gln Thr Leu Lys Phe Ser Val Ala Gly Pro Ser Asn Met Ala Val Gln
    50                  55                  60

Gly Arg Asn Tyr Ile Pro Gly Pro Ser Tyr Arg Gln Gln Arg Val Ser
65                  70                  75                  80

Thr Thr Val Thr Gln Asn Asn Asn Ser Glu Phe Ala Trp Pro Gly Ala
                85                  90                  95

Ser Ser Trp Ala Leu Asn Gly Arg Asn Ser Leu Met Asn Pro Gly Pro
            100                 105                 110

Ala Met Ala Ser His Lys Glu Gly Glu Asp Arg Phe Phe Pro Leu Ser
        115                 120                 125

Gly Ser Leu Ile Phe Gly Lys Gln Gly Thr Gly Arg Asp Asn Val Asp
    130                 135                 140

Ala Asp Lys Val Met Ile Thr Asn Glu Glu Glu Ile Lys Thr Thr Asn
145                 150                 155                 160

Pro Val Ala Thr Glu Ser Tyr Gly Gln Val Ala Thr Asn His Gln Ser
                165                 170                 175

Ala Gln Ala Gln Ala Gln Thr Gly Trp Val Gln Asn Gln Gly Ile Leu
            180                 185                 190

Pro Gly Met Val Trp Gln Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile
        195                 200                 205

Trp Ala Lys Ile Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu
    210                 215                 220

Met Gly Gly Phe Gly Met Lys His Pro Pro Pro Gln Ile Leu Ile Lys
225                 230                 235                 240
```

<210> 32
<211> 239
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 32

```
Gln Phe Ser Tyr Glu Phe Glu Asn Val Pro Phe His Ser Ser Tyr Ala
1               5                   10                  15

His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr
            20                  25                  30

Leu Tyr Tyr Leu Ser Lys Thr Ile Asn Gly Ser Gly Gln Asn Gln Gln
        35                  40                  45
```

```
Thr Leu Lys Phe Ser Val Ala Gly Pro Ser Asn Met Ala Val Gln Gly
    50                  55                  60

Arg Asn Tyr Ile Pro Gly Pro Ser Tyr Arg Gln Gln Arg Val Ser Thr
65                  70                  75                  80

Thr Val Thr Gln Asn Asn Asn Ser Glu Phe Ala Trp Pro Gly Ala Ser
                85                  90                  95

Ser Trp Ala Leu Asn Gly Arg Asn Ser Leu Met Asn Pro Gly Pro Ala
            100                 105                 110

Met Ala Ser His Lys Glu Gly Glu Asp Arg Phe Phe Pro Leu Ser Gly
        115                 120                 125

Ser Leu Ile Phe Gly Lys Gln Gly Thr Gly Arg Asp Asn Val Asp Ala
    130                 135                 140

Asp Lys Val Met Ile Thr Asn Glu Glu Glu Ile Lys Thr Thr Asn Pro
145                 150                 155                 160

Val Ala Thr Glu Ser Tyr Gly Gln Val Ala Thr Asn His Gln Ser Gly
                165                 170                 175

Gln Ala Gln Ala Ala Thr Gly Trp Val Gln Asn Gln Gly Ile Leu Pro
            180                 185                 190

Gly Met Val Trp Gln Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp
        195                 200                 205

Ala Lys Ile Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met
    210                 215                 220

Gly Gly Phe Gly Met Lys His Pro Pro Pro Gln Ile Leu Ile Lys
225                 230                 235


<210>  33
<211>  240
<212>  PRT
<213>  Adeno-associated virus-5

<400>  33

Asn Phe Glu Phe Thr Tyr Asn Phe Glu Glu Val Pro Phe His Ser Ser
1               5                   10                  15

Phe Ala Pro Ser Gln Asn Leu Phe Lys Leu Ala Asn Pro Leu Val Asp
            20                  25                  30

