

SEQUENCE LISTING

<110> MAYO FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH

<120> MULTIVALENT PD-L1 BINDING COMPOUNDS FOR TREATING CANCER

<130> ADZE 2 PCT SEQ

<150> US 62/839,916

<151> 2019-04-29

<160> 51

<170> PatentIn version 3.5

<210> 1

<211> 465

<212> PRT

<213> Human Adenovirus 6

<400> 1

Ala Tyr Asn Ala Leu Ala Pro Lys Gly Ala Pro Asn Ser Cys Glu Trp
1 5 10 15

Glu Gln Asn Glu Thr Ala Gln Val Asp Ala Gln Glu Leu Asp Glu Glu
20 25 30

Glu Asn Glu Ala Asn Glu Ala Gln Ala Arg Glu Gln Glu Gln Ala Lys
35 40 45

Lys Thr His Val Tyr Ala Gln Ala Pro Leu Ser Gly Ile Lys Ile Thr
50 55 60

Lys Glu Gly Leu Gln Ile Gly Thr Ala Asp Ala Thr Val Ala Gly Ala
65 70 75 80

Gly Lys Glu Ile Phe Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Val
85 90 95

Gly Glu Ser Gln Trp Asn Glu Ala Asp Ala Thr Ala Ala Gly Gly Arg
100 105 110

Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala
115 120 125

Arg Pro Thr Asn Ser Asn Gly Gly Gln Gly Val Leu Trp Leu Thr Asn
130 135 140

Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe Ser Thr Ser Thr
145 150 155 160

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

Ser Glu Asp Val Asn Met Glu Thr Pro Asp Thr His Leu Ser Tyr Lys
180 185 190

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

Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly
210 215 220

Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln
225 230 235 240

Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu
245 250 255

Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr
260 265 270

Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr Asp Pro Asp Val Arg
275 280 285

Ile Ile Glu Asn His Gly Thr Glu Asp Glu Leu Pro Asn Tyr Cys Phe
290 295 300

Pro Leu Gly Gly Ile Gly Ile Thr Asp Thr Phe Gln Ala Val Lys Thr
305 310 315 320

Thr Ala Ala Asn Gly Asp Gln Gly Asn Thr Thr Trp Gln Lys Asp Ser
325 330 335

Thr Phe Ala Glu Arg Asn Glu Ile Gly Val Gly Asn Asn Phe Ala Met
 340 345 350

Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn
 355 360 365

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

Asp Ile Ser Asp Asn Pro Asn Thr Tyr Asp His Met Lys Arg Val Val
 385 390 395 400

Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser
 405 410 415

Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala
 420 425 430

Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro
 435 440 445

Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu
 450 455 460

Leu
 465

<210> 2
 <211> 959
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Hexon Polypeptide

<400> 2

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
 1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
 20 25 30

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

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

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Ser Cys Glu Trp Asp Glu Asp Asp Thr Gln Val Gln Val
130 135 140

Ala Ala Glu Asp Asp Gln Asp Asp Asp Glu Glu Glu Glu Gln Leu Pro
145 150 155 160

Gln Gln Arg Asn Gly Lys Lys Thr His Val Tyr Ala Gln Ala Pro Phe
165 170 175

Ala Gly Glu Ala Ile Asn Lys Asn Gly Leu Gln Ile Gly Thr Asn Gly
180 185 190

Ala Ala Thr Glu Gly Asn Lys Glu Ile Tyr Ala Asp Lys Thr Tyr Gln
195 200 205

Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Asn Glu Ala Glu Ser Ser
210 215 220

Val Ala Gly Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys
225 230 235 240

Tyr Gly Ser Tyr Ala Arg Pro Thr Asn Ser Asn Gly Gly Gln Gly Val
245 250 255

Met Val Glu Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe
260 265 270

Phe Ser Thr Ser Val Asn Ala Met Asn Glu Ala Asn Ala Ile Gln Pro
275 280 285

Lys Leu Val Leu Tyr Ser Glu Asp Val Asn Met Glu Thr Pro Asp Thr
290 295 300

His Leu Ser Tyr Lys Pro Gly Lys Ser Asp Asp Asn Ser Lys Ala Met
305 310 315 320

Leu Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg
325 330 335

Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly
340 345 350

Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln
355 360 365

Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly
370 375 380

Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr
385 390 395 400

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

Pro Asn Tyr Cys Phe Pro Leu Gly Gly Ile Gly Val Thr Asp Thr Tyr
420 425 430

Gln Ala Ile Lys Ala Thr Asn Gly Asn Gly Gly Ala Thr Thr Trp Ala
435 440 445

Gln Asp Asn Thr Phe Ala Glu Arg Asn Glu Ile Gly Val Gly Asn Asn

450

455

460

Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu
 465 470 475 480

Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Asn Pro
 485 490 495

Thr Asn Val Glu Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn
 500 505 510

Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly
 515 520 525

Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His
 530 535 540

His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly
 545 550 555 560

Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile
 565 570 575

Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe
 580 585 590

Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu
 595 600 605

Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala
 610 615 620

Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met
 625 630 635 640

Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala
 645 650 655

Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile
 660 665 670

Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr
675 680 685

Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro
690 695 700

Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr
705 710 715 720

Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val
725 730 735

Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile
740 745 750

Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met
755 760 765

Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly
770 775 780

Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser
785 790 795 800

Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr
805 810 815

Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Ile His Gln His Asn Asn
820 825 830

Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala
835 840 845

Tyr Pro Ala Asn Val Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp
850 855 860

Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile
865 870 875 880

Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly
885 890 895

Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe
900 905 910

Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu
915 920 925

Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu
930 935 940

Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
945 950 955

<210> 3
<211> 959
<212> PRT
<213> Artificial Sequence

<220>
<223> Hexon Polypeptide

<400> 3

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

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

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Ser Cys Glu Trp Asp Glu Asp Asp Thr Gln Val Gln Val
130 135 140

Ala Ala Glu Asp Asp Gln Asp Asp Asp Glu Glu Glu Glu Gln Leu Pro
145 150 155 160

Gln Gln Arg Asn Gly Lys Lys Thr His Val Tyr Ala Gln Ala Pro Phe
165 170 175

Ala Gly Glu Ala Ile Asn Lys Asn Gly Leu Gln Ile Gly Thr Asn Gly
180 185 190

Ala Ala Thr Glu Gly Asn Lys Glu Ile Tyr Ala Asp Lys Thr Tyr Gln
195 200 205

Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Asn Glu Ala Glu Ser Ser
210 215 220

Val Ala Gly Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys
225 230 235 240

Tyr Gly Ser Tyr Ala Arg Pro Thr Asn Ser Asn Gly Gly Gln Gly Val
245 250 255

Met Val Glu Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe
260 265 270

Phe Ser Thr Ser Val Asn Ala Met Asn Glu Ala Asn Ala Ile Gln Pro
275 280 285

Lys Leu Val Leu Tyr Ser Glu Asp Val Asn Met Glu Thr Pro Asp Thr
290 295 300

His Leu Ser Tyr Lys Pro Gly Lys Ser Asp Asp Asn Ser Lys Ala Met
 305 310 315 320

Leu Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg
 325 330 335

Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly
 340 345 350

Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln
 355 360 365

Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly
 370 375 380

Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr
 385 390 395 400

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

Pro Asn Tyr Cys Phe Pro Leu Gly Gly Ile Gly Val Thr Asp Thr Tyr
 420 425 430

Gln Ala Ile Lys Ala Thr Asn Gly Asn Gly Gly Ala Thr Thr Trp Ala
 435 440 445

Gln Asp Asn Thr Phe Ala Glu Arg Asn Glu Ile Gly Val Gly Asn Asn
 450 455 460

Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu
 465 470 475 480

Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Asn Pro
 485 490 495

Thr Asn Val Glu Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn
 500 505 510

Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly
515 520 525

Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His
530 535 540

His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly
545 550 555 560

Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile
565 570 575

Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe
580 585 590

Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu
595 600 605

Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala
610 615 620

Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met
625 630 635 640

Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala
645 650 655

Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile
660 665 670

Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr
675 680 685

Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro
690 695 700

Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr
705 710 715 720

Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val

725

730

735

Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile
740 745 750

Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met
755 760 765

Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly
770 775 780

Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser
785 790 795 800

Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr
805 810 815

Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Ile His Gln His Asn Asn
820 825 830

Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala
835 840 845

Tyr Pro Ala Asn Val Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp
850 855 860

Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile
865 870 875 880

Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly
885 890 895

Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe
900 905 910

Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu
915 920 925

Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu
930 935 940

Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
 945 950 955

<210> 4
 <211> 962
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Hexon Polypeptide

<400> 4

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
 1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
 20 25 30

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
 35 40 45

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

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
 65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
 85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
 115 120 125

Ala Pro Asn Ser Cys Glu Trp Glu Gln Asn Glu Thr Ala Gln Val Asp
 130 135 140

Ala Gln Glu Leu Asp Glu Glu Glu Asn Glu Ala Asn Glu Ala Gln Ala

145		150		155		160
Arg	Glu	Gln	Glu	Gln	Ala	Pro
				165		175
Leu	Ser	Gly	Glu	Ala	Ile	Asn
			180			185
						190
Gly	Ala	Ala	Thr	Glu	Gly	Asn
						200
						205
Gln	Pro	Glu	Pro	Gln	Ile	Gly
						215
						220
Ser	Val	Ala	Gly	Gly	Arg	Val
225					230	
						235
Cys	Tyr	Gly	Ser	Tyr	Ala	Arg
						245
						250
						255
Val	Met	Val	Glu	Gln	Asn	Gly
						260
						265
						270
Phe	Phe	Ser	Thr	Ser	Val	Asn
						275
						280
						285
Pro	Lys	Leu	Val	Leu	Tyr	Ser
						290
						295
						300
Thr	His	Leu	Ser	Tyr	Lys	Pro
305						310
						315
						320
Met	Leu	Gly	Gln	Gln	Ser	Met
						325
						330
						335
Arg	Asp	Asn	Phe	Ile	Gly	Leu
						340
						345
						350
Gly	Val	Leu	Ala	Gly	Gln	Ala
						355
						360
						365

Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile
 370 375 380

Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser
 385 390 395 400

Tyr Asp Pro Asp Val Arg Ile Ile Glu Asn His Gly Thr Glu Asp Glu
 405 410 415

Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Ile Gly Ile Thr Asp Thr
 420 425 430

Phe Gln Ala Val Lys Thr Thr Ala Ala Asn Gly Asp Gln Gly Asn Thr
 435 440 445

Thr Trp Gln Lys Asp Ser Thr Phe Ala Glu Arg Asn Glu Ile Gly Val
 450 455 460

Gly Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg
 465 470 475 480

Asn Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys
 485 490 495

Tyr Asn Pro Thr Asn Val Glu Ile Ser Asp Asn Pro Asn Thr Tyr Asp
 500 505 510

Tyr Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile
 515 520 525

Asn Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro
 530 535 540

Phe Asn His Pro Arg His Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu
 545 550 555 560

Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe
 565 570 575

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

Trp Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly
595 600 605

Asn Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys
610 615 620

Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu
625 630 635 640

Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr
645 650 655

Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn
660 665 670

Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp
675 680 685

Ala Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly
690 695 700

Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly
705 710 715 720

Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp
725 730 735

Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu
740 745 750

Phe Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln
755 760 765

Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr
770 775 780

Asn Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg
785 790 795 800

Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val
805 810 815

Asp Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Ile His Gln
820 825 830

His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu
835 840 845

Gly Gln Ala Tyr Pro Ala Asn Val Pro Tyr Pro Leu Ile Gly Lys Thr
850 855 860

Ala Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu
865 870 875 880

Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr
885 890 895

Asp Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp
900 905 910

Met Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val
915 920 925

Leu Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly
930 935 940

Val Ile Glu Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala
945 950 955 960

Thr Thr

<210> 5
<211> 288
<212> PRT
<213> Homo sapiens

<400> 5

Met Gln Ile Pro Gln Ala Pro Trp Pro Val Val Trp Ala Val Leu Gln
1 5 10 15

Leu Gly Trp Arg Pro Gly Trp Phe Leu Asp Ser Pro Asp Arg Pro Trp
20 25 30

Asn Pro Pro Thr Phe Ser Pro Ala Leu Leu Val Val Thr Glu Gly Asp
35 40 45

Asn Ala Thr Phe Thr Cys Ser Phe Ser Asn Thr Ser Glu Ser Phe Val
50 55 60

Leu Asn Trp Tyr Arg Met Ser Pro Ser Asn Gln Thr Asp Lys Leu Ala
65 70 75 80

Ala Phe Pro Glu Asp Arg Ser Gln Pro Gly Gln Asp Cys Arg Phe Arg
85 90 95

Val Thr Gln Leu Pro Asn Gly Arg Asp Phe His Met Ser Val Val Arg
100 105 110

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

Ala Pro Lys Ala Gln Ile Lys Glu Ser Leu Arg Ala Glu Leu Arg Val
130 135 140

Thr Glu Arg Arg Ala Glu Val Pro Thr Ala His Pro Ser Pro Ser Pro
145 150 155 160

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

Leu Leu Gly Ser Leu Val Leu Leu Val Trp Val Leu Ala Val Ile Cys
180 185 190

Ser Arg Ala Ala Arg Gly Thr Ile Gly Ala Arg Arg Thr Gly Gln Pro
195 200 205

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

Glu Leu Asp Phe Gln Trp Arg Glu Lys Thr Pro Glu Pro Pro Val Pro
 225 230 235 240

Cys Val Pro Glu Gln Thr Glu Tyr Ala Thr Ile Val Phe Pro Ser Gly
 245 250 255

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

Ser Ala Gln Pro Leu Arg Pro Glu Asp Gly His Cys Ser Trp Pro Leu
 275 280 285

<210> 6
 <211> 288
 <212> PRT
 <213> Mus musculus

<400> 6

Met Trp Val Arg Gln Val Pro Trp Ser Phe Thr Trp Ala Val Leu Gln
 1 5 10 15

Leu Ser Trp Gln Ser Gly Trp Leu Leu Glu Val Pro Asn Gly Pro Trp
 20 25 30

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

Asn Ala Thr Phe Thr Cys Ser Leu Ser Asn Trp Ser Glu Asp Leu Met
 50 55 60

Leu Asn Trp Asn Arg Leu Ser Pro Ser Asn Gln Thr Glu Lys Gln Ala
 65 70 75 80

Ala Phe Cys Asn Gly Leu Ser Gln Pro Val Gln Asp Ala Arg Phe Gln
 85 90 95

Ile Ile Gln Leu Pro Asn Arg His Asp Phe His Met Asn Ile Leu Asp

100	105	110
Thr Arg Arg Asn Asp Ser Gly Ile Tyr Leu Cys Gly Ala Ile Ser Leu 115 120 125		
His Pro Lys Ala Lys Ile Glu Glu Ser Pro Gly Ala Glu Leu Val Val 130 135 140		
Thr Glu Arg Ile Leu Glu Thr Ser Thr Arg Tyr Pro Ser Pro Ser Pro 145 150 155 160		
Lys Pro Glu Gly Arg Phe Gln Gly Met Val Ile Gly Ile Met Ser Ala 165 170 175		
Leu Val Gly Ile Pro Val Leu Leu Leu Leu Ala Trp Ala Leu Ala Val 180 185 190		
Phe Cys Ser Thr Ser Met Ser Glu Ala Arg Gly Ala Gly Ser Lys Asp 195 200 205		
Asp Thr Leu Lys Glu Glu Pro Ser Ala Ala Pro Val Pro Ser Val Ala 210 215 220		
Tyr Glu Glu Leu Asp Phe Gln Gly Arg Glu Lys Thr Pro Glu Leu Pro 225 230 235 240		
Thr Ala Cys Val His Thr Glu Tyr Ala Thr Ile Val Phe Thr Glu Gly 245 250 255		
Leu Gly Ala Ser Ala Met Gly Arg Arg Gly Ser Ala Asp Gly Leu Gln 260 265 270		
Gly Pro Arg Pro Pro Arg His Glu Asp Gly His Cys Ser Trp Pro Leu 275 280 285		

<210> 7
 <211> 390
 <212> PRT
 <213> Artificial Sequence

<220>

<223> PD-1 Fusion

<400> 7

Met Trp Val Arg Gln Val Pro Trp Ser Phe Thr Trp Ala Val Leu Gln
1 5 10 15

Leu Ser Trp Gln Ser Gly Trp Leu Leu Glu Val Pro Asn Gly Pro Trp
20 25 30

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

Asn Ala Thr Phe Thr Cys Ser Leu Ser Asn Trp Ser Glu Asp Leu Met
50 55 60

Leu Asn Trp Asn Arg Leu Ser Pro Ser Asn Gln Thr Glu Lys Gln Ala
65 70 75 80

Ala Phe Cys Asn Gly Leu Ser Gln Pro Val Gln Asp Ala Arg Phe Gln
85 90 95

Ile Ile Gln Leu Pro Asn Arg His Asp Phe His Met Asn Ile Leu Asp
100 105 110

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

His Pro Lys Ala Lys Ile Glu Glu Ser Pro Gly Ala Glu Leu Val Val
130 135 140

Thr Glu Arg Ile Leu Glu Thr Ser Thr Arg Tyr Pro Ser Pro Ser Pro
145 150 155 160

Lys Pro Glu Gly Arg Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro
165 170 175