Gln Tyr Leu Tyr Arg Phe Val Ser Thr Asn Asn Thr Gly Gly Val Gln
        35                  40                  45
```

```
Phe Asn Lys Asn Leu Ala Gly Arg Tyr Ala Asn Thr Tyr Lys Asn Trp
    50                  55                  60

Phe Pro Gly Pro Met Gly Arg Thr Gln Gly Trp Asn Leu Gly Ser Gly
65                  70                  75                  80

Val Asn Arg Ala Ser Val Ser Ala Phe Ala Thr Thr Asn Arg Met Glu
                85                  90                  95

Leu Glu Gly Ala Ser Tyr Gln Val Pro Pro Gln Pro Asn Gly Met Thr
            100                 105                 110

Asn Asn Leu Gln Gly Ser Asn Thr Tyr Ala Leu Glu Asn Thr Met Ile
        115                 120                 125

Phe Asn Ser Gln Pro Ala Asn Pro Gly Thr Thr Ala Thr Tyr Leu Glu
    130                 135                 140

Gly Asn Met Leu Ile Thr Ser Glu Ser Glu Thr Gln Pro Val Asn Arg
145                 150                 155                 160

Val Ala Tyr Asn Val Gly Gly Gln Met Ala Thr Asn Asn Gln Ser Ser
                165                 170                 175

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

Gly Ser Val Trp Met Glu Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp
        195                 200                 205

Ala Lys Ile Pro Glu Thr Gly Ala His Phe His Pro Ser Pro Ala Met
    210                 215                 220

Gly Gly Phe Gly Leu Lys His Pro Pro Pro Met Met Leu Ile Lys Asn
225                 230                 235                 240
```

<210> 34
<211> 250
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 34

```
Thr Phe Ser Tyr Thr Phe Glu Glu Val Pro Phe His Ser Ser Tyr Ala
1               5                   10                  15

His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr
            20                  25                  30

Leu Tyr Tyr Leu Asn Arg Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn
```

35 40 45

Lys Asp Leu Leu Phe Ser Arg Gly Ser Pro Ala Gly Met Ser Val Gln
50 55 60

Pro Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser
65 70 75 80

Lys Thr Lys Thr Asp Asn Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala
85 90 95

Ser Lys Tyr Asn Leu Asn Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr
100 105 110

Ala Met Ala Ser His Lys Asp Asp Glu Asp Lys Phe Phe Pro Met Ser
115 120 125

Gly Val Met Ile Phe Gly Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala
130 135 140

Leu Asp Asn Val Met Ile Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn
145 150 155 160

Pro Val Ala Thr Glu Arg Phe Gly Thr Val Ala Val Asn Phe Gln Ser
165 170 175

Ser Ser Thr Asp Leu Ala Leu Gly Glu Thr Thr Arg Pro Ala Pro Ala
180 185 190

Thr Gly Asp Val His Ala Met Gly Ala Leu Pro Gly Met Val Trp Gln
195 200 205

Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
210 215 220

Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu
225 230 235 240

Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys
245 250

<210> 35
<211> 250
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 35

Thr Phe Ser Tyr Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala
1 5 10 15

```
His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr
            20                  25                  30

Leu Tyr Tyr Leu Asn Arg Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn
        35                  40                  45

Lys Asp Leu Leu Phe Ser Arg Gly Ser Pro Ala Gly Met Ser Val Gln
    50                  55                  60

Pro Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser
65                  70                  75                  80

Lys Thr Lys Thr Asp Asn Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala
                85                  90                  95

Ser Lys Tyr Asn Leu Asn Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr
            100                 105                 110

Ala Met Ala Ser His Lys Asp Asp Lys Asp Lys Phe Phe Pro Met Ser
        115                 120                 125

Gly Val Met Ile Phe Gly Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala
    130                 135                 140

Leu Asp Asn Val Met Ile Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn
145                 150                 155                 160

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

Ser Ser Thr Asp Leu Ala Leu Gly Glu Thr Thr Arg Pro Ala Pro Ala
            180                 185                 190