Pro Val Ala Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
180 185 190

Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp

195

200

205

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

Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn
 225 230 235 240

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

Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro
 260 265 270

Ala Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu
 275 280 285

Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn
 290 295 300

Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
 305 310 315 320

Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
 325 330 335

Thr Pro Pro Met Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
 340 345 350

Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
 355 360 365

Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
 370 375 380

Ser Leu Ser Pro Gly Lys
 385 390

<210> 8

<211> 273

<212> PRT
<213> Artificial Sequence

<220>
<223> PD-1 Fusion

<400> 8

Met Trp Val Arg Gln Val Pro Trp Ser Phe Thr Trp Ala Val Leu Gln
1 5 10 15

Leu Ser Trp Gln Ser Gly Trp Leu Leu Glu Val Pro Asn Gly Pro Trp
20 25 30

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

Asn Ala Thr Phe Thr Cys Ser Leu Ser Asn Trp Ser Glu Asp Leu Met
50 55 60

Leu Asn Trp Asn Arg Leu Ser Pro Ser Asn Gln Thr Glu Lys Gln Ala
65 70 75 80

Ala Phe Cys Asn Gly Leu Ser Gln Pro Val Gln Asp Ala Arg Phe Gln
85 90 95

Ile Ile Gln Leu Pro Asn Arg His Asp Phe His Met Asn Ile Leu Asp
100 105 110

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

His Pro Lys Ala Lys Ile Glu Glu Ser Pro Gly Ala Glu Leu Val Val
130 135 140

Thr Glu Arg Ile Leu Glu Thr Ser Thr Arg Tyr Pro Ser Pro Ser Pro
145 150 155 160

Lys Pro Glu Gly Arg Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro
165 170 175

Pro Val Ala Gly Gly Ser Ala Asn Ser Phe Leu Glu Glu Met Lys Lys

180

185

190

Gly His Leu Glu Arg Glu Cys Met Glu Glu Thr Cys Ser Tyr Glu Glu
 195 200 205

Ala Arg Glu Val Phe Glu Asp Ser Asp Lys Thr Asn Glu Phe Trp Asn
 210 215 220

Lys Tyr Lys Asp Gly Asp Gln Cys Glu Thr Ser Pro Cys Gln Asn Gln
 225 230 235 240

Gly Lys Cys Lys Asp Gly Leu Gly Glu Tyr Thr Cys Thr Cys Leu Glu
 245 250 255

Gly Phe Glu Gly Lys Asn Cys Glu Leu Pro Val Gly Tyr Arg Gly Gly
 260 265 270

Ser

<210> 9

<211> 252

<212> PRT

<213> Artificial Sequence

<220>

<223> PD-1 Fusion

<400> 9

Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Gly
 1 5 10 15

Ser Ala Asn Ser Phe Leu Glu Glu Met Lys Lys Gly His Leu Glu Arg
 20 25 30

Glu Cys Met Glu Glu Thr Cys Ser Tyr Glu Glu Ala Arg Glu Val Phe
 35 40 45

Glu Asp Ser Asp Lys Thr Asn Glu Phe Trp Asn Lys Tyr Lys Asp Gly
 50 55 60

Asp Gln Cys Glu Thr Ser Pro Cys Gln Asn Gln Gly Lys Cys Lys Asp
65 70 75 80

Gly Leu Gly Glu Tyr Thr Cys Thr Cys Leu Glu Gly Phe Glu Gly Lys
85 90 95

Asn Cys Glu Leu Pro Val Gly Tyr Arg Gly Gly Ser Gly Trp Leu Leu
100 105 110

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

Leu Thr Val Ser Glu Gly Ala Asn Ala Thr Phe Thr Cys Ser Leu Ser
130 135 140

Asn Trp Ser Glu Asp Leu Met Leu Asn Trp Asn Arg Leu Ser Pro Ser
145 150 155 160

Asn Gln Thr Glu Lys Gln Ala Ala Phe Cys Asn Gly Leu Ser Gln Pro
165 170 175

Val Gln Asp Ala Arg Phe Gln Ile Ile Gln Leu Pro Asn Arg His Asp
180 185 190

Phe His Met Asn Ile Leu Asp Thr Arg Arg Asn Asp Ser Gly Ile Tyr
195 200 205

Leu Cys Gly Ala Ile Ser Leu His Pro Lys Ala Lys Ile Glu Glu Ser
210 215 220

Pro Gly Ala Glu Leu Val Val Thr Glu Arg Ile Leu Glu Thr Ser Thr
225 230 235 240

Arg Tyr Pro Ser Pro Ser Pro Lys Pro Glu Gly Arg
245 250

<210> 10
<211> 310
<212> PRT
<213> Artificial Sequence

<220>

<223> PD-1 Fusion

<400> 10

Met Trp Val Arg Gln Val Pro Trp Ser Phe Thr Trp Ala Val Leu Gln
1 5 10 15

Leu Ser Trp Gln Ser Gly Trp Leu Leu Glu Val Pro Asn Gly Pro Trp
20 25 30

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

Asn Ala Thr Phe Thr Cys Ser Leu Ser Asn Trp Ser Glu Asp Leu Met
50 55 60

Leu Asn Trp Asn Arg Leu Ser Pro Ser Asn Gln Thr Glu Lys Gln Ala
65 70 75 80

Ala Phe Cys Asn Gly Leu Ser Gln Pro Val Gln Asp Ala Arg Phe Gln
85 90 95

Ile Ile Gln Leu Pro Asn Arg His Asp Phe His Met Asn Ile Leu Asp
100 105 110

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

His Pro Lys Ala Lys Ile Glu Glu Ser Pro Gly Ala Glu Leu Val Val
130 135 140

Thr Glu Arg Ile Leu Glu Thr Ser Thr Arg Tyr Pro Ser Pro Ser Pro
145 150 155 160

Lys Pro Glu Gly Arg Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro
165 170 175

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

Lys Thr Ser Gln Ile His Ser Asp Thr Ile Leu Arg Ile Thr Gln Gly
195 200 205

Leu Asp Asp Ala Asn Lys Arg Ile Ile Ala Leu Glu Gln Ser Arg Asp
210 215 220

Asp Leu Val Ala Ser Val Ser Asp Ala Gln Leu Ala Ile Ser Arg Leu
225 230 235 240

Glu Ser Ser Ile Gly Ala Leu Gln Thr Val Val Asn Gly Leu Asp Ser
245 250 255

Ser Val Thr Gln Leu Gly Ala Arg Val Gly Gln Leu Glu Thr Gly Leu
260 265 270

Ala Glu Leu Arg Val Asp His Asp Asn Leu Val Ala Arg Val Asp Thr
275 280 285

Ala Glu Arg Asn Ile Gly Ser Leu Thr Thr Glu Leu Ser Thr Leu Thr
290 295 300

Leu Arg Val Thr Ser Ile
305 310

<210> 11
<211> 599
<212> PRT
<213> Artificial Sequence

<220>
<223> PD-1 Fusion Polypeptide

<400> 11

Met Trp Val Arg Gln Val Pro Trp Ser Phe Thr Trp Ala Val Leu Gln
1 5 10 15

Leu Ser Trp Gln Ser Gly Trp Leu Leu Glu Val Pro Asn Gly Pro Trp
20 25 30

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

Asn Ala Thr Phe Thr Cys Ser Leu Ser Asn Trp Ser Glu Asp Leu Met
50 55 60

Leu Asn Trp Asn Arg Leu Ser Pro Ser Asn Gln Thr Glu Lys Gln Ala
65 70 75 80

Ala Phe Cys Asn Gly Leu Ser Gln Pro Val Gln Asp Ala Arg Phe Gln
85 90 95

Ile Ile Gln Leu Pro Asn Arg His Asp Phe His Met Asn Ile Leu Asp
100 105 110

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

His Pro Lys Ala Lys Ile Glu Glu Ser Pro Gly Ala Glu Leu Val Val
130 135 140

Thr Glu Arg Ile Leu Glu Thr Ser Thr Arg Tyr Pro Ser Pro Ser Pro
145 150 155 160

Lys Pro Glu Gly Arg Ser Gly Trp Leu Leu Glu Val Pro Asn Gly Pro
165 170 175

Trp Arg Ser Leu Thr Phe Tyr Pro Ala Trp Leu Thr Val Ser Glu Gly
180 185 190

Ala Asn Ala Thr Phe Thr Cys Ser Leu Ser Asn Trp Ser Glu Asp Leu
195 200 205

Met Leu Asn Trp Asn Arg Leu Ser Pro Ser Asn Gln Thr Glu Lys Gln
210 215 220

Ala Ala Phe Cys Asn Gly Leu Ser Gln Pro Val Gln Asp Ala Arg Phe
225 230 235 240

Gln Ile Ile Gln Leu Pro Asn Arg His Asp Phe His Met Asn Ile Leu
245 250 255

Asp Thr Arg Arg Asn Asp Ser Gly Ile Tyr Leu Cys Gly Ala Ile Ser
260 265 270

Leu His Pro Lys Ala Lys Ile Glu Glu Ser Pro Gly Ala Glu Leu Val
275 280 285

Val Thr Glu Arg Ile Leu Glu Thr Ser Thr Arg Tyr Pro Ser Pro Ser
290 295 300

Pro Lys Pro Glu Gly Arg Cys Cys Val Glu Cys Pro Pro Cys Pro Ala
305 310 315 320

Pro Pro Val Ala Gly Thr Met Gly Gly Ala Ala Gly Ser Gly Ala Ala
325 330 335

Glu Ala Gly Ile Thr Gly Thr Trp Tyr Asn Gln Leu Gly Ser Thr Phe
340 345 350

Ile Val Thr Ala Gly Ala Asp Gly Ala Leu Thr Gly Thr Tyr Glu Ser
355 360 365

Ala Val Gly Asn Ala Glu Ser Arg Tyr Val Leu Thr Gly Arg Tyr Glu
370 375 380

Ser Ala Pro Ala Thr Asp Gly Ser Gly Thr Ala Leu Gly Trp Thr Val
385 390 395 400

Ala Trp Lys Asn Asn Tyr Arg Asn Ala His Ser Ala Thr Thr Trp Ser
405 410 415

Gly Gln Tyr Val Gly Gly Ala Glu Ala Arg Ile Asn Thr Gln Trp Leu
420 425 430

Leu Thr Ser Gly Thr Thr Glu Ala Asn Ala Trp Lys Ser Thr Leu Val
435 440 445

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

Ala Ala Gly Ser Gly Ala Ala Glu Ala Gly Ile Thr Gly Thr Trp Tyr

465 470 475 480
 Asn Gln Leu Gly Ser Thr Phe Ile Val Thr Ala Gly Ala Asp Gly Ala
 485 490 495
 Leu Thr Gly Thr Tyr Glu Ser Ala Val Gly Asn Ala Glu Ser Arg Tyr
 500 505 510
 Val Leu Thr Gly Arg Tyr Glu Ser Ala Pro Ala Thr Asp Gly Ser Gly
 515 520 525
 Thr Ala Leu Gly Trp Thr Val Ala Trp Lys Asn Asn Tyr Arg Asn Ala
 530 535 540
 His Ser Ala Thr Thr Trp Ser Gly Gln Tyr Val Gly Gly Ala Glu Ala
 545 550 555 560
 Arg Ile Asn Thr Gln Trp Leu Leu Thr Ser Gly Thr Thr Glu Ala Asn
 565 570 575
 Ala Trp Lys Ser Thr Leu Val Gly His Asp Thr Phe Thr Lys Val Lys
 580 585 590
 Pro Ser Ala Ala Ser Gly Ser
 595

<210> 12
 <211> 765
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> PD-1 Fusion Polypeptide

<400> 12

Met Ser Pro Gln Arg Asp Arg Ile Asn Ala Phe Tyr Lys Asp Asn Pro
 1 5 10 15
 His Pro Lys Gly Ser Arg Ile Val Ile Asn Arg Glu His Leu Met Ile
 20 25 30

Asp Arg Pro Tyr Val Leu Leu Ala Val Leu Phe Val Met Phe Leu Ser
35 40 45

Leu Ile Gly Leu Leu Ala Ile Ala Gly Ile Arg Leu His Arg Ala Ala
50 55 60

Ile Tyr Thr Ala Glu Ile His Lys Ser Leu Ser Thr Asn Leu Asp Val
65 70 75 80

Thr Asn Ser Ile Glu His Gln Val Lys Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Thr Pro Gln Arg Phe Thr
100 105 110

Asp Leu Val Lys Phe Ile Ser Asp Lys Ile Lys Phe Leu Asn Pro Asp
115 120 125

Arg Glu Tyr Asp Phe Arg Asp Leu Thr Trp Cys Ile Asn Pro Pro Glu
130 135 140

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

Glu Leu Met Asn Ala Leu Val Asn Ser Thr Leu Leu Glu Thr Arg Thr
165 170 175

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

Thr Ile Arg Gly Gln Phe Ser Asn Met Ser Leu Ser Leu Leu Asp Leu
195 200 205

Tyr Leu Gly Arg Gly Tyr Asn Val Ser Ser Ile Val Thr Met Thr Ser
210 215 220

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

Ser Lys Arg Ser Glu Leu Ser Gln Leu Ser Met Tyr Arg Val Phe Glu

	245		250		255
Val Gly Val Ile Arg Asn Pro Gly Leu Gly Ala Pro Val Phe His Met	260		265		270
Thr Asn Tyr Leu Glu Gln Pro Val Ser Asn Asp Leu Ser Asn Cys Met	275		280		285
Val Ala Leu Gly Glu Leu Lys Leu Ala Ala Leu Cys His Gly Glu Asp	290		295		300
Ser Ile Thr Ile Pro Tyr Gln Gly Ser Gly Lys Gly Val Ser Phe Gln	305		310		315
Leu Val Lys Leu Gly Val Trp Lys Ser Pro Thr Asp Met Gln Ser Trp		325		330	335
Val Pro Leu Ser Thr Asp Asp Pro Val Ile Asp Arg Leu Tyr Leu Ser		340		345	350
Ser His Arg Gly Val Ile Ala Asp Asn Gln Ala Lys Trp Ala Val Pro		355		360	365
Thr Thr Arg Thr Asp Asp Lys Leu Arg Met Glu Thr Cys Phe Gln Gln		370		375	380
Ala Cys Lys Gly Lys Ile Gln Ala Leu Cys Glu Asn Pro Glu Trp Ala	385		390		395
Pro Leu Lys Asp Asn Arg Ile Pro Ser Tyr Gly Val Leu Ser Val Asp		405		410	415
Leu Ser Leu Thr Val Glu Leu Lys Ile Lys Ile Ala Ser Gly Phe Gly		420		425	430
Pro Leu Ile Thr His Gly Ser Gly Met Asp Leu Tyr Lys Ser Asn His		435		440	445
Asn Asn Val Tyr Trp Leu Thr Ile Pro Pro Met Lys Asn Leu Ala Leu		450		455	460

Gly Val Ile Asn Thr Leu Glu Trp Ile Pro Arg Phe Lys Val Ser Pro
 465 470 475 480

Ala Leu Phe Asn Val Pro Ile Lys Glu Ala Gly Gly Asp Cys His Ala
 485 490 495

Pro Thr Tyr Leu Pro Ala Glu Val Asp Gly Asp Val Lys Leu Ser Ser
 500 505 510

Asn Leu Val Ile Leu Pro Gly Gln Asp Leu Gln Tyr Val Leu Ala Thr
 515 520 525

Tyr Asp Thr Ser Ala Val Glu His Ala Val Val Tyr Tyr Val Tyr Ser
 530 535 540

Pro Ser Arg Ser Phe Ser Tyr Phe Tyr Pro Phe Arg Leu Pro Ile Lys
 545 550 555 560

Gly Val Pro Ile Glu Leu Gln Val Glu Cys Phe Thr Trp Asp Gln Lys
 565 570 575

Leu Trp Cys Arg His Phe Cys Val Leu Ala Asp Ser Glu Ser Gly Gly
 580 585 590

His Ile Thr His Ser Gly Met Val Gly Met Gly Val Ser Cys Thr Val
 595 600 605

Thr Arg Glu Asp Gly Thr Asn Ile Glu Gly Arg Pro Gly Trp Phe Leu
 610 615 620

Asp Ser Pro Asp Arg Pro Trp Asn Pro Pro Thr Phe Ser Pro Ala Leu
 625 630 635 640

Leu Val Val Thr Glu Gly Asp Asn Ala Thr Phe Thr Cys Ser Phe Ser
 645 650 655

Asn Thr Ser Glu Ser Phe His Val Ile Trp His Arg Glu Ser Pro Ser
 660 665 670

Gly Gln Thr Asp Thr Leu Ala Ala Phe Pro Glu Asp Arg Ser Gln Pro
675 680 685

Gly Gln Asp Cys Arg Phe Arg Val Thr Gln Leu Pro Asn Gly Arg Asp
690 695 700

Phe His Met Ser Val Val Arg Ala Arg Arg Asn Asp Ser Gly Thr Tyr
705 710 715 720

Val Cys Gly Val Ile Ser Leu Ala Pro Lys Ile Gln Ile Lys Glu Ser
725 730 735

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

Ala His Pro Ser Pro Ser Pro His His His His His His
755 760 765

<210> 13
<211> 385
<212> PRT
<213> Artificial Sequence

<220>
<223> PD-1 Fusion Polypeptide

<400> 13

Met Gln Ile Pro Gln Ala Pro Trp Pro Val Val Trp Ala Val Leu Gln
1 5 10 15

Leu Gly Trp Arg Pro Gly Trp Phe Leu Asp Ser Pro Asp Arg Pro Trp
20 25 30

Asn Pro Pro Thr Phe Ser Pro Ala Leu Leu Val Val Thr Glu Gly Asp
35 40 45

Asn Ala Thr Phe Thr Cys Ser Phe Ser Asn Thr Ser Glu Ser Phe Val
50 55 60

Leu Asn Trp Tyr Arg Met Ser Pro Ser Asn Gln Thr Asp Lys Leu Ala
65 70 75 80

Ala Phe Pro Glu Asp Arg Ser Gln Pro Gly Gln Asp Cys Arg Phe Arg
85 90 95

Val Thr Gln Leu Pro Asn Gly Arg Asp Phe His Met Ser Val Val Arg
100 105 110

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

Ala Pro Lys Ala Gln Ile Lys Glu Ser Leu Arg Ala Glu Leu Arg Val
130 135 140

Thr Glu Arg Arg Ala Glu Val Pro Thr Ala His Pro Ser Pro Ser Pro
145 150 155 160

Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro
165 170 175

Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
180 185 190

Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp
195 200 205

Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
210 215 220

Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val
225 230 235 240

Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu
245 250 255

Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys
260 265 270

Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr
275 280 285

Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr
 290 295 300

Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
 305 310 315 320

Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu
 325 330 335

Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys
 340 345 350

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu
 355 360 365

Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
 370 375 380

Lys
 385

<210> 14
 <211> 268
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> PD-1 Fusion Polypeptide

<400> 14

Met Gln Ile Pro Gln Ala Pro Trp Pro Val Val Trp Ala Val Leu Gln
 1 5 10 15

Leu Gly Trp Arg Pro Gly Trp Phe Leu Asp Ser Pro Asp Arg Pro Trp
 20 25 30

Asn Pro Pro Thr Phe Ser Pro Ala Leu Leu Val Val Thr Glu Gly Asp
 35 40 45

Asn Ala Thr Phe Thr Cys Ser Phe Ser Asn Thr Ser Glu Ser Phe Val
 50 55 60

Leu Asn Trp Tyr Arg Met Ser Pro Ser Asn Gln Thr Asp Lys Leu Ala
65 70 75 80

Ala Phe Pro Glu Asp Arg Ser Gln Pro Gly Gln Asp Cys Arg Phe Arg
85 90 95

Val Thr Gln Leu Pro Asn Gly Arg Asp Phe His Met Ser Val Val Arg
100 105 110

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

Ala Pro Lys Ala Gln Ile Lys Glu Ser Leu Arg Ala Glu Leu Arg Val
130 135 140

Thr Glu Arg Arg Ala Glu Val Pro Thr Ala His Pro Ser Pro Ser Pro
145 150 155 160

Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Gly
165 170 175

Ser Ala Asn Ser Phe Leu Glu Glu Met Lys Lys Gly His Leu Glu Arg
180 185 190

Glu Cys Met Glu Glu Thr Cys Ser Tyr Glu Glu Ala Arg Glu Val Phe
195 200 205

Glu Asp Ser Asp Lys Thr Asn Glu Phe Trp Asn Lys Tyr Lys Asp Gly
210 215 220

Asp Gln Cys Glu Thr Ser Pro Cys Gln Asn Gln Gly Lys Cys Lys Asp
225 230 235 240

Gly Leu Gly Glu Tyr Thr Cys Thr Cys Leu Glu Gly Phe Glu Gly Lys
245 250 255

Asn Cys Glu Leu Pro Val Gly Tyr Arg Gly Gly Ser
260 265

<210> 15
 <211> 248
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> PD-1 Fusion Polypeptide

<400> 15

Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Gly
 1 5 10 15

Ser Ala Asn Ser Phe Leu Glu Glu Met Lys Lys Gly His Leu Glu Arg
 20 25 30

Glu Cys Met Glu Glu Thr Cys Ser Tyr Glu Glu Ala Arg Glu Val Phe
 35 40 45

Glu Asp Ser Asp Lys Thr Asn Glu Phe Trp Asn Lys Tyr Lys Asp Gly
 50 55 60

Asp Gln Cys Glu Thr Ser Pro Cys Gln Asn Gln Gly Lys Cys Lys Asp
 65 70 75 80

Gly Leu Gly Glu Tyr Thr Cys Thr Cys Leu Glu Gly Phe Glu Gly Lys
 85 90 95

Asn Cys Glu Leu Pro Val Gly Tyr Arg Gly Gly Ser Pro Gly Trp Phe
 100 105 110

Leu Asp Ser Pro Asp Arg Pro Trp Asn Pro Pro Thr Phe Ser Pro Ala
 115 120 125

Leu Leu Val Val Thr Glu Gly Asp Asn Ala Thr Phe Thr Cys Ser Phe
 130 135 140

Ser Asn Thr Ser Glu Ser Phe Val Leu Asn Trp Tyr Arg Met Ser Pro
 145 150 155 160

Ser Asn Gln Thr Asp Lys Leu Ala Ala Phe Pro Glu Asp Arg Ser Gln
 165 170 175

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

Asp Phe His Met Ser Val Val Arg Ala Arg Arg Asn Asp Ser Gly Thr
195 200 205

Tyr Leu Cys Gly Ala Ile Ser Leu Ala Pro Lys Ala Gln Ile Lys Glu
210 215 220

Ser Leu Arg Ala Glu Leu Arg Val Thr Glu Arg Arg Ala Glu Val Pro
225 230 235 240

Thr Ala His Pro Ser Pro Ser Pro
245

<210> 16
<211> 305
<212> PRT
<213> Artificial Sequence

<220>
<223> PD-1 Fusion Polypeptide

<400> 16

Met Gln Ile Pro Gln Ala Pro Trp Pro Val Val Trp Ala Val Leu Gln
1 5 10 15

Leu Gly Trp Arg Pro Gly Trp Phe Leu Asp Ser Pro Asp Arg Pro Trp
20 25 30

Asn Pro Pro Thr Phe Ser Pro Ala Leu Leu Val Val Thr Glu Gly Asp
35 40 45

Asn Ala Thr Phe Thr Cys Ser Phe Ser Asn Thr Ser Glu Ser Phe Val
50 55 60

Leu Asn Trp Tyr Arg Met Ser Pro Ser Asn Gln Thr Asp Lys Leu Ala
65 70 75 80

Ala Phe Pro Glu Asp Arg Ser Gln Pro Gly Gln Asp Cys Arg Phe Arg

85

90

95

Val Thr Gln Leu Pro Asn Gly Arg Asp Phe His Met Ser Val Val Arg
 100 105 110

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

Ala Pro Lys Ala Gln Ile Lys Glu Ser Leu Arg Ala Glu Leu Arg Val
 130 135 140

Thr Glu Arg Arg Ala Glu Val Pro Thr Ala His Pro Ser Pro Ser Pro
 145 150 155 160

Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Ser
 165 170 175

Lys Gly Leu Glu Ser Arg Val Ser Ala Leu Glu Lys Thr Ser Gln Ile
 180 185 190

His Ser Asp Thr Ile Leu Arg Ile Thr Gln Gly Leu Asp Asp Ala Asn
 195 200 205

Lys Arg Ile Ile Ala Leu Glu Gln Ser Arg Asp Asp Leu Val Ala Ser
 210 215 220

Val Ser Asp Ala Gln Leu Ala Ile Ser Arg Leu Glu Ser Ser Ile Gly
 225 230 235 240

Ala Leu Gln Thr Val Val Asn Gly Leu Asp Ser Ser Val Thr Gln Leu
 245 250 255

Gly Ala Arg Val Gly Gln Leu Glu Thr Gly Leu Ala Glu Leu Arg Val
 260 265 270

Asp His Asp Asn Leu Val Ala Arg Val Asp Thr Ala Glu Arg Asn Ile
 275 280 285

Gly Ser Leu Thr Thr Glu Leu Ser Thr Leu Thr Leu Arg Val Thr Ser
 290 295 300

Ile
305

<210> 17
<211> 594
<212> PRT
<213> Artificial Sequence

<220>
<223> PD-1 Fusion Polypeptide

<400> 17

Met Gln Ile Pro Gln Ala Pro Trp Pro Val Val Trp Ala Val Leu Gln
1 5 10 15

Leu Gly Trp Arg Pro Gly Trp Phe Leu Asp Ser Pro Asp Arg Pro Trp
20 25 30

Asn Pro Pro Thr Phe Ser Pro Ala Leu Leu Val Val Thr Glu Gly Asp
35 40 45

Asn Ala Thr Phe Thr Cys Ser Phe Ser Asn Thr Ser Glu Ser Phe Val
50 55 60

Leu Asn Trp Tyr Arg Met Ser Pro Ser Asn Gln Thr Asp Lys Leu Ala
65 70 75 80

Ala Phe Pro Glu Asp Arg Ser Gln Pro Gly Gln Asp Cys Arg Phe Arg
85 90 95

Val Thr Gln Leu Pro Asn Gly Arg Asp Phe His Met Ser Val Val Arg
100 105 110

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

Ala Pro Lys Ala Gln Ile Lys Glu Ser Leu Arg Ala Glu Leu Arg Val
130 135 140

Thr Glu Arg Arg Ala Glu Val Pro Thr Ala His Pro Ser Pro Ser Pro

145		150		155		160
Ser Gly Trp Leu	Leu Glu Val Pro Asn Gly Pro Trp Arg Ser Leu Thr	165	170	175		
Phe Tyr Pro Ala Trp Leu Thr Val Ser Glu Gly Ala Asn Ala Thr Phe		180	185	190		
Thr Cys Ser Leu Ser Asn Trp Ser Glu Asp Leu Met Leu Asn Trp Asn		195	200	205		
Arg Leu Ser Pro Ser Asn Gln Thr Glu Lys Gln Ala Ala Phe Cys Asn		210	215	220		
Gly Leu Ser Gln Pro Val Gln Asp Ala Arg Phe Gln Ile Ile Gln Leu		225	230	235		240
Pro Asn Arg His Asp Phe His Met Asn Ile Leu Asp Thr Arg Arg Asn		245	250	255		
Asp Ser Gly Ile Tyr Leu Cys Gly Ala Ile Ser Leu His Pro Lys Ala		260	265	270		
Lys Ile Glu Glu Ser Pro Gly Ala Glu Leu Val Val Thr Glu Arg Ile		275	280	285		
Leu Glu Thr Ser Thr Arg Tyr Pro Ser Pro Ser Pro Lys Pro Glu Gly		290	295	300		
Arg Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly		305	310	315		320
Thr Met Gly Gly Ala Ala Gly Ser Gly Ala Ala Glu Ala Gly Ile Thr		325	330	335		
Gly Thr Trp Tyr Asn Gln Leu Gly Ser Thr Phe Ile Val Thr Ala Gly		340	345	350		
Ala Asp Gly Ala Leu Thr Gly Thr Tyr Glu Ser Ala Val Gly Asn Ala		355	360	365		

Glu Ser Arg Tyr Val Leu Thr Gly Arg Tyr Glu Ser Ala Pro Ala Thr
 370 375 380

Asp Gly Ser Gly Thr Ala Leu Gly Trp Thr Val Ala Trp Lys Asn Asn
 385 390 395 400

Tyr Arg Asn Ala His Ser Ala Thr Thr Trp Ser Gly Gln Tyr Val Gly
 405 410 415

Gly Ala Glu Ala Arg Ile Asn Thr Gln Trp Leu Leu Thr Ser Gly Thr
 420 425 430

Thr Glu Ala Asn Ala Trp Lys Ser Thr Leu Val Gly His Asp Thr Phe
 435 440 445

Thr Lys Val Lys Pro Ser Ala Ala Ser Gly Ser Ala Ala Gly Ser Gly
 450 455 460

Ala Ala Glu Ala Gly Ile Thr Gly Thr Trp Tyr Asn Gln Leu Gly Ser
 465 470 475 480

Thr Phe Ile Val Thr Ala Gly Ala Asp Gly Ala Leu Thr Gly Thr Tyr
 485 490 495

Glu Ser Ala Val Gly Asn Ala Glu Ser Arg Tyr Val Leu Thr Gly Arg
 500 505 510

Tyr Glu Ser Ala Pro Ala Thr Asp Gly Ser Gly Thr Ala Leu Gly Trp
 515 520 525

Thr Val Ala Trp Lys Asn Asn Tyr Arg Asn Ala His Ser Ala Thr Thr
 530 535 540

Trp Ser Gly Gln Tyr Val Gly Gly Ala Glu Ala Arg Ile Asn Thr Gln
 545 550 555 560

Trp Leu Leu Thr Ser Gly Thr Thr Glu Ala Asn Ala Trp Lys Ser Thr
 565 570 575

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

Gly Ser

<210> 18
<211> 765
<212> PRT
<213> Artificial Sequence

<220>
<223> PD-1 Fusion Polypeptide

<400> 18

Met Ser Pro Gln Arg Asp Arg Ile Asn Ala Phe Tyr Lys Asp Asn Pro
1 5 10 15

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

Asp Arg Pro Tyr Val Leu Leu Ala Val Leu Phe Val Met Phe Leu Ser
35 40 45

Leu Ile Gly Leu Leu Ala Ile Ala Gly Ile Arg Leu His Arg Ala Ala
50 55 60

Ile Tyr Thr Ala Glu Ile His Lys Ser Leu Ser Thr Asn Leu Asp Val
65 70 75 80

Thr Asn Ser Ile Glu His Gln Val Lys Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Thr Pro Gln Arg Phe Thr
100 105 110