Thr Gly Asp Val His Val Met Gly Ala Leu Pro Gly Met Val Trp Gln
        195                 200                 205

Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
    210                 215                 220

Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu
225                 230                 235                 240

Lys His Pro Pro Pro Gln Ile Leu Ile Lys
                245                 250
```

<210> 36
<211> 250
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 36

```
Phe Ser Tyr Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His
1               5                  10                  15

Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu
            20                  25                  30

Tyr Tyr Leu Ser Arg Thr Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser
        35                  40                  45

Arg Leu Gln Phe Ser Gln Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser
    50                  55                  60

Arg Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys
65                  70                  75                  80

Thr Ser Ala Asp Asn Asn Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr
                85                  90                  95

Lys Tyr His Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Pro Ala
            100                 105                 110

Met Ala Ser His Lys Asp Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly
        115                 120                 125

Val Leu Ile Phe Gly Lys Gln Gly Ser Glu Lys Thr Asn Val Asp Ile
    130                 135                 140

Glu Lys Val Met Ile Thr Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro
145                 150                 155                 160

Val Ala Thr Glu Gln Tyr Gly Ser Val Ser Thr Asn Leu Gln Arg Gly
                165                 170                 175

Asn Leu Ala Leu Gly Glu Thr Thr Arg Pro Ala Arg Gln Ala Ala Thr
            180                 185                 190

Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
        195                 200                 205

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    210                 215                 220

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
225                 230                 235                 240

His Pro Pro Pro Gln Ile Leu Ile Lys Asn
                245                 250
```

<210> 37

<211> 253
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 37

```
Asn Phe Gln Phe Thr Tyr Thr Phe Glu Asp Val Pro Phe His Ser Ser
1               5                  10                  15

Tyr Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp
            20                  25                  30

Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr Gln Thr Thr Gly Gly Thr Ala
        35                  40                  45

Asn Thr Gln Thr Leu Gly Phe Ser Gln Gly Gly Pro Asn Thr Met Ala
    50                  55                  60

Asn Gln Ala Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg
65                  70                  75                  80

Val Ser Thr Thr Thr Gly Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr
                85                  90                  95

Ala Gly Thr Lys Tyr His Leu Asn Gly Arg Asn Ser Leu Ala Asn Pro
            100                 105                 110

Gly Ile Ala Met Ala Thr His Lys Asp Asp Glu Glu Arg Phe Phe Pro
        115                 120                 125

Ser Asn Gly Ile Leu Ile Phe Gly Lys Gln Asn Ala Ala Arg Asp Asn
    130                 135                 140

Ala Asp Tyr Ser Asp Val Met Leu Thr Ser Glu Glu Glu Ile Lys Thr
145                 150                 155                 160

Thr Asn Pro Val Ala Thr Glu Glu Tyr Gly Ile Val Ala Asp Asn Leu
                165                 170                 175

Gln Gln Gln Asn Leu Ala Leu Gly Glu Thr Thr Arg Pro Ala Thr Ala
            180                 185                 190

Pro Gln Ile Gly Thr Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
        195                 200                 205

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    210                 215                 220

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
225                 230                 235                 240
```

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn
245 250

<210> 38
<211> 252
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 38

Asn Phe Gln Phe Thr Tyr Thr Phe Glu Asp Val Pro Phe His Ser Ser
1 5 10 15

Tyr Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp
20 25 30

Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr Gln Thr Thr Gly Gly Thr Ala
35 40 45

Asn Thr Gln Thr Leu Gly Phe Ser Gln Gly Gly Pro Asn Thr Met Ala
50 55 60

Asn Gln Ala Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg
65 70 75 80

Val Ser Thr Thr Thr Gly Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr
85 90 95

Ala Gly Thr Lys Tyr His Leu Asn Gly Arg Asn Ser Leu Ala Asn Pro
100 105 110

Gly Ile Ala Met Ala Thr His Lys Asp Asp Glu Glu Arg Phe Phe Pro
115 120 125

Ser Asn Gly Ile Leu Ile Phe Gly Lys Gln Asn Ala Ala Arg Asp Asn
130 135 140

Ala Asp Tyr Ser Asp Val Met Leu Thr Ser Glu Glu Glu Ile Lys Thr
145 150 155 160

Thr Asn Pro Val Ala Thr Glu Glu Tyr Gly Ile Val Ala Asp Asn Leu
165 170 175

Gln Gly Gln Arg Gly Leu Gly Glu Thr Thr Arg Pro Ala Gln Ala Ala
180 185 190

Gln Ile Gly Thr Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val Trp
195 200 205

Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro

210 215 220

His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
225 230 235 240

Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn
245 250

<210> 39
<211> 251
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 39

Phe Gln Phe Ser Tyr Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr
1 5 10 15

Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln
20 25 30

Tyr Leu Tyr Tyr Leu Val Arg Thr Gln Thr Thr Gly Thr Gly Gly Thr
35 40 45

Gln Thr Leu Ala Phe Ser Gln Ala Gly Pro Ser Ser Met Ala Asn Gln
50 55 60

Ala Arg Asn Trp Val Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser
65 70 75 80

Thr Thr Thr Asn Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala
85 90 95

Ala Lys Phe Lys Leu Asn Gly Arg Asp Ser Leu Met Asn Pro Gly Val
100 105 110

Ala Met Ala Ser His Lys Asp Asp Asp Asp Arg Phe Phe Pro Ser Ser
115 120 125

Gly Val Leu Ile Phe Gly Lys Gln Gly Ala Gly Asn Asp Gly Val Asp
130 135 140

Tyr Ser Gln Val Leu Ile Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn
145 150 155 160

Pro Val Ala Thr Glu Glu Tyr Gly Ala Val Ala Ile Asn Asn Gln Ala
165 170 175

Ala Asn Leu Ala Leu Gly Glu Thr Thr Arg Pro Ala Thr Gln Ala Gln
180 185 190

Thr Gly Leu Val His Asn Gln Gly Val Ile Pro Gly Met Val Trp Gln
195 200 205

Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
210 215 220

Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu
225 230 235 240

Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn
245 250

<210> 40
<211> 253
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 40

Asn Phe Glu Phe Ser Tyr Thr Phe Glu Asp Val Pro Phe His Ser Ser
1 5 10 15

Tyr Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp
20 25 30

Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr Gln Ser Thr Gly Gly Thr Gln
35 40 45

Gly Thr Gln Gln Leu Leu Phe Ser Gln Ala Gly Pro Ala Asn Met Ser
50 55 60

Ala Gln Ala Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg
65 70 75 80

Val Ser Thr Thr Leu Ser Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr
85 90 95

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

Gly Val Ala Met Ala Thr His Lys Asp Asp Glu Glu Arg Phe Phe Pro
115 120 125

Ser Ser Gly Val Leu Met Phe Gly Lys Gln Gly Ala Gly Arg Asp Asn
130 135 140

Val Asp Tyr Ser Ser Val Met Leu Thr Ser Glu Glu Glu Ile Lys Thr
145 150 155 160

Thr Asn Pro Val Ala Thr Glu Gln Tyr Gly Val Val Ala Asp Asn Leu

165 170 175

Gln Gln Leu Ala Leu Gly Glu Thr Thr Arg Pro Ala Ala Asn Thr Gly
180 185 190

Pro Ile Val Gly Asn Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
195 200 205

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
210 215 220

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
225 230 235 240

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn
245 250

<210> 41
<211> 252
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 41

Phe Glu Phe Ser Tyr Ser Phe Glu Asp Val Pro Phe His Ser Ser Tyr
1 5 10 15

Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln
20 25 30

Tyr Leu Tyr Tyr Leu Ala Arg Thr Gln Ser Asn Pro Gly Gly Thr Ala
35 40 45

Gly Asn Arg Glu Leu Gln Phe Tyr Gln Gly Gly Pro Ser Thr Met Ala
50 55 60

Glu Gln Ala Lys Asn Trp Leu Pro Gly Pro Cys Phe Arg Gln Gln Arg
65 70 75 80

Val Ser Lys Thr Leu Asp Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr
85 90 95

Gly Ala Thr Lys Tyr His Leu Asn Gly Arg Asn Ser Leu Val Asn Pro
100 105 110

Gly Val Ala Met Ala Thr His Lys Asp Asp Glu Asp Arg Phe Phe Pro
115 120 125

Ser Ser Gly Val Leu Ile Phe Gly Lys Thr Gly Ala Thr Asn Lys Thr
130 135 140