Asp Leu Val Lys Phe Ile Ser Asp Lys Ile Lys Phe Leu Asn Pro Asp
115 120 125

Arg Glu Tyr Asp Phe Arg Asp Leu Thr Trp Cys Ile Asn Pro Pro Glu
130 135 140

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

Glu Leu Met Asn Ala Leu Val Asn Ser Thr Leu Leu Glu Thr Arg Thr
165 170 175

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

Thr Ile Arg Gly Gln Phe Ser Asn Met Ser Leu Ser Leu Leu Asp Leu
195 200 205

Tyr Leu Gly Arg Gly Tyr Asn Val Ser Ser Ile Val Thr Met Thr Ser
210 215 220

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

Ser Lys Arg Ser Glu Leu Ser Gln Leu Ser Met Tyr Arg Val Phe Glu
245 250 255

Val Gly Val Ile Arg Asn Pro Gly Leu Gly Ala Pro Val Phe His Met
260 265 270

Thr Asn Tyr Leu Glu Gln Pro Val Ser Asn Asp Leu Ser Asn Cys Met
275 280 285

Val Ala Leu Gly Glu Leu Lys Leu Ala Ala Leu Cys His Gly Glu Asp
290 295 300

Ser Ile Thr Ile Pro Tyr Gln Gly Ser Gly Lys Gly Val Ser Phe Gln
305 310 315 320

Leu Val Lys Leu Gly Val Trp Lys Ser Pro Thr Asp Met Gln Ser Trp
325 330 335

Val Pro Leu Ser Thr Asp Asp Pro Val Ile Asp Arg Leu Tyr Leu Ser
340 345 350

Ser His Arg Gly Val Ile Ala Asp Asn Gln Ala Lys Trp Ala Val Pro
355 360 365

Thr Thr Arg Thr Asp Asp Lys Leu Arg Met Glu Thr Cys Phe Gln Gln
370 375 380

Ala Cys Lys Gly Lys Ile Gln Ala Leu Cys Glu Asn Pro Glu Trp Ala
385 390 395 400

Pro Leu Lys Asp Asn Arg Ile Pro Ser Tyr Gly Val Leu Ser Val Asp
405 410 415

Leu Ser Leu Thr Val Glu Leu Lys Ile Lys Ile Ala Ser Gly Phe Gly
420 425 430

Pro Leu Ile Thr His Gly Ser Gly Met Asp Leu Tyr Lys Ser Asn His
435 440 445

Asn Asn Val Tyr Trp Leu Thr Ile Pro Pro Met Lys Asn Leu Ala Leu
450 455 460

Gly Val Ile Asn Thr Leu Glu Trp Ile Pro Arg Phe Lys Val Ser Pro
465 470 475 480

Ala Leu Phe Asn Val Pro Ile Lys Glu Ala Gly Gly Asp Cys His Ala
485 490 495

Pro Thr Tyr Leu Pro Ala Glu Val Asp Gly Asp Val Lys Leu Ser Ser
500 505 510

Asn Leu Val Ile Leu Pro Gly Gln Asp Leu Gln Tyr Val Leu Ala Thr
515 520 525

Tyr Asp Thr Ser Ala Val Glu His Ala Val Val Tyr Tyr Val Tyr Ser
530 535 540

Pro Ser Arg Ser Phe Ser Tyr Phe Tyr Pro Phe Arg Leu Pro Ile Lys
545 550 555 560

Gly Val Pro Ile Glu Leu Gln Val Glu Cys Phe Thr Trp Asp Gln Lys
565 570 575

Leu Trp Cys Arg His Phe Cys Val Leu Ala Asp Ser Glu Ser Gly Gly
580 585 590

His Ile Thr His Ser Gly Met Val Gly Met Gly Val Ser Cys Thr Val
595 600 605

Thr Arg Glu Asp Gly Thr Asn Ile Glu Gly Arg Pro Gly Trp Phe Leu
610 615 620

Asp Ser Pro Asp Arg Pro Trp Asn Pro Pro Thr Phe Ser Pro Ala Leu
625 630 635 640

Leu Val Val Thr Glu Gly Asp Asn Ala Thr Phe Thr Cys Ser Phe Ser
645 650 655

Asn Thr Ser Glu Ser Phe Val Leu Asn Trp Tyr Arg Met Ser Pro Ser
660 665 670

Asn Gln Thr Asp Lys Leu Ala Ala Phe Pro Glu Asp Arg Ser Gln Pro
675 680 685

Gly Gln Asp Cys Arg Phe Arg Val Thr Gln Leu Pro Asn Gly Arg Asp
690 695 700

Phe His Met Ser Val Val Arg Ala Arg Arg Asn Asp Ser Gly Thr Tyr
705 710 715 720

Leu Cys Gly Ala Ile Ser Leu Ala Pro Lys Ala Gln Ile Lys Glu Ser
725 730 735

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

Ala His Pro Ser Pro Ser Pro His His His His His His
755 760 765

<210> 19

<211> 765
 <212> PRT
 <213> Artificial Sequence

<220>

<223> PD-1 Fusion Polypeptide

<400> 19

Met Ser Pro Gln Arg Asp Arg Ile Asn Ala Phe Tyr Lys Asp Asn Pro
 1 5 10 15

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

Asp Arg Pro Tyr Val Leu Leu Ala Val Leu Phe Val Met Phe Leu Ser
 35 40 45

Leu Ile Gly Leu Leu Ala Ile Ala Gly Ile Arg Leu His Arg Ala Ala
 50 55 60

Ile Tyr Thr Ala Glu Ile His Lys Ser Leu Ser Thr Asn Leu Asp Val
 65 70 75 80

Thr Asn Ser Ile Glu His Gln Val Lys Asp Val Leu Thr Pro Leu Phe
 85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Thr Pro Gln Arg Phe Thr
 100 105 110

Asp Leu Val Lys Phe Ile Ser Asp Lys Ile Lys Phe Leu Asn Pro Asp
 115 120 125

Arg Glu Tyr Asp Phe Arg Asp Leu Thr Trp Cys Ile Asn Pro Pro Glu
 130 135 140

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

Glu Leu Met Asn Ala Leu Val Asn Ser Thr Leu Leu Glu Thr Arg Thr
 165 170 175

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

Thr Ile Arg Gly Gln Phe Ser Asn Met Ser Leu Ser Leu Leu Asp Leu
195 200 205

Tyr Leu Gly Arg Gly Tyr Asn Val Ser Ser Ile Val Thr Met Thr Ser
210 215 220

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

Ser Lys Arg Ser Glu Leu Ser Gln Leu Ser Met Tyr Arg Val Phe Glu
245 250 255

Val Gly Val Ile Arg Asn Pro Gly Leu Gly Ala Pro Val Phe His Met
260 265 270

Thr Asn Tyr Leu Glu Gln Pro Val Ser Asn Asp Leu Ser Asn Cys Met
275 280 285

Val Ala Leu Gly Glu Leu Lys Leu Ala Ala Leu Cys His Gly Glu Asp
290 295 300

Ser Ile Thr Ile Pro Tyr Gln Gly Ser Gly Lys Gly Val Ser Phe Gln
305 310 315 320

Leu Val Lys Leu Gly Val Trp Lys Ser Pro Thr Asp Met Gln Ser Trp
325 330 335

Val Pro Leu Ser Thr Asp Asp Pro Val Ile Asp Arg Leu Tyr Leu Ser
340 345 350

Ser His Arg Gly Val Ile Ala Asp Asn Gln Ala Lys Trp Ala Val Pro
355 360 365

Thr Thr Arg Thr Asp Asp Lys Leu Arg Met Glu Thr Cys Phe Gln Gln
370 375 380

Ala Cys Lys Gly Lys Ile Gln Ala Leu Cys Glu Asn Pro Glu Trp Ala

385		390		395		400									
Pro	Leu	Lys	Asp	Asn	Arg	Ile	Pro	Ser	Tyr	Gly	Val	Leu	Ser	Val	Asp
				405					410					415	
Leu	Ser	Leu	Thr	Val	Glu	Leu	Lys	Ile	Lys	Ile	Ala	Ser	Gly	Phe	Gly
			420					425					430		
Pro	Leu	Ile	Thr	His	Gly	Ser	Gly	Met	Asp	Leu	Tyr	Lys	Ser	Asn	His
		435					440					445			
Asn	Asn	Val	Tyr	Trp	Leu	Thr	Ile	Pro	Pro	Met	Lys	Asn	Leu	Ala	Leu
	450					455					460				
Gly	Val	Ile	Asn	Thr	Leu	Glu	Trp	Ile	Pro	Arg	Phe	Lys	Val	Ser	Pro
465					470					475					480
Ala	Leu	Phe	Asn	Val	Pro	Ile	Lys	Glu	Ala	Gly	Gly	Asp	Cys	His	Ala
			485						490					495	
Pro	Thr	Tyr	Leu	Pro	Ala	Glu	Val	Asp	Gly	Asp	Val	Lys	Leu	Ser	Ser
			500					505					510		
Asn	Leu	Val	Ile	Leu	Pro	Gly	Gln	Asp	Leu	Gln	Tyr	Val	Leu	Ala	Thr
		515					520					525			
Tyr	Asp	Thr	Ser	Ala	Val	Glu	His	Ala	Val	Val	Tyr	Tyr	Val	Tyr	Ser
	530					535					540				
Pro	Ser	Arg	Leu	Ser	Ser	Tyr	Phe	Tyr	Pro	Phe	Arg	Leu	Pro	Ile	Lys
545					550					555					560
Gly	Val	Pro	Ile	Glu	Leu	Gln	Val	Glu	Cys	Phe	Thr	Trp	Asp	Gln	Lys
				565					570					575	
Leu	Trp	Cys	Arg	His	Phe	Cys	Val	Leu	Ala	Asp	Ser	Glu	Ser	Gly	Gly
			580					585					590		
His	Ile	Thr	His	Ser	Gly	Met	Val	Gly	Met	Gly	Val	Ser	Cys	Thr	Val
		595					600					605			

Thr Arg Glu Asp Gly Thr Asn Ile Glu Gly Arg Pro Gly Trp Phe Leu
610 615 620

Asp Ser Pro Asp Arg Pro Trp Asn Pro Pro Thr Phe Ser Pro Ala Leu
625 630 635 640

Leu Val Val Thr Glu Gly Asp Asn Ala Thr Phe Thr Cys Ser Phe Ser
645 650 655

Asn Thr Ser Glu Ser Phe Val Leu Asn Trp Tyr Arg Met Ser Pro Ser
660 665 670

Asn Gln Thr Asp Lys Leu Ala Ala Phe Pro Glu Asp Arg Ser Gln Pro
675 680 685

Gly Gln Asp Cys Arg Phe Arg Val Thr Gln Leu Pro Asn Gly Arg Asp
690 695 700

Phe His Met Ser Val Val Arg Ala Arg Arg Asn Asp Ser Gly Thr Tyr
705 710 715 720

Leu Cys Gly Ala Ile Ser Leu Ala Pro Lys Ala Gln Ile Lys Glu Ser
725 730 735

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

Ala His Pro Ser Pro Ser Pro His His His His His His
755 760 765

<210> 20
<211> 754
<212> PRT
<213> Artificial Sequence

<220>
<223> PD-1 Fusion Polypeptide

<400> 20

Met Leu Pro Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala

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

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

Arg Glu Phe Asp Thr Arg Glu Ile Arg Val Phe Glu Ile Gly Phe Ile
 245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
 260 265 270

Val Leu Pro Lys Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
 275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Glu Glu Ser Thr Val Leu Leu
 290 295 300

Tyr His Asp Ser Ser Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
 305 310 315 320

Gly Ile Phe Trp Ala Thr Pro Met Asp His Ile Glu Glu Val Ile Pro
 325 330 335

Val Ala His Pro Ser Met Lys Lys Ile His Ile Thr Asn His Arg Gly
 340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
 355 360 365

Glu Lys Gln Glu Glu Gln Lys Gly Cys Leu Glu Ser Ala Cys Gln Arg
 370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Ala Ser Trp Glu Pro Phe Gly Gly
 385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
 405 410 415

Val Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
 420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asn Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asp Gly Thr Ile Ser Gly Leu Ile Asn
450 455 460

Lys Ala Gly Arg Gly Asp Gln Phe Thr Val Leu Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Arg Asp Arg Asp Val Leu Ile Glu Ser Asn Ile Val Val
500 505 510

Leu Pro Thr Gln Ser Ile Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Ser Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asn Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Ala Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ile Glu Gly Arg
595 600 605

Pro Gly Trp Phe Leu Asp Ser Pro Asp Arg Pro Trp Asn Pro Pro Thr
610 615 620

Phe Ser Pro Ala Leu Leu Val Val Thr Glu Gly Asp Asn Ala Thr Phe
625 630 635 640

Thr Cys Ser Phe Ser Asn Thr Ser Glu Ser Phe Val Leu Asn Trp Tyr
645 650 655

Arg Met Ser Pro Ser Asn Gln Thr Asp Lys Leu Ala Ala Phe Pro Glu
660 665 670

Asp Arg Ser Gln Pro Gly Gln Asp Cys Arg Phe Arg Val Thr Gln Leu
675 680 685

Pro Asn Gly Arg Asp Phe His Met Ser Val Val Arg Ala Arg Arg Asn
690 695 700

Asp Ser Gly Thr Tyr Leu Cys Gly Ala Ile Ser Leu Ala Pro Lys Ala
705 710 715 720

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

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

His His

<210> 21
<211> 385
<212> PRT
<213> Artificial Sequence

<220>
<223> PD-1 Fusion Polypeptide

<400> 21

Met Gln Ile Pro Gln Ala Pro Trp Pro Val Val Trp Ala Val Leu Gln
1 5 10 15

Leu Gly Trp Arg Pro Gly Trp Phe Leu Asp Ser Pro Asp Arg Pro Trp
20 25 30

Asn Pro Pro Thr Phe Ser Pro Ala Leu Leu Val Val Thr Glu Gly Asp
35 40 45

Asn Ala Thr Phe Thr Cys Ser Phe Ser Asn Thr Ser Glu Ser Phe His
50 55 60

Val Ile Trp His Arg Glu Ser Pro Ser Gly Gln Thr Asp Thr Leu Ala
65 70 75 80

Ala Phe Pro Glu Asp Arg Ser Gln Pro Gly Gln Asp Cys Arg Phe Arg
85 90 95

Val Thr Gln Leu Pro Asn Gly Arg Asp Phe His Met Ser Val Val Arg
100 105 110

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

Ala Pro Lys Ile Gln Ile Lys Glu Ser Leu Arg Ala Glu Leu Arg Val
130 135 140

Thr Glu Arg Arg Ala Glu Val Pro Thr Ala His Pro Ser Pro Ser Pro
145 150 155 160

Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Pro
165 170 175

Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
180 185 190

Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp
195 200 205

Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
210 215 220

Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg Val
225 230 235 240

Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys Glu
245 250 255

Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu Lys
260 265 270

Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr
275 280 285

Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr
290 295 300

Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
305 310 315 320

Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu
325 330 335

Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys
340 345 350

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu
355 360 365

Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
370 375 380

Lys
385

<210> 22
<211> 268
<212> PRT
<213> Artificial Sequence

<220>
<223> PD-1 Fusion Polypeptide

<400> 22

Met Gln Ile Pro Gln Ala Pro Trp Pro Val Val Trp Ala Val Leu Gln
1 5 10 15

Leu Gly Trp Arg Pro Gly Trp Phe Leu Asp Ser Pro Asp Arg Pro Trp
20 25 30

Asn Pro Pro Thr Phe Ser Pro Ala Leu Leu Val Val Thr Glu Gly Asp
35 40 45

Asn Ala Thr Phe Thr Cys Ser Phe Ser Asn Thr Ser Glu Ser Phe His
50 55 60

Val Ile Trp His Arg Glu Ser Pro Ser Gly Gln Thr Asp Thr Leu Ala
65 70 75 80

Ala Phe Pro Glu Asp Arg Ser Gln Pro Gly Gln Asp Cys Arg Phe Arg
85 90 95

Val Thr Gln Leu Pro Asn Gly Arg Asp Phe His Met Ser Val Val Arg
100 105 110

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

Ala Pro Lys Ile Gln Ile Lys Glu Ser Leu Arg Ala Glu Leu Arg Val
130 135 140

Thr Glu Arg Arg Ala Glu Val Pro Thr Ala His Pro Ser Pro Ser Pro
145 150 155 160

Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Gly
165 170 175

Ser Ala Asn Ser Phe Leu Glu Glu Met Lys Lys Gly His Leu Glu Arg
180 185 190

Glu Cys Met Glu Glu Thr Cys Ser Tyr Glu Glu Ala Arg Glu Val Phe
195 200 205

Glu Asp Ser Asp Lys Thr Asn Glu Phe Trp Asn Lys Tyr Lys Asp Gly
210 215 220

Asp Gln Cys Glu Thr Ser Pro Cys Gln Asn Gln Gly Lys Cys Lys Asp
225 230 235 240

Gly Leu Gly Glu Tyr Thr Cys Thr Cys Leu Glu Gly Phe Glu Gly Lys
245 250 255

Asn Cys Glu Leu Pro Val Gly Tyr Arg Gly Gly Ser
260 265

<210> 23
<211> 248
<212> PRT
<213> Artificial Sequence

<220>
<223> PD-1 Fusion Polypeptide

<400> 23

Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Gly
1 5 10 15

Ser Ala Asn Ser Phe Leu Glu Glu Met Lys Lys Gly His Leu Glu Arg
20 25 30

Glu Cys Met Glu Glu Thr Cys Ser Tyr Glu Glu Ala Arg Glu Val Phe
35 40 45

Glu Asp Ser Asp Lys Thr Asn Glu Phe Trp Asn Lys Tyr Lys Asp Gly
50 55 60

Asp Gln Cys Glu Thr Ser Pro Cys Gln Asn Gln Gly Lys Cys Lys Asp
65 70 75 80

Gly Leu Gly Glu Tyr Thr Cys Thr Cys Leu Glu Gly Phe Glu Gly Lys
85 90 95

Asn Cys Glu Leu Pro Val Gly Tyr Arg Gly Gly Ser Pro Gly Trp Phe
100 105 110

Leu Asp Ser Pro Asp Arg Pro Trp Asn Pro Pro Thr Phe Ser Pro Ala
115 120 125

Leu Leu Val Val Thr Glu Gly Asp Asn Ala Thr Phe Thr Cys Ser Phe
130 135 140

Ser Asn Thr Ser Glu Ser Phe His Val Ile Trp His Arg Glu Ser Pro
145 150 155 160

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

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

Asp Phe His Met Ser Val Val Arg Ala Arg Arg Asn Asp Ser Gly Thr
195 200 205

Tyr Val Cys Gly Val Ile Ser Leu Ala Pro Lys Ile Gln Ile Lys Glu
210 215 220

Ser Leu Arg Ala Glu Leu Arg Val Thr Glu Arg Arg Ala Glu Val Pro
225 230 235 240

Thr Ala His Pro Ser Pro Ser Pro
245

<210> 24
<211> 305
<212> PRT
<213> Artificial Sequence

<220>
<223> PD-1 Fusion Polypeptide

<400> 24

Met Gln Ile Pro Gln Ala Pro Trp Pro Val Val Trp Ala Val Leu Gln
1 5 10 15

Leu Gly Trp Arg Pro Gly Trp Phe Leu Asp Ser Pro Asp Arg Pro Trp
20 25 30

Asn Pro Pro Thr Phe Ser Pro Ala Leu Leu Val Val Thr Glu Gly Asp
35 40 45

Asn Ala Thr Phe Thr Cys Ser Phe Ser Asn Thr Ser Glu Ser Phe His
50 55 60

Val Ile Trp His Arg Glu Ser Pro Ser Gly Gln Thr Asp Thr Leu Ala
65 70 75 80

Ala Phe Pro Glu Asp Arg Ser Gln Pro Gly Gln Asp Cys Arg Phe Arg
85 90 95

Val Thr Gln Leu Pro Asn Gly Arg Asp Phe His Met Ser Val Val Arg
100 105 110

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

Ala Pro Lys Ile Gln Ile Lys Glu Ser Leu Arg Ala Glu Leu Arg Val
130 135 140

Thr Glu Arg Arg Ala Glu Val Pro Thr Ala His Pro Ser Pro Ser Pro
145 150 155 160

Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly Ser
165 170 175

Lys Gly Leu Glu Ser Arg Val Ser Ala Leu Glu Lys Thr Ser Gln Ile
180 185 190

His Ser Asp Thr Ile Leu Arg Ile Thr Gln Gly Leu Asp Asp Ala Asn
195 200 205

Lys Arg Ile Ile Ala Leu Glu Gln Ser Arg Asp Asp Leu Val Ala Ser
210 215 220

Val Ser Asp Ala Gln Leu Ala Ile Ser Arg Leu Glu Ser Ser Ile Gly
225 230 235 240

Ala Leu Gln Thr Val Val Asn Gly Leu Asp Ser Ser Val Thr Gln Leu
245 250 255

Gly Ala Arg Val Gly Gln Leu Glu Thr Gly Leu Ala Glu Leu Arg Val
260 265 270

Asp His Asp Asn Leu Val Ala Arg Val Asp Thr Ala Glu Arg Asn Ile
 275 280 285

Gly Ser Leu Thr Thr Glu Leu Ser Thr Leu Thr Leu Arg Val Thr Ser
 290 295 300

Ile
 305

<210> 25
 <211> 765
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> PD-1 Fusion Polypeptide

<400> 25

Met Ser Pro Gln Arg Asp Arg Ile Asn Ala Phe Tyr Lys Asp Asn Pro
 1 5 10 15

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

Asp Arg Pro Tyr Val Leu Leu Ala Val Leu Phe Val Met Phe Leu Ser
 35 40 45

Leu Ile Gly Leu Leu Ala Ile Ala Gly Ile Arg Leu His Arg Ala Ala
 50 55 60

Ile Tyr Thr Ala Glu Ile His Lys Ser Leu Ser Thr Asn Leu Asp Val
 65 70 75 80

Thr Asn Ser Ile Glu His Gln Val Lys Asp Val Leu Thr Pro Leu Phe
 85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Thr Pro Gln Arg Phe Thr
 100 105 110

Asp Leu Val Lys Phe Ile Ser Asp Lys Ile Lys Phe Leu Asn Pro Asp
 115 120 125

Arg Glu Tyr Asp Phe Arg Asp Leu Thr Trp Cys Ile Asn Pro Pro Glu
130 135 140

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

Glu Leu Met Asn Ala Leu Val Asn Ser Thr Leu Leu Glu Thr Arg Thr
165 170 175

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

Thr Ile Arg Gly Gln Phe Ser Asn Met Ser Leu Ser Leu Leu Asp Leu
195 200 205

Tyr Leu Gly Arg Gly Tyr Asn Val Ser Ser Ile Val Thr Met Thr Ser
210 215 220

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

Ser Lys Arg Ser Glu Leu Ser Gln Leu Ser Met Tyr Arg Val Phe Glu
245 250 255

Val Gly Val Ile Arg Asn Pro Gly Leu Gly Ala Pro Val Phe His Met
260 265 270

Thr Asn Tyr Leu Glu Gln Pro Val Ser Asn Asp Leu Ser Asn Cys Met
275 280 285

Val Ala Leu Gly Glu Leu Lys Leu Ala Ala Leu Cys His Gly Glu Asp
290 295 300

Ser Ile Thr Ile Pro Tyr Gln Gly Ser Gly Lys Gly Val Ser Phe Gln
305 310 315 320

Leu Val Lys Leu Gly Val Trp Lys Ser Pro Thr Asp Met Gln Ser Trp
325 330 335

Val Pro Leu Ser Thr Asp Asp Pro Val Ile Asp Arg Leu Tyr Leu Ser
340 345 350

Ser His Arg Gly Val Ile Ala Asp Asn Gln Ala Lys Trp Ala Val Pro
355 360 365

Thr Thr Arg Thr Asp Asp Lys Leu Arg Met Glu Thr Cys Phe Gln Gln
370 375 380

Ala Cys Lys Gly Lys Ile Gln Ala Leu Cys Glu Asn Pro Glu Trp Ala
385 390 395 400

Pro Leu Lys Asp Asn Arg Ile Pro Ser Tyr Gly Val Leu Ser Val Asp
405 410 415

Leu Ser Leu Thr Val Glu Leu Lys Ile Lys Ile Ala Ser Gly Phe Gly
420 425 430

Pro Leu Ile Thr His Gly Ser Gly Met Asp Leu Tyr Lys Ser Asn His
435 440 445

Asn Asn Val Tyr Trp Leu Thr Ile Pro Pro Met Lys Asn Leu Ala Leu
450 455 460

Gly Val Ile Asn Thr Leu Glu Trp Ile Pro Arg Phe Lys Val Ser Pro
465 470 475 480

Ala Leu Phe Asn Val Pro Ile Lys Glu Ala Gly Gly Asp Cys His Ala
485 490 495

Pro Thr Tyr Leu Pro Ala Glu Val Asp Gly Asp Val Lys Leu Ser Ser
500 505 510

Asn Leu Val Ile Leu Pro Gly Gln Asp Leu Gln Tyr Val Leu Ala Thr
515 520 525

Tyr Asp Thr Ser Ala Val Glu His Ala Val Val Tyr Tyr Val Tyr Ser
530 535 540

Pro Ser Arg Ser Phe Ser Tyr Phe Tyr Pro Phe Arg Leu Pro Ile Lys
 545 550 555 560

Gly Val Pro Ile Glu Leu Gln Val Glu Cys Phe Thr Trp Asp Gln Lys
 565 570 575

Leu Trp Cys Arg His Phe Cys Val Leu Ala Asp Ser Glu Ser Gly Gly
 580 585 590

His Ile Thr His Ser Gly Met Val Gly Met Gly Val Ser Cys Thr Val
 595 600 605

Thr Arg Glu Asp Gly Thr Asn Ile Glu Gly Arg Pro Gly Trp Phe Leu
 610 615 620

Asp Ser Pro Asp Arg Pro Trp Asn Pro Pro Thr Phe Ser Pro Ala Leu
 625 630 635 640

Leu Val Val Thr Glu Gly Asp Asn Ala Thr Phe Thr Cys Ser Phe Ser
 645 650 655

Asn Thr Ser Glu Ser Phe His Val Ile Trp His Arg Glu Ser Pro Ser
 660 665 670

Gly Gln Thr Asp Thr Leu Ala Ala Phe Pro Glu Asp Arg Ser Gln Pro
 675 680 685

Gly Gln Asp Cys Arg Phe Arg Val Thr Gln Leu Pro Asn Gly Arg Asp
 690 695 700

Phe His Met Ser Val Val Arg Ala Arg Arg Asn Asp Ser Gly Thr Tyr
 705 710 715 720

Val Cys Gly Val Ile Ser Leu Ala Pro Lys Ile Gln Ile Lys Glu Ser
 725 730 735

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

Ala His Pro Ser Pro Ser Pro His His His His His

755

760

765

<210> 26

<211> 765

<212> PRT

<213> Artificial Sequence

<220>

<223> PD-1 Fusion Polypeptide

<400> 26

Met Ser Pro Gln Arg Asp Arg Ile Asn Ala Phe Tyr Lys Asp Asn Pro
 1 5 10 15

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

Asp Arg Pro Tyr Val Leu Leu Ala Val Leu Phe Val Met Phe Leu Ser
 35 40 45

Leu Ile Gly Leu Leu Ala Ile Ala Gly Ile Arg Leu His Arg Ala Ala
 50 55 60

Ile Tyr Thr Ala Glu Ile His Lys Ser Leu Ser Thr Asn Leu Asp Val
 65 70 75 80

Thr Asn Ser Ile Glu His Gln Val Lys Asp Val Leu Thr Pro Leu Phe
 85 90 95

Lys Ile Ile Gly Asp Glu Val Gly Leu Arg Thr Pro Gln Arg Phe Thr
 100 105 110

Asp Leu Val Lys Phe Ile Ser Asp Lys Ile Lys Phe Leu Asn Pro Asp
 115 120 125

Arg Glu Tyr Asp Phe Arg Asp Leu Thr Trp Cys Ile Asn Pro Pro Glu
 130 135 140

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

Glu Leu Met Asn Ala Leu Val Asn Ser Thr Leu Leu Glu Thr Arg Thr
165 170 175

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

Thr Ile Arg Gly Gln Phe Ser Asn Met Ser Leu Ser Leu Leu Asp Leu
195 200 205

Tyr Leu Gly Arg Gly Tyr Asn Val Ser Ser Ile Val Thr Met Thr Ser
210 215 220

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

Ser Lys Arg Ser Glu Leu Ser Gln Leu Ser Met Tyr Arg Val Phe Glu
245 250 255

Val Gly Val Ile Arg Asn Pro Gly Leu Gly Ala Pro Val Phe His Met
260 265 270

Thr Asn Tyr Leu Glu Gln Pro Val Ser Asn Asp Leu Ser Asn Cys Met
275 280 285

Val Ala Leu Gly Glu Leu Lys Leu Ala Ala Leu Cys His Gly Glu Asp
290 295 300

Ser Ile Thr Ile Pro Tyr Gln Gly Ser Gly Lys Gly Val Ser Phe Gln
305 310 315 320

Leu Val Lys Leu Gly Val Trp Lys Ser Pro Thr Asp Met Gln Ser Trp
325 330 335

Val Pro Leu Ser Thr Asp Asp Pro Val Ile Asp Arg Leu Tyr Leu Ser
340 345 350

Ser His Arg Gly Val Ile Ala Asp Asn Gln Ala Lys Trp Ala Val Pro
355 360 365

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

370

375

380

Ala Cys Lys Gly Lys Ile Gln Ala Leu Cys Glu Asn Pro Glu Trp Ala
 385 390 395 400

Pro Leu Lys Asp Asn Arg Ile Pro Ser Tyr Gly Val Leu Ser Val Asp
 405 410 415

Leu Ser Leu Thr Val Glu Leu Lys Ile Lys Ile Ala Ser Gly Phe Gly
 420 425 430

Pro Leu Ile Thr His Gly Ser Gly Met Asp Leu Tyr Lys Ser Asn His
 435 440 445

Asn Asn Val Tyr Trp Leu Thr Ile Pro Pro Met Lys Asn Leu Ala Leu
 450 455 460

Gly Val Ile Asn Thr Leu Glu Trp Ile Pro Arg Phe Lys Val Ser Pro
 465 470 475 480

Ala Leu Phe Asn Val Pro Ile Lys Glu Ala Gly Gly Asp Cys His Ala
 485 490 495

Pro Thr Tyr Leu Pro Ala Glu Val Asp Gly Asp Val Lys Leu Ser Ser
 500 505 510

Asn Leu Val Ile Leu Pro Gly Gln Asp Leu Gln Tyr Val Leu Ala Thr
 515 520 525

Tyr Asp Thr Ser Ala Val Glu His Ala Val Val Tyr Tyr Val Tyr Ser
 530 535 540

Pro Ser Arg Leu Ser Ser Tyr Phe Tyr Pro Phe Arg Leu Pro Ile Lys
 545 550 555 560

Gly Val Pro Ile Glu Leu Gln Val Glu Cys Phe Thr Trp Asp Gln Lys
 565 570 575

Leu Trp Cys Arg His Phe Cys Val Leu Ala Asp Ser Glu Ser Gly Gly
 580 585 590

His Ile Thr His Ser Gly Met Val Gly Met Gly Val Ser Cys Thr Val
595 600 605

Thr Arg Glu Asp Gly Thr Asn Ile Glu Gly Arg Pro Gly Trp Phe Leu
610 615 620

Asp Ser Pro Asp Arg Pro Trp Asn Pro Pro Thr Phe Ser Pro Ala Leu
625 630 635 640

Leu Val Val Thr Glu Gly Asp Asn Ala Thr Phe Thr Cys Ser Phe Ser
645 650 655

Asn Thr Ser Glu Ser Phe Val Leu Asn Trp Tyr Arg Met Ser Pro Ser
660 665 670

Asn Gln Thr Asp Lys Leu Ala Ala Phe Pro Glu Asp Arg Ser Gln Pro
675 680 685

Gly Gln Asp Cys Arg Phe Arg Val Thr Gln Leu Pro Asn Gly Arg Asp
690 695 700

Phe His Met Ser Val Val Arg Ala Arg Arg Asn Asp Ser Gly Thr Tyr
705 710 715 720

Leu Cys Gly Ala Ile Ser Leu Ala Pro Lys Ala Gln Ile Lys Glu Ser
725 730 735

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

Ala His Pro Ser Pro Ser Pro His His His His His His
755 760 765

<210> 27
<211> 754
<212> PRT
<213> Artificial Sequence

<220>
<223> PD-1 Fusion Polypeptide

<400> 27

Met Leu Pro Tyr Gln Asp Lys Val Gly Ala Phe Tyr Lys Asp Asn Ala
1 5 10 15

Arg Ala Asn Ser Thr Lys Leu Ser Leu Val Thr Glu Gly His Gly Gly
20 25 30

Arg Arg Pro Pro Tyr Leu Leu Phe Val Leu Leu Ile Leu Leu Val Gly
35 40 45

Ile Leu Ala Leu Leu Ala Ile Thr Gly Val Arg Phe His Gln Val Ser
50 55 60

Thr Ser Asn Met Glu Phe Ser Arg Leu Leu Lys Glu Asp Met Glu Lys
65 70 75 80

Ser Glu Ala Val His His Gln Val Ile Asp Val Leu Thr Pro Leu Phe
85 90 95

Lys Ile Ile Gly Asp Glu Ile Gly Leu Arg Leu Pro Gln Lys Leu Asn
100 105 110

Glu Ile Lys Gln Phe Ile Leu Gln Lys Thr Asn Phe Phe Asn Pro Asn
115 120 125

Arg Glu Phe Asp Phe Arg Asp Leu His Trp Cys Ile Asn Pro Pro Ser
130 135 140

Thr Val Lys Val Asn Phe Thr Asn Tyr Cys Glu Ser Ile Gly Ile Arg
145 150 155 160

Lys Ala Ile Ala Ser Ala Ala Asn Pro Ile Leu Leu Ser Ala Leu Ser
165 170 175

Gly Gly Arg Gly Asp Ile Phe Pro Pro His Arg Cys Ser Gly Ala Thr
180 185 190

Thr Ser Val Gly Lys Val Phe Pro Leu Ser Val Ser Leu Ser Met Ser
195 200 205

Leu Ile Ser Arg Thr Ser Glu Val Ile Asn Met Leu Thr Ala Ile Ser
 210 215 220

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

Arg Glu Phe Asp Thr Arg Glu Ile Arg Val Phe Glu Ile Gly Phe Ile
 245 250 255

Lys Arg Trp Leu Asn Asp Met Pro Leu Leu Gln Thr Thr Asn Tyr Met
 260 265 270

Val Leu Pro Lys Asn Ser Lys Ala Lys Val Cys Thr Ile Ala Val Gly
 275 280 285

Glu Leu Thr Leu Ala Ser Leu Cys Val Glu Glu Ser Thr Val Leu Leu
 290 295 300

Tyr His Asp Ser Ser Gly Ser Gln Asp Gly Ile Leu Val Val Thr Leu
 305 310 315 320

Gly Ile Phe Trp Ala Thr Pro Met Asp His Ile Glu Glu Val Ile Pro
 325 330 335

Val Ala His Pro Ser Met Lys Lys Ile His Ile Thr Asn His Arg Gly
 340 345 350

Phe Ile Lys Asp Ser Ile Ala Thr Trp Met Val Pro Ala Leu Ala Ser
 355 360 365

Glu Lys Gln Glu Glu Gln Lys Gly Cys Leu Glu Ser Ala Cys Gln Arg
 370 375 380

Lys Thr Tyr Pro Met Cys Asn Gln Ala Ser Trp Glu Pro Phe Gly Gly
 385 390 395 400

Arg Gln Leu Pro Ser Tyr Gly Arg Leu Thr Leu Pro Leu Asp Ala Ser
 405 410 415

Val Asp Leu Gln Leu Asn Ile Ser Phe Thr Tyr Gly Pro Val Ile Leu
420 425 430

Asn Gly Asp Gly Met Asp Tyr Tyr Glu Ser Pro Leu Leu Asn Ser Gly
435 440 445

Trp Leu Thr Ile Pro Pro Lys Asp Gly Thr Ile Ser Gly Leu Ile Asn
450 455 460

Lys Ala Gly Arg Gly Asp Gln Phe Thr Val Leu Pro His Val Leu Thr
465 470 475 480

Phe Ala Pro Arg Glu Ser Ser Gly Asn Cys Tyr Leu Pro Ile Gln Thr
485 490 495

Ser Gln Ile Arg Asp Arg Asp Val Leu Ile Glu Ser Asn Ile Val Val
500 505 510

Leu Pro Thr Gln Ser Ile Arg Tyr Val Ile Ala Thr Tyr Asp Ile Ser
515 520 525

Arg Ser Asp His Ala Ile Val Tyr Tyr Val Tyr Asp Pro Ile Arg Thr
530 535 540

Ile Ser Tyr Thr His Pro Phe Arg Leu Thr Thr Lys Gly Arg Pro Asp
545 550 555 560

Phe Leu Arg Ile Glu Cys Phe Val Trp Asp Asp Asn Leu Trp Cys His
565 570 575

Gln Phe Tyr Arg Phe Glu Ala Asp Ile Ala Asn Ser Thr Thr Ser Val
580 585 590

Glu Asn Leu Val Arg Ile Arg Phe Ser Cys Asn Arg Ile Glu Gly Arg
595 600 605

Pro Gly Trp Phe Leu Asp Ser Pro Asp Arg Pro Trp Asn Pro Pro Thr
610 615 620

Phe Ser Pro Ala Leu Leu Val Val Thr Glu Gly Asp Asn Ala Thr Phe
625 630 635 640

Thr Cys Ser Phe Ser Asn Thr Ser Glu Ser Phe His Val Ile Trp His
645 650 655

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

Asp Arg Ser Gln Pro Gly Gln Asp Cys Arg Phe Arg Val Thr Gln Leu
675 680 685

Pro Asn Gly Arg Asp Phe His Met Ser Val Val Arg Ala Arg Arg Asn
690 695 700

Asp Ser Gly Thr Tyr Val Cys Gly Val Ile Ser Leu Ala Pro Lys Ile
705 710 715 720

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

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

His His

<210> 28
<211> 959
<212> PRT
<213> Artificial Sequence

<220>
<223> Hexon Polypeptide

<400> 28

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

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

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Ser Cys Glu Trp Asp Glu Asp Asp Thr Gln Val Gln Val
130 135 140