```
Thr Leu Glu Asn Val Leu Met Thr Asn Glu Glu Glu Ile Arg Pro Thr
145                 150                 155                 160

Asn Pro Val Ala Thr Glu Glu Tyr Gly Ile Val Ser Ser Asn Leu Gln
                165                 170                 175

Ala Ala Asn Leu Ala Leu Gly Glu Thr Thr Arg Pro Ala Thr Ala Ala
            180                 185                 190

Gln Thr Gln Val Val Asn Asn Gln Gly Ala Leu Pro Gly Met Val Trp
        195                 200                 205

Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro
    210                 215                 220

His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
225                 230                 235                 240

Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn
                245                 250
```

<210> 42
<211> 249
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 42

```
Phe Gln Phe Ser Tyr Glu Phe Glu Asn Val Pro Phe His Ser Ser Tyr
1               5                   10                  15

Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln
            20                  25                  30

Tyr Leu Tyr Tyr Leu Ser Lys Thr Ile Asn Gly Ser Gly Gln Asn Gln
        35                  40                  45

Gln Thr Leu Lys Phe Ser Val Ala Gly Pro Ser Asn Met Ala Val Gln
    50                  55                  60

Gly Arg Asn Tyr Ile Pro Gly Pro Ser Tyr Arg Gln Gln Arg Val Ser
65                  70                  75                  80

Thr Thr Val Thr Gln Asn Asn Asn Ser Glu Phe Ala Trp Pro Gly Ala
                85                  90                  95

Ser Ser Trp Ala Leu Asn Gly Arg Asn Ser Leu Met Asn Pro Gly Pro
            100                 105                 110

Ala Met Ala Ser His Lys Glu Gly Glu Asp Arg Phe Phe Pro Leu Ser
```

115 120 125

Gly Ser Leu Ile Phe Gly Lys Gln Gly Thr Gly Arg Asp Asn Val Asp
130 135 140

Ala Asp Lys Val Met Ile Thr Asn Glu Glu Glu Ile Lys Thr Thr Asn
145 150 155 160

Pro Val Ala Thr Glu Ser Tyr Gly Gln Val Ala Thr Asn His Gln Ser
165 170 175

Ala Gln Leu Ala Leu Gly Glu Thr Thr Arg Pro Ala Gln Ala Gln Thr
180 185 190

Gly Trp Val Gln Asn Gln Gly Ile Leu Pro Gly Met Val Trp Gln Asp
195 200 205

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
210 215 220

Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Met Lys
225 230 235 240

His Pro Pro Pro Gln Ile Leu Ile Lys
245

<210> 43
<211> 248
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 43

Gln Phe Ser Tyr Glu Phe Glu Asn Val Pro Phe His Ser Ser Tyr Ala
1 5 10 15

His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr
20 25 30

Leu Tyr Tyr Leu Ser Lys Thr Ile Asn Gly Ser Gly Gln Asn Gln Gln
35 40 45

Thr Leu Lys Phe Ser Val Ala Gly Pro Ser Asn Met Ala Val Gln Gly
50 55 60

Arg Asn Tyr Ile Pro Gly Pro Ser Tyr Arg Gln Gln Arg Val Ser Thr
65 70 75 80

Thr Val Thr Gln Asn Asn Asn Ser Glu Phe Ala Trp Pro Gly Ala Ser
85 90 95