Ala Ala Glu Asp Asp Gln Asp Asp Asp Glu Glu Glu Glu Gln Leu Pro
145 150 155 160

Gln Gln Arg Asn Gly Lys Lys Thr His Val Tyr Ala Gln Ala Pro Phe
165 170 175

Ala Gly Glu Ala Ile Asn Lys Asn Gly Leu Gln Ile Gly Thr Asn Gly
180 185 190

Ala Ala Thr Glu Gly Asn Lys Glu Ile Tyr Ala Asp Lys Thr Tyr Gln
195 200 205

Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Asn Glu Ala Glu Ser Ser
210 215 220

Val Ala Gly Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys
225 230 235 240

Tyr Gly Ser Tyr Ala Arg Pro Thr Asn Ser Asn Gly Gly Gln Gly Val
245 250 255

Met Val Glu Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe
260 265 270

Phe Ser Thr Ser Val Asn Ala Met Asn Glu Ala Asn Ala Ile Gln Pro
275 280 285

Lys Leu Val Leu Tyr Ser Glu Asp Val Asn Met Glu Thr Pro Asp Thr
290 295 300

His Leu Ser Tyr Lys Pro Gly Lys Ser Asp Asp Asn Ser Lys Ala Met
305 310 315 320

Leu Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg
325 330 335

Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly
340 345 350

Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln
355 360 365

Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly
370 375 380

Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr
385 390 395 400

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

Pro Asn Tyr Cys Phe Pro Leu Gly Gly Ile Gly Val Thr Asp Thr Tyr
420 425 430

Gln Ala Ile Lys Ala Thr Asn Gly Asn Gly Gly Ala Thr Thr Trp Ala
435 440 445

Gln Asp Asn Thr Phe Ala Glu Arg Asn Glu Ile Gly Val Gly Asn Asn

450

455

460

Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu
 465 470 475 480

Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Asn Pro
 485 490 495

Thr Asn Val Glu Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn
 500 505 510

Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly
 515 520 525

Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His
 530 535 540

His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly
 545 550 555 560

Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile
 565 570 575

Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe
 580 585 590

Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu
 595 600 605

Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala
 610 615 620

Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met
 625 630 635 640

Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala
 645 650 655

Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile
 660 665 670

Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr
675 680 685

Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro
690 695 700

Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr
705 710 715 720

Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val
725 730 735

Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile
740 745 750

Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met
755 760 765

Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly
770 775 780

Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser
785 790 795 800

Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr
805 810 815

Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Ile His Gln His Asn Asn
820 825 830

Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala
835 840 845

Tyr Pro Ala Asn Val Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp
850 855 860

Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile
865 870 875 880

Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly
885 890 895

Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe
900 905 910

Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu
915 920 925

Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu
930 935 940

Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
945 950 955

<210> 29
<211> 962
<212> PRT
<213> Artificial Sequence

<220>
<223> Hexon Polypeptide

<400> 29

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

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

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Ser Cys Glu Trp Glu Gln Asn Glu Thr Ala Gln Val Asp
130 135 140

Ala Gln Glu Leu Asp Glu Glu Glu Asn Glu Ala Asn Glu Ala Gln Ala
145 150 155 160

Arg Glu Gln Glu Gln Ala Lys Lys Thr His Val Tyr Ala Gln Ala Pro
165 170 175

Leu Ser Gly Glu Ala Ile Asn Lys Asn Gly Leu Gln Ile Gly Thr Asn
180 185 190

Gly Ala Ala Thr Glu Gly Asn Lys Glu Ile Tyr Ala Asp Lys Thr Tyr
195 200 205

Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Asn Glu Ala Glu Ser
210 215 220

Ser Val Ala Gly Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro
225 230 235 240

Cys Tyr Gly Ser Tyr Ala Arg Pro Thr Asn Ser Asn Gly Gly Gln Gly
245 250 255

Val Met Val Glu Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln
260 265 270

Phe Phe Ser Thr Ser Val Asn Ala Met Asn Glu Ala Asn Ala Ile Gln
275 280 285

Pro Lys Leu Val Leu Tyr Ser Glu Asp Val Asn Met Glu Thr Pro Asp
290 295 300

Thr His Leu Ser Tyr Lys Pro Gly Lys Ser Asp Asp Asn Ser Lys Ala
 305 310 315 320

Met Leu Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe
 325 330 335

Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met
 340 345 350

Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu
 355 360 365

Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile
 370 375 380

Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser
 385 390 395 400

Tyr Asp Pro Asp Val Arg Ile Ile Glu Asn His Gly Thr Glu Asp Glu
 405 410 415

Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Ile Gly Ile Thr Asp Thr
 420 425 430

Phe Gln Ala Val Lys Thr Thr Ala Ala Asn Gly Asp Gln Gly Asn Thr
 435 440 445

Thr Trp Gln Lys Asp Ser Thr Phe Ala Glu Arg Asn Glu Ile Gly Val
 450 455 460

Gly Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg
 465 470 475 480

Asn Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys
 485 490 495

Tyr Asn Pro Thr Asn Val Glu Ile Ser Asp Asn Pro Asn Thr Tyr Asp
 500 505 510

Tyr Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile
515 520 525

Asn Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro
530 535 540

Phe Asn His Pro Arg His Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu
545 550 555 560

Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe
565 570 575

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

Trp Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly
595 600 605

Asn Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys
610 615 620

Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu
625 630 635 640

Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr
645 650 655

Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn
660 665 670

Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp
675 680 685

Ala Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly
690 695 700

Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly
705 710 715 720

Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp

725

730

735

Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu
 740 745 750

Phe Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln
 755 760 765

Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr
 770 775 780

Asn Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg
 785 790 795 800

Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val
 805 810 815

Asp Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Ile His Gln
 820 825 830

His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu
 835 840 845

Gly Gln Ala Tyr Pro Ala Asn Val Pro Tyr Pro Leu Ile Gly Lys Thr
 850 855 860

Ala Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu
 865 870 875 880

Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr
 885 890 895

Asp Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp
 900 905 910

Met Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val
 915 920 925

Leu Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly
 930 935 940

Val Ile Glu Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala
 945 950 955 960

Thr Thr

<210> 30
 <211> 959
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Hexon Polypeptide

<400> 30

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
 1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
 20 25 30

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
 35 40 45

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

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
 65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
 85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
 115 120 125

Ala Pro Asn Ser Cys Glu Trp Asp Glu Asp Asp Thr Gln Val Gln Val

130

135

140

Ala Ala Glu Asp Asp Gln Asp Asp Asp Glu Glu Glu Glu Gln Leu Pro
 145 150 155 160

Gln Gln Arg Asn Gly Lys Lys Thr His Val Tyr Ala Gln Ala Pro Phe
 165 170 175

Ala Gly Glu Ala Ile Asn Lys Asn Gly Leu Gln Ile Gly Thr Asn Gly
 180 185 190

Ala Ala Thr Glu Gly Asn Lys Glu Ile Tyr Ala Asp Lys Thr Tyr Gln
 195 200 205

Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Asn Glu Ala Glu Ser Ser
 210 215 220

Val Ala Gly Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys
 225 230 235 240

Tyr Gly Ser Tyr Ala Arg Pro Thr Asn Ser Asn Gly Gly Gln Gly Val
 245 250 255

Met Val Glu Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe
 260 265 270

Phe Ser Thr Ser Val Asn Ala Met Asn Glu Ala Asn Ala Ile Gln Pro
 275 280 285

Lys Leu Val Leu Tyr Ser Glu Asp Val Asn Met Glu Thr Pro Asp Thr
 290 295 300

His Leu Ser Tyr Lys Pro Gly Lys Ser Asp Asp Asn Ser Lys Ala Met
 305 310 315 320

Leu Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg
 325 330 335

Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly
 340 345 350

Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln
355 360 365

Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly
370 375 380

Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr
385 390 395 400

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

Pro Asn Tyr Cys Phe Pro Leu Gly Gly Ile Gly Val Thr Asp Thr Tyr
420 425 430

Gln Ala Ile Lys Ala Thr Asn Gly Asn Gly Gly Ala Thr Thr Trp Ala
435 440 445

Gln Asp Asn Thr Phe Ala Glu Arg Asn Glu Ile Gly Val Gly Asn Asn
450 455 460

Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu
465 470 475 480

Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Asn Pro
485 490 495

Thr Asn Val Glu Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn
500 505 510

Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly
515 520 525

Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His
530 535 540

His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly
545 550 555 560

Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile
565 570 575

Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe
580 585 590

Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu
595 600 605

Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala
610 615 620

Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met
625 630 635 640

Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala
645 650 655

Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile
660 665 670

Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr
675 680 685

Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro
690 695 700

Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr
705 710 715 720

Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val
725 730 735

Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile
740 745 750

Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met
755 760 765

Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly
770 775 780

Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser
785 790 795 800

Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr
805 810 815

Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Ile His Gln His Asn Asn
820 825 830

Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala
835 840 845

Tyr Pro Ala Asn Val Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp
850 855 860

Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile
865 870 875 880

Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly
885 890 895

Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe
900 905 910

Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu
915 920 925

Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu
930 935 940

Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
945 950 955

<210> 31
<211> 132
<212> PRT
<213> Artificial Sequence

<220>

<223> Adenovirus E1A N-terminus polypeptide

<400> 31

Met Arg His Ile Ile Cys His Gly Gly Val Ile Thr Glu Glu Met Ala
1 5 10 15

Ala Ser Leu Leu Asp Gln Leu Ile Glu Glu Val Leu Ala Asp Asn Leu
20 25 30

Pro Pro Pro Ser His Phe Glu Pro Pro Thr Leu His Glu Leu Tyr Asp
35 40 45

Leu Asp Val Thr Ala Pro Glu Asp Pro Asn Glu Glu Ala Val Ser Gln
50 55 60

Ile Phe Pro Glu Ser Val Met Leu Ala Val Gln Glu Gly Ile Asp Leu
65 70 75 80

Phe Thr Phe Pro Pro Ala Pro Gly Ser Pro Glu Pro Pro His Leu Ser
85 90 95

Arg Gln Pro Glu Gln Pro Glu Gln Arg Ala Leu Gly Pro Val Ser Met
100 105 110

Pro Asn Leu Val Pro Glu Val Ile Asp Leu Thr Cys His Glu Ala Gly
115 120 125

Phe Pro Pro Ser
130

<210> 32

<211> 112

<212> PRT

<213> Artificial Sequence

<220>

<223> E1A N-terminus polypeptide

<400> 32

Met Arg His Ile Glu Glu Val Leu Ala Asp Asn Leu Pro Pro Pro Ser
1 5 10 15

His Phe Glu Pro Pro Thr Leu His Glu Leu Tyr Asp Leu Asp Val Thr
20 25 30

Ala Pro Glu Asp Pro Asn Glu Glu Ala Val Ser Gln Ile Phe Pro Glu
35 40 45

Ser Val Met Leu Ala Val Gln Glu Gly Ile Asp Leu Phe Thr Phe Pro
50 55 60

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

Gln Pro Glu Gln Arg Ala Leu Gly Pro Val Ser Met Pro Asn Leu Val
85 90 95

Pro Glu Val Ile Asp Leu Thr Cys His Glu Ala Gly Phe Pro Pro Ser
100 105 110

<210> 33

<211> 119

<212> PRT

<213> Artificial Sequence

<220>

<223> E1A N-terminus polypeptide

<400> 33

Met Arg His Ile Ile Cys His Gly Gly Val Ile Thr Glu Glu Met Ala
1 5 10 15

Ala Ser Leu Leu Asp Gln Leu Ile Glu Glu Val Leu Ala Asp Asn Leu
20 25 30

Pro Pro Pro Ser His Phe Glu Pro Pro Thr Leu His Glu Leu Tyr Asp
35 40 45

Leu Asp Val Thr Ala Pro Glu Asp Pro Asn Glu Glu Ala Val Ser Gln
50 55 60

Ile Phe Pro Glu Ser Val Met Leu Ala Val Gln Glu Gly Ile Asp Leu

65		70		75		80									
Phe	Thr	Phe	Pro	Pro	Ala	Pro	Gly	Ser	Pro	Glu	Pro	Pro	His	Leu	Ser
				85					90					95	
Arg	Gln	Pro	Glu	Gln	Pro	Glu	Gln	Arg	Ala	Leu	Gly	Pro	Val	Cys	His
			100					105					110		
Glu	Ala	Gly	Phe	Pro	Pro	Ser									
			115												
<210> 34															
<211> 99															
<212> PRT															
<213> Artificial Sequence															
<220>															
<223> E1A N-terminus polypeptide															
<400> 34															
Met	Arg	His	Ile	Glu	Glu	Val	Leu	Ala	Asp	Asn	Leu	Pro	Pro	Pro	Ser
1				5					10					15	
His	Phe	Glu	Pro	Pro	Thr	Leu	His	Glu	Leu	Tyr	Asp	Leu	Asp	Val	Thr
			20					25					30		
Ala	Pro	Glu	Asp	Pro	Asn	Glu	Glu	Ala	Val	Ser	Gln	Ile	Phe	Pro	Glu
		35						40				45			
Ser	Val	Met	Leu	Ala	Val	Gln	Glu	Gly	Ile	Asp	Leu	Phe	Thr	Phe	Pro
	50					55					60				
Pro	Ala	Pro	Gly	Ser	Pro	Glu	Pro	Pro	His	Leu	Ser	Arg	Gln	Pro	Glu
65					70					75				80	
Gln	Pro	Glu	Gln	Arg	Ala	Leu	Gly	Pro	Val	Cys	His	Glu	Ala	Gly	Phe
				85					90					95	
Pro	Pro	Ser													

<210> 35
 <211> 528
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Fiber Polypeptide

<400> 35

Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro
 1 5 10 15

Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
 20 25 30

Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
 35 40 45

Leu Arg Leu Ser Glu Pro Leu Val Thr Ser His Gly Met Leu Ala Leu
 50 55 60

Lys Met Gly Ser Gly Leu Ser Leu Asp Gln Ala Gly Asn Leu Thr Ser
 65 70 75 80

Asn Thr Ile Thr Val Ser Gln Pro Leu Lys Lys Thr Lys Ser Asn Ile
 85 90 95

Thr Leu Glu Thr Ser Ala Pro Leu Thr Val Ser Ser Gly Ala Leu Thr
 100 105 110

Met Ala Thr Thr Ser Pro Leu Val Val Ser Asp Asn Thr Leu Thr Met
 115 120 125

Gln Ser Gln Ala Pro Leu Thr Val Gln Asp Ser Lys Leu Ser Ile Ala
 130 135 140

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

Ser Ala Pro Leu Ser Ala Thr Asp Asn Asn Ala Leu Thr Ile Thr Ala
 165 170 175

Ser Pro Pro Leu Thr Thr Ala Asn Gly Ser Leu Ala Val Thr Met Glu
180 185 190

Asn Pro Leu Tyr Asn Asn Asn Gly Lys Leu Gly Leu Lys Ile Gly Gly
195 200 205

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

Gln Gly Val Ala Val His Asn Asn Leu Leu His Thr Lys Val Thr Gly
225 230 235 240

Ala Ile Gly Phe Asp Thr Ser Gly Asn Met Glu Leu Lys Thr Gly Asp
245 250 255

Gly Leu Tyr Val Asp Ser Ala Gly Pro Asn Gln Lys Leu His Ile Asn
260 265 270

Leu Asn Thr Thr Lys Gly Leu Ala Phe Asp Asn Thr Ala Ile Thr Ile
275 280 285

Asn Ala Gly Lys Gly Leu Glu Phe Glu Thr Asp Ser Ser Asn Gly Asn
290 295 300

Pro Ile Lys Thr Lys Ile Gly Ser Gly Ile Gln Tyr Asn Thr Asn Gly
305 310 315 320

Ala Met Val Ala Lys Leu Gly Thr Gly Leu Ser Phe Asp Ser Ser Gly
325 330 335

Ala Ile Thr Met Gly Ser Ile Asn Asn Asp Arg Leu Thr Leu Trp Thr
340 345 350

Thr Pro Asp Pro Ser Pro Asn Cys Arg Ile Ala Ser Asp Lys Asp Cys
355 360 365

Lys Leu Thr Leu Ala Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Thr
370 375 380

Val Ser Ala Leu Ala Val Ser Gly Asn Met Ala Ser Ile Asn Gly Thr
 385 390 395 400

Leu Ser Ser Val Asn Leu Val Leu Arg Phe Asp Asp Asn Gly Val Leu
 405 410 415

Met Ser Asn Ser Ser Leu Asp Lys Gln Tyr Trp Asn Phe Arg Asn Gly
 420 425 430

Asp Ser Thr Asn Gly Gln Pro Tyr Thr Tyr Ala Val Gly Phe Met Pro
 435 440 445

Asn Leu Lys Ala Tyr Pro Lys Thr Gln Ser Lys Thr Ala Lys Ser Asn
 450 455 460

Ile Val Ser Gln Val Tyr Leu Asn Gly Asp Lys Ser Lys Pro Leu His
 465 470 475 480

Phe Thr Ile Thr Leu Asn Gly Thr Asp Glu Thr Asn Gln Val Ser Lys
 485 490 495

Tyr Ser Ile Ser Phe Ser Trp Ser Trp Asn Ser Gly Gln Tyr Thr Asn
 500 505 510

Asp Lys Phe Ala Thr Asn Ser Tyr Thr Phe Ser Tyr Ile Ala Gln Glu
 515 520 525

<210> 36
 <211> 324
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Fiber Polypeptide

<400> 36

Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro
 1 5 10 15

Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
 20 25 30

Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Thr
35 40 45

Leu Lys Cys Leu Thr Pro Leu Thr Thr Thr Gly Gly Ser Leu Gln Leu
50 55 60

Lys Val Gly Gly Gly Leu Thr Val Asp Asp Thr Asp Gly Thr Leu Gln
65 70 75 80

Glu Asn Ile Arg Ala Thr Ala Pro Ile Thr Lys Asn Asn His Ser Val
85 90 95

Glu Leu Ser Ile Gly Asn Gly Leu Glu Thr Gln Asn Asn Lys Leu Cys
100 105 110

Ala Lys Leu Gly Asn Gly Leu Lys Phe Asn Asn Gly Asp Ile Cys Ile
115 120 125

Lys Asp Ser Ile Asn Thr Leu Trp Thr Gly Ile Asn Pro Pro Pro Asn
130 135 140

Cys Gln Ile Val Glu Asn Thr Asn Thr Asn Asp Gly Lys Leu Thr Leu
145 150 155 160

Val Leu Val Lys Asn Gly Gly Leu Val Asn Gly Tyr Val Ser Leu Val
165 170 175

Gly Val Ser Asp Thr Val Asn Gln Met Phe Thr Gln Lys Thr Ala Asn
180 185 190

Ile Gln Leu Arg Leu Tyr Phe Asp Ser Ser Gly Asn Leu Leu Thr Asp
195 200 205

Glu Ser Asp Leu Lys Ile Pro Leu Lys Asn Lys Ser Ser Thr Ala Thr
210 215 220

Ser Glu Thr Val Ala Ser Ser Lys Ala Phe Met Pro Ser Thr Thr Ala
225 230 235 240

Tyr Pro Phe Asn Thr Thr Thr Arg Asp Ser Glu Asn Tyr Ile His Gly
245 250 255

Ile Cys Tyr Tyr Met Thr Ser Tyr Asp Arg Ser Leu Phe Pro Leu Asn
260 265 270

Ile Ser Ile Met Leu Asn Ser Arg Met Ile Ser Ser Asn Val Ala Tyr
275 280 285

Ala Ile Gln Phe Glu Trp Asn Leu Asn Ala Ser Glu Ser Pro Glu Ser
290 295 300

Asn Ile Ala Thr Leu Thr Thr Ser Pro Phe Phe Phe Ser Tyr Ile Thr
305 310 315 320

Glu Asp Asp Asn

<210> 37
<211> 534
<212> PRT
<213> Artificial Sequence

<220>
<223> Fiber Polypeptide

<400> 37

Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro
1 5 10 15

Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
20 25 30

Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
35 40 45

Leu Arg Leu Ser Glu Pro Leu Val Thr Ser His Gly Met Leu Ala Leu
50 55 60

Lys Met Gly Ser Gly Leu Ser Leu Asp Gln Ala Gly Asn Leu Thr Ser
65 70 75 80

Asn Thr Ile Thr Val Ser Gln Pro Leu Lys Lys Thr Lys Ser Asn Ile
85 90 95

Thr Leu Glu Thr Ser Ala Pro Leu Thr Val Ser Ser Gly Ala Leu Thr
100 105 110

Met Ala Thr Thr Ser Pro Leu Val Val Ser Asp Asn Thr Leu Thr Met
115 120 125

Gln Ser Gln Ala Pro Leu Thr Val Gln Asp Ser Lys Leu Ser Ile Ala
130 135 140

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

Ser Ala Pro Leu Ser Ala Thr Asp Asn Asn Ala Leu Thr Ile Thr Ala
165 170 175

Ser Pro Pro Leu Thr Thr Ala Asn Gly Ser Leu Ala Val Thr Met Glu
180 185 190

Asn Pro Leu Tyr Asn Asn Asn Gly Lys Leu Gly Leu Lys Ile Gly Gly
195 200 205

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

Gln Gly Val Ala Val His Asn Asn Leu Leu His Thr Lys Val Thr Gly
225 230 235 240

Ala Ile Gly Phe Asp Thr Ser Gly Asn Met Glu Leu Lys Thr Gly Asp
245 250 255

Gly Leu Tyr Val Asp Ser Ala Gly Pro Asn Gln Lys Leu His Ile Asn
260 265 270

Leu Asn Thr Thr Lys Gly Leu Ala Phe Asp Asn Thr Ala Ile Thr Ile
275 280 285

Asn Ala Gly Lys Gly Leu Glu Phe Glu Thr Asp Ser Ser Asn Gly Asn
 290 295 300

Pro Ile Lys Thr Lys Ile Gly Ser Gly Ile Gln Tyr Asn Thr Asn Gly
 305 310 315 320

Ala Met Val Ala Lys Leu Gly Thr Gly Leu Ser Phe Asp Ser Ser Gly
 325 330 335

Ala Ile Thr Met Gly Ser Ile Asn Asn Asp Arg Leu Thr Leu Trp Thr
 340 345 350

Thr Pro Asp Pro Ser Pro Asn Cys Arg Ile Ala Ser Asp Lys Asp Cys
 355 360 365

Lys Leu Thr Leu Ala Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Thr
 370 375 380

Val Ser Ala Leu Ala Val Ser Gly Asn Met Ala Ser Ile Asn Gly Thr
 385 390 395 400

Leu Ser Ser Val Asn Leu Val Leu Arg Phe Asp Asp Asn Gly Val Leu
 405 410 415

Met Ser Asn Ser Ser Leu Asp Lys Gln Tyr Trp Asn Phe Arg Asn Gly
 420 425 430

Asp Ser Thr Asn Gly Gln Pro Tyr Thr Tyr Ala Val Gly Phe Met Pro
 435 440 445

Asn Leu Lys Ala Tyr Pro Lys Thr Gln Ser Lys Thr Ala Lys Ser Asn
 450 455 460

Ile Val Ser Gln Val Tyr Leu Asn Gly Asp Lys Ser Lys Pro Leu His
 465 470 475 480

Phe Thr Ile Thr Leu Asn Gly Thr Asp Glu Thr Asn Gln Val Ser Lys
 485 490 495

Tyr Ser Ile Ser Phe Ser Trp Ser Trp Asn Ser Gly Gln Tyr Thr Asn

500

505

510

Asp Lys Phe Ala Thr Asn Ser Tyr Thr Phe Ser Tyr Ile Ala Gln Glu
 515 520 525

Lys Lys Lys Lys Lys Lys
 530

<210> 38
 <211> 425
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Fiber Polypeptide

<400> 38

Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro
 1 5 10 15

Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
 20 25 30

Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
 35 40 45

Leu Arg Leu Ser Glu Pro Leu Val Thr Lys Asn Gly Glu Ile Thr Leu
 50 55 60

Lys Leu Gly Glu Gly Val Asp Leu Asp Ser Ser Gly Lys Leu Ile Ser
 65 70 75 80

Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
 85 90 95

Ile Ser Leu Asn Met Asp His Pro Phe Tyr Thr Lys Asp Gly Lys Leu
 100 105 110

Ser Leu Gln Val Ser Pro Pro Leu Asn Ile Leu Arg Thr Ser Ile Leu
 115 120 125

Asn Thr Leu Ala Leu Gly Phe Gly Ser Gly Leu Gly Leu Arg Gly Ser
130 135 140

Ala Leu Ala Val Gln Leu Val Ser Pro Leu Thr Phe Asp Thr Asp Gly
145 150 155 160

Asn Ile Lys Leu Thr Leu Asp Arg Gly Leu His Val Thr Thr Gly Asp
165 170 175

Ala Ile Glu Ser Asn Ile Ser Trp Ala Lys Gly Leu Lys Phe Glu Asp
180 185 190

Gly Ala Ile Ala Thr Asn Ile Gly Asn Gly Leu Glu Phe Gly Ser Ser
195 200 205

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

Gly Ser Gly Leu Ser Phe Asp Ser Thr Gly Ala Ile Met Ala Gly Asn
225 230 235 240

Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro
245 250 255

Asn Cys Gln Ile Leu Ala Glu Asn Asp Ala Lys Leu Thr Leu Cys Leu
260 265 270

Thr Lys Cys Gly Ser Gln Ile Leu Ala Thr Val Ser Val Leu Val Val
275 280 285

Gly Ser Gly Asn Leu Asn Pro Ile Thr Gly Thr Val Ser Ser Ala Gln
290 295 300

Val Phe Leu Arg Phe Asp Ala Asn Gly Val Leu Leu Thr Glu His Ser
305 310 315 320

Thr Leu Lys Lys Tyr Trp Gly Tyr Arg Gln Gly Asp Ser Ile Asp Gly
325 330 335

Thr Pro Tyr Thr Asn Ala Val Gly Phe Met Pro Asn Leu Lys Ala Tyr

340

345

350

Pro Lys Ser Gln Ser Ser Thr Thr Lys Asn Asn Ile Val Gly Gln Val
 355 360 365

Tyr Met Asn Gly Asp Val Ser Lys Pro Met Leu Leu Thr Ile Thr Leu
 370 375 380

Asn Gly Thr Asp Asp Ser Asn Ser Thr Tyr Ser Met Ser Phe Ser Tyr
 385 390 395 400

Thr Trp Thr Asn Gly Ser Tyr Val Gly Ala Thr Phe Gly Ala Asn Ser
 405 410 415

Tyr Thr Phe Ser Tyr Ile Ala Gln Glu
 420 425

<210> 39

<211> 432

<212> PRT

<213> Artificial Sequence

<220>

<223> Fiber Polypeptide

<400> 39

Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro
 1 5 10 15

Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
 20 25 30

Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
 35 40 45

Leu Arg Leu Ser Glu Pro Leu Val Thr Lys Asn Gly Glu Ile Thr Leu
 50 55 60

Lys Leu Gly Glu Gly Val Asp Leu Asp Ser Ser Gly Lys Leu Ile Ser
 65 70 75 80

Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
85 90 95

Ile Ser Leu Asn Met Asp His Pro Phe Tyr Thr Lys Asp Gly Lys Leu
100 105 110

Ser Leu Gln Val Ser Pro Pro Leu Asn Ile Leu Arg Thr Ser Ile Leu
115 120 125

Asn Thr Leu Ala Leu Gly Phe Gly Ser Gly Leu Gly Leu Arg Gly Ser
130 135 140

Ala Leu Ala Val Gln Leu Val Ser Pro Leu Thr Phe Asp Thr Asp Gly
145 150 155 160

Asn Ile Lys Leu Thr Leu Asp Arg Gly Leu His Val Thr Thr Gly Asp
165 170 175

Ala Ile Glu Ser Asn Ile Ser Trp Ala Lys Gly Leu Lys Phe Glu Asp
180 185 190

Gly Ala Ile Ala Thr Asn Ile Gly Asn Gly Leu Glu Phe Gly Ser Ser
195 200 205

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

Gly Ser Gly Leu Ser Phe Asp Ser Thr Gly Ala Ile Met Ala Gly Asn
225 230 235 240

Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro
245 250 255

Asn Cys Gln Ile Leu Ala Glu Asn Asp Ala Lys Leu Thr Leu Cys Leu
260 265 270

Thr Lys Cys Gly Ser Gln Ile Leu Ala Thr Val Ser Val Leu Val Val
275 280 285

Gly Ser Gly Asn Leu Asn Pro Ile Thr Gly Thr Val Ser Ser Ala Gln

290

295

300

Val Phe Leu Arg Phe Asp Ala Asn Gly Val Leu Leu Thr Glu His Ser
305 310 315 320

Thr Leu Lys Lys Tyr Trp Gly Tyr Arg Gln Gly Asp Ser Ile Asp Gly
325 330 335

Thr Pro Tyr Thr Asn Ala Val Gly Phe Met Pro Asn Leu Lys Ala Tyr
340 345 350

Pro Lys Ser Gln Ser Ser Thr Thr Lys Asn Asn Ile Val Gly Gln Val
355 360 365

Tyr Met Asn Gly Asp Val Ser Lys Pro Met Leu Leu Thr Ile Thr Leu
370 375 380

Asn Gly Thr Asp Asp Ser Asn Ser Thr Tyr Ser Met Ser Phe Ser Tyr
385 390 395 400

Thr Trp Thr Asn Gly Ser Tyr Val Gly Ala Thr Phe Gly Ala Asn Ser
405 410 415

Tyr Thr Phe Ser Tyr Ile Ala Gln Glu Lys Lys Lys Lys Lys Lys Lys
420 425 430

<210> 40

<211> 441

<212> PRT

<213> Artificial Sequence

<220>

<223> Fiber Polypeptide

<400> 40

Met Lys Arg Ala Arg Pro Ser Glu Asp Thr Phe Asn Pro Val Tyr Pro
1 5 10 15

Tyr Asp Thr Glu Thr Gly Pro Pro Thr Val Pro Phe Leu Thr Pro Pro
20 25 30

Phe Val Ser Pro Asn Gly Phe Gln Glu Ser Pro Pro Gly Val Leu Ser
35 40 45

Leu Arg Leu Ser Glu Pro Leu Val Thr Lys Asn Gly Glu Ile Thr Leu
50 55 60

Lys Leu Gly Glu Gly Val Asp Leu Asp Ser Ser Gly Lys Leu Ile Ser
65 70 75 80

Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
85 90 95

Ile Ser Leu Asn Met Asp His Pro Phe Tyr Thr Lys Asp Gly Lys Leu
100 105 110

Ser Leu Gln Val Ser Pro Pro Leu Asn Ile Leu Arg Thr Ser Ile Leu
115 120 125

Asn Thr Leu Ala Leu Gly Phe Gly Ser Gly Leu Gly Leu Arg Gly Ser
130 135 140

Ala Leu Ala Val Gln Leu Val Ser Pro Leu Thr Phe Asp Thr Asp Gly
145 150 155 160

Asn Ile Lys Leu Thr Leu Asp Arg Gly Leu His Val Thr Thr Gly Asp
165 170 175

Ala Ile Glu Ser Asn Ile Ser Trp Ala Lys Gly Leu Lys Phe Glu Asp
180 185 190

Gly Ala Ile Ala Thr Asn Ile Gly Asn Gly Leu Glu Phe Gly Ser Ser
195 200 205

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

Gly Ser Gly Leu Ser Phe Asp Ser Thr Gly Ala Ile Met Ala Gly Asn
225 230 235 240

Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro

	245		250		255										
Asn	Cys	Gln	Ile	Leu	Ala	Glu	Asn	Asp	Ala	Lys	Leu	Thr	Leu	Cys	Leu
			260					265					270		
Thr	Lys	Cys	Gly	Ser	Gln	Ile	Leu	Ala	Thr	Val	Ser	Val	Leu	Val	Val
		275					280					285			
Gly	Ser	Gly	Asn	Leu	Asn	Pro	Ile	Thr	Gly	Thr	Val	Ser	Ser	Ala	Gln
	290					295					300				
Val	Phe	Leu	Arg	Phe	Asp	Ala	Asn	Gly	Val	Leu	Leu	Thr	Glu	His	Ser
305					310					315					320
Thr	Leu	Lys	Lys	Tyr	Trp	Gly	Tyr	Arg	Gln	Gly	Asp	Ser	Ile	Asp	Gly
				325					330					335	
Thr	Pro	Tyr	Thr	Asn	Ala	Val	Gly	Phe	Met	Pro	Asn	Leu	Lys	Ala	Tyr
			340					345					350		
Pro	Lys	Ser	Gln	Ser	Ser	Thr	Thr	Lys	Asn	Asn	Ile	Val	Gly	Gln	Val
		355					360					365			
Tyr	Met	Asn	Gly	Asp	Val	Ser	Lys	Pro	Met	Leu	Leu	Thr	Ile	Thr	Leu
	370					375					380				
Asn	Gly	Thr	Asp	Asp	Ser	Gly	Gly	Ser	Ser	Gly	Lys	Lys	Lys	Lys	Lys
385					390					395					400
Lys	Lys	Ala	Ser	Gly	Gly	Ser	Ser	Thr	Tyr	Ser	Met	Ser	Phe	Ser	Tyr
				405					410					415	
Thr	Trp	Thr	Asn	Gly	Ser	Tyr	Val	Gly	Ala	Thr	Phe	Gly	Ala	Asn	Ser
			420					425					430		
Tyr	Thr	Phe	Ser	Tyr	Ile	Ala	Gln	Glu							
	435						440								

<210> 41
 <211> 1608

<212> DNA
<213> Artificial Sequence

<220>
<223> Probasin-E1

<400> 41
tcgagcgacg gtatcgataa gcttggagct tatgatagca tcttgttctt agtctttttc 60
ttaataggga cataaagccc acaaataaaa atatgcctga agaatgggac aggcattggg 120
cattgtccat gcctagtaaa gtactccaag aacctatttg tatactagat gacacaatgt 180
tctagccaag cttggtagtc atcatgttta aacatctacc attccagtta agaaaatatg 240
atagcatctt gttcttagtc tttttcttaa tagggacata aagcccacaa ataaaaatat 300
gcctgaagaa tgggacaggc attgggcatt gtccatgcct agtaaagtac tccaagaacc 360
tatttgtata ctagatgaca caatgtcaat gtctgtgtac aactgccaac tgggatgcaa 420
gacactgccc atgccaatca tcctgaaaag cagctataaa aagcaggaag ctactctgca 480
ccttgtcagt gaggtccaga tacctccctc gagcggccgc gacgcgcagt gtattttatac 540
ccggtgagtt cctcaagagg ccactcttga gtgccagcga gtagagtttt ctcctccgag 600
ccgctccgac accgggactg aaaatgagac atattatctg ccacggaggt gttattaccg 660
aagaaatggc cgccagtctt ttggaccagc tgatcgaaga ggtactggct gataatcttc 720
cacctcctag ccattttgaa ccacctaccc ttcacgaact gtatgattta gacgtgacgg 780
ccccgaaga tccaacgag gaggcgggtt cgcagatttt tcccagagtct gtaatgttgg 840
cgggtgcagga agggattgac ttattcactt ttccgccggc gcccggttct ccggagccgc 900
ctcacctttc ccggcagccc gagcagccgg agcagagagc cttgggtccg gtttctatgc 960
caaaccttgt gccggaggtg atcgatctta cctgccacga ggctggcttt ccacccagtg 1020
acgacgagga tgaagagggg gaggagtttg tgttagatta tgtggagcac cccgggcacg 1080
gttgacggtc ttgtcattat caccggagga atacggggga ccagatatt atgtgttcgc 1140
tttgctatat gaggacctgt ggcatgtttg tctacagtaa gtgaaaatta tgggcagtcg 1200
gtgatagagt ggtggggttg gtgtggtaat ttttttttaa tttttacagt tttgtggttt 1260
aaagaatfff gtattgtgat tttttaaaag gtcctgtgtc tgaacctgag cctgagcccg 1320
agccagaacc ggagcctgca agacctaccc ggcgtcctaa attggtgcct gctatcctga 1380

gacgcccgac atcacctgtg tctagagaat gcaatagtag tacggatagc tgtgactccg	1440
gtcctttctaa cacacctcct gagatacacc cggtaggtccc gctgtgcccc attaaaccag	1500
ttgccgtgag agttgggtggg cgtcgccagg ctgtggaatg tatcgaggac ttgcttaacg	1560
agtctgggca acctttggac ttgagctgta aacgccccag gccataag	1608

<210> 42
 <211> 967
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Hexon Polypeptide

<400> 42

Met	Ala	Thr	Pro	Ser	Met	Met	Pro	Gln	Trp	Ser	Tyr	Met	His	Ile	Ser
1				5					10					15	

Gly	Gln	Asp	Ala	Ser	Glu	Tyr	Leu	Ser	Pro	Gly	Leu	Val	Gln	Phe	Ala
			20					25					30		

Arg	Ala	Thr	Glu	Thr	Tyr	Phe	Ser	Leu	Asn	Asn	Lys	Phe	Arg	Asn	Pro
		35					40					45			

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

Thr	Leu	Arg	Phe	Ile	Pro	Val	Asp	Arg	Glu	Asp	Thr	Ala	Tyr	Ser	Tyr
65					70					75					80

Lys	Ala	Arg	Phe	Thr	Leu	Ala	Val	Gly	Asp	Asn	Arg	Val	Leu	Asp	Met
				85					90					95	

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

Phe	Lys	Pro	Tyr	Ser	Gly	Thr	Ala	Tyr	Asn	Ala	Leu	Ala	Pro	Lys	Gly
		115					120					125			

Ala	Pro	Asn	Ser	Cys	Glu	Trp	Asp	Glu	Asp	Asp	Thr	Gln	Val	Gln	Val
	130					135					140				

Ala Ala Glu Asp Asp Gln Asp Asp Asp Ser Ser Cys Ser Ser Gly Gly
 145 150 155 160

Thr Glu Glu Glu Glu Gln Leu Pro Gln Gln Arg Asn Gly Lys Lys Thr
 165 170 175

His Val Tyr Ala Gln Ala Pro Phe Ala Gly Glu Ala Ile Asn Lys Asn
 180 185 190

Gly Leu Gln Ile Gly Thr Asn Gly Ala Ala Thr Glu Gly Asn Lys Glu
 195 200 205

Ile Tyr Ala Asp Lys Thr Tyr Gln Pro Glu Pro Gln Ile Gly Glu Ser
 210 215 220

Gln Trp Asn Glu Ala Glu Ser Ser Val Ala Gly Gly Arg Val Leu Lys
 225 230 235 240

Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Arg Pro Thr
 245 250 255

Asn Ser Asn Gly Gly Gln Gly Val Met Val Glu Gln Asn Gly Lys Leu
 260 265 270

Glu Ser Gln Val Glu Met Gln Phe Phe Ser Thr Ser Val Asn Ala Met
 275 280 285

Asn Glu Ala Asn Ala Ile Gln Pro Lys Leu Val Leu Tyr Ser Glu Asp
 290 295 300

Val Asn Met Glu Thr Pro Asp Thr His Leu Ser Tyr Lys Pro Gly Lys
 305 310 315 320

Ser Asp Asp Asn Ser Lys Ala Met Leu Gly Gln Gln Ser Met Pro Asn
 325 330 335

Arg Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr
 340 345 350

Tyr Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln
355 360 365

Leu Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr
370 375 380

Gln Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met
385 390 395 400

Trp Asn Gln Ala Val Asp Ser Tyr Asp Pro Asp Val Arg Ile Ile Glu
405 410 415

Asn His Gly Thr Glu Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu Gly
420 425 430

Gly Ile Gly Val Thr Asp Thr Tyr Gln Ala Ile Lys Ala Thr Asn Gly
435 440 445

Asn Gly Gly Ala Thr Thr Trp Ala Gln Asp Asn Thr Phe Ala Glu Arg
450 455 460

Asn Glu Ile Gly Val Gly Asn Asn Phe Ala Met Glu Ile Asn Leu Asn
465 470 475 480

Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu
485 490 495

Pro Asp Lys Leu Lys Tyr Asn Pro Thr Asn Val Glu Ile Ser Asp Asn
500 505 510

Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro Gly Leu
515 520 525

Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met
530 535 540

Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu Arg Tyr
545 550 555 560

Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln
565 570 575

Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly
580 585 590

Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met Val Leu
595 600 605

Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser Ile Lys
610 615 620

Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn
625 630 635 640

Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln
645 650 655

Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro
660 665 670

Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala
675 680 685

Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro
690 695 700

Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile
705 710 715 720

Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val
725 730 735

Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu
740 745 750

Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly Glu Gly
755 760 765

Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln

770

775

780

Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu
785 790 795 800

Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met
805 810 815

Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val
820 825 830

Gly Ile Ile His Gln His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala
835 840 845

Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn Val Pro Tyr Pro
850 855 860

Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln Lys Lys Phe Leu
865 870 875 880

Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser
885 890 895

Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser
900 905 910

Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp Glu Pro
915 920 925

Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val Val Arg Val His
930 935 940

Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu Arg Thr Pro Phe
945 950 955 960

Ser Ala Gly Asn Ala Thr Thr
965

<210> 43

<211> 955

<212> PRT
<213> Artificial Sequence

<220>
<223> Hexon Polypeptide

<400> 43

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

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

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Ser Cys Glu Trp Asp Glu Asp Asp Thr Gln Val Gln Val
130 135 140

Ala Ala Glu Asp Asp Gln Asp Asp Asp Glu Glu Glu Glu Gln Leu Pro
145 150 155 160

Gln Gln Arg Asn Gly Lys Lys Thr His Val Tyr Ala Gln Ala Pro Phe
165 170 175

Ala Gly Glu Ala Ile Asn Lys Asn Gly Leu Gln Ile Gly Thr Asn Gly

180	185	190																			
Ala	Ala	Thr	Glu	Gly	Asn	Lys	Glu	Ile	Tyr	Ala	Asp	Lys	Thr	Tyr	Gln						
		195					200					205									
Pro	Glu	Pro	Gln	Ile	Gly	Glu	Ser	Gln	Trp	Asn	Glu	Ala	Glu	Ser	Ser						
	210					215					220										
Val	Ala	Gly	Gly	Arg	Val	Leu	Lys	Lys	Thr	Thr	Pro	Met	Lys	Pro	Cys						
225					230					235					240						
Tyr	Gly	Ser	Tyr	Ala	Arg	Pro	Thr	Asn	Ser	Asn	Gly	Gly	Gln	Gly	Val						
				245					250					255							
Met	Val	Glu	Gln	Asn	Gly	Lys	Leu	Glu	Ser	Gln	Val	Glu	Met	Gln	Phe						
			260					265					270								
Phe	Ser	Thr	Ser	Ser	Cys	Ser	Ser	Gly	Gly	Thr	Pro	Lys	Leu	Val	Leu						
		275					280					285									
Tyr	Ser	Glu	Asp	Val	Asn	Met	Glu	Thr	Pro	Asp	Thr	His	Leu	Ser	Tyr						
	290					295					300										
Lys	Pro	Gly	Lys	Ser	Asp	Asp	Asn	Ser	Lys	Ala	Met	Leu	Gly	Gln	Gln						
305					310					315					320						
Ser	Met	Pro	Asn	Arg	Pro	Asn	Tyr	Ile	Ala	Phe	Arg	Asp	Asn	Phe	Ile						
				325					330					335							
Gly	Leu	Met	Tyr	Tyr	Asn	Ser	Thr	Gly	Asn	Met	Gly	Val	Leu	Ala	Gly						
			340					345					350								
Gln	Ala	Ser	Gln	Leu	Asn	Ala	Val	Val	Asp	Leu	Gln	Asp	Arg	Asn	Thr						
		355					360					365									
Glu	Leu	Ser	Tyr	Gln	Leu	Leu	Leu	Asp	Ser	Ile	Gly	Asp	Arg	Thr	Arg						
	370					375					380										
Tyr	Phe	Ser	Met	Trp	Asn	Gln	Ala	Val	Asp	Ser	Tyr	Asp	Pro	Asp	Val						
385					390					395					400						

Arg Ile Ile Glu Asn His Gly Thr Glu Asp Glu Leu Pro Asn Tyr Cys
405 410 415

Phe Pro Leu Gly Gly Ile Gly Val Thr Asp Thr Tyr Gln Ala Ile Lys
420 425 430

Ala Thr Asn Gly Asn Gly Gly Ala Thr Thr Trp Ala Gln Asp Asn Thr
435 440 445

Phe Ala Glu Arg Asn Glu Ile Gly Val Gly Asn Asn Phe Ala Met Glu
450 455 460

Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile
465 470 475 480

Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Asn Pro Thr Asn Val Glu
485 490 495

Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val
500 505 510

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

Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala
530 535 540

Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro
545 550 555 560

Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu
565 570 575

Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val
580 585 590

Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly
595 600 605

Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro
610 615 620

Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp
625 630 635 640

Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu
645 650 655

Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser
660 665 670

Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr
675 680 685

Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr
690 695 700

Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr
705 710 715 720

Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly
725 730 735

Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val
740 745 750

Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp
755 760 765

Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe
770 775 780

Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn
785 790 795 800

Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp
805 810 815

Tyr Gln Gln Val Gly Ile Ile His Gln His Asn Asn Ser Gly Phe Val
820 825 830

Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn
835 840 845

Val Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln
850 855 860

Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser
865 870 875 880

Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu
885 890 895

Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro
900 905 910

Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val
915 920 925

Val Arg Val His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu
930 935 940

Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
945 950 955

<210> 44
<211> 964
<212> PRT
<213> Artificial Sequence

<220>
<223> Hexon Polypeptide

<400> 44

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

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

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Ser Cys Glu Trp Asp Glu Asp Asp Thr Gln Val Gln Val
130 135 140

Ala Ala Glu Asp Asp Gln Asp Asp Asp Ser Ser Gly Gly Thr Glu Glu
145 150 155 160

Glu Glu Gln Leu Pro Gln Gln Arg Asn Gly Lys Lys Thr His Val Tyr
165 170 175

Ala Gln Ala Pro Phe Ala Gly Glu Ala Ile Asn Lys Asn Gly Leu Gln
180 185 190

Ile Gly Thr Asn Gly Ala Ala Thr Glu Gly Asn Lys Glu Ile Tyr Ala
195 200 205

Asp Lys Thr Tyr Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Asn
210 215 220

Glu Ala Glu Ser Ser Val Ala Gly Gly Arg Val Leu Lys Lys Thr Thr
225 230 235 240

Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Arg Pro Thr Asn Ser Asn
245 250 255

Gly Gly Gln Gly Val Met Val Glu Gln Asn Gly Lys Leu Glu Ser Gln
260 265 270

Val Glu Met Gln Phe Phe Ser Thr Ser Val Asn Ala Met Asn Glu Ala
275 280 285

Asn Ala Ile Gln Pro Lys Leu Val Leu Tyr Ser Glu Asp Val Asn Met
290 295 300

Glu Thr Pro Asp Thr His Leu Ser Tyr Lys Pro Gly Lys Ser Asp Asp
305 310 315 320

Asn Ser Lys Ala Met Leu Gly Gln Gln Ser Met Pro Asn Arg Pro Asn
325 330 335

Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser
340 345 350

Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala
355 360 365

Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu
370 375 380

Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln
385 390 395 400

Ala Val Asp Ser Tyr Asp Pro Asp Val Arg Ile Ile Glu Asn His Gly
405 410 415

Thr Glu Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Ile Gly
420 425 430

Val Thr Asp Thr Tyr Gln Ala Ile Lys Ala Thr Asn Gly Asn Gly Gly
435 440 445

Ala Thr Thr Trp Ala Gln Asp Asn Thr Phe Ala Glu Arg Asn Glu Ile

450		455		460
Gly Val Gly Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu				
465		470		475
				480
Trp Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys				
		485		490
				495
Leu Lys Tyr Asn Pro Thr Asn Val Glu Ile Ser Asp Asn Pro Asn Thr				
		500		505
				510
Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys				
		515		520
				525
Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val				
		530		535
				540
Asn Pro Phe Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met				
545		550		555
				560
Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln				
		565		570
				575
Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr				
		580		585
				590
Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser				
		595		600
				605
Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser				
		610		615
				620
Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser				
625		630		635
				640
Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn				
		645		650
				655
Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala				
		660		665
				670

Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg
675 680 685

Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly
690 695 700

Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu
705 710 715 720

Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr
725 730 735

Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro
740 745 750

Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val
755 760 765

Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala
770 775 780

Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys
785 790 795 800

Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln
805 810 815

Val Val Asp Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Ile
820 825 830

His Gln His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met
835 840 845

Arg Glu Gly Gln Ala Tyr Pro Ala Asn Val Pro Tyr Pro Leu Ile Gly
850 855 860

Lys Thr Ala Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg
865 870 875 880

Thr Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala
885 890 895

Leu Thr Asp Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala
900 905 910

Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu
915 920 925

Tyr Val Leu Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His
930 935 940

Arg Gly Val Ile Glu Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly
945 950 955 960

Asn Ala Thr Thr

<210> 45
<211> 952
<212> PRT
<213> Artificial Sequence

<220>
<223> Hexon Polypeptide

<400> 45

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

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

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

120

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Ser Cys Glu