```
Ser Trp Ala Leu Asn Gly Arg Asn Ser Leu Met Asn Pro Gly Pro Ala
            100                 105                 110

Met Ala Ser His Lys Glu Gly Glu Asp Arg Phe Phe Pro Leu Ser Gly
        115                 120                 125

Ser Leu Ile Phe Gly Lys Gln Gly Thr Gly Arg Asp Asn Val Asp Ala
    130                 135                 140

Asp Lys Val Met Ile Thr Asn Glu Glu Glu Ile Lys Thr Thr Asn Pro
145                 150                 155                 160

Val Ala Thr Glu Ser Tyr Gly Gln Val Ala Thr Asn His Gln Ser Gly
                165                 170                 175

Gln Ala Ala Leu Gly Glu Thr Thr Arg Pro Ala Gln Ala Ala Thr Gly
            180                 185                 190

Trp Val Gln Asn Gln Gly Ile Leu Pro Gly Met Val Trp Gln Asp Arg
        195                 200                 205

Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr Asp
    210                 215                 220

Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Met Lys His
225                 230                 235                 240

Pro Pro Pro Gln Ile Leu Ile Lys
                245
```

<210> 44
<211> 250
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic peptide

<400> 44

```
Asn Phe Glu Phe Thr Tyr Asn Phe Glu Glu Val Pro Phe His Ser Ser
1               5                   10                  15

Phe Ala Pro Ser Gln Asn Leu Phe Lys Leu Ala Asn Pro Leu Val Asp
            20                  25                  30

Gln Tyr Leu Tyr Arg Phe Val Ser Thr Asn Asn Thr Gly Gly Val Gln
        35                  40                  45

Phe Asn Lys Asn Leu Ala Gly Arg Tyr Ala Asn Thr Tyr Lys Asn Trp
    50                  55                  60

Phe Pro Gly Pro Met Gly Arg Thr Gln Gly Trp Asn Leu Gly Ser Gly
```

65 70 75 80

Val Asn Arg Ala Ser Val Ser Ala Phe Ala Thr Thr Asn Arg Met Glu
85 90 95

Leu Glu Gly Ala Ser Tyr Gln Val Pro Pro Gln Pro Asn Gly Met Thr
100 105 110

Asn Asn Leu Gln Gly Ser Asn Thr Tyr Ala Leu Glu Asn Thr Met Ile
115 120 125

Phe Asn Ser Gln Pro Ala Asn Pro Gly Thr Thr Ala Thr Tyr Leu Glu
130 135 140

Gly Asn Met Leu Ile Thr Ser Glu Ser Glu Thr Gln Pro Val Asn Arg
145 150 155 160

Val Ala Tyr Asn Val Gly Gly Gln Met Ala Thr Asn Asn Gln Ser Leu
165 170 175

Ala Leu Gly Glu Thr Thr Arg Pro Ala Ser Thr Thr Ala Pro Ala Thr
180 185 190

Gly Thr Tyr Asn Leu Gln Glu Ile Val Pro Gly Ser Val Trp Met Glu
195 200 205

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro Glu Thr
210 215 220

Gly Ala His Phe His Pro Ser Pro Ala Met Gly Gly Phe Gly Leu Lys
225 230 235 240

His Pro Pro Pro Met Met Leu Ile Lys Asn
245 250

<210> 45
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 45

Leu Ala Leu Gly Glu Thr Thr Arg Pro Ala
1 5 10

<210> 46
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 46

Leu Ala Asn Glu Thr Ile Thr Arg Pro Ala
1 5 10

<210> 47
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 47

Leu Ala Lys Ala Gly Gln Ala Asn Asn Ala
1 5 10

<210> 48
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 48

Leu Ala Lys Asp Pro Lys Thr Thr Asn Ala
1 5 10

<210> 49
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 49

Ala Ala Leu Gly Glu Thr Thr Arg Pro Ala
1 5 10

<210> 50
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide

<400> 50

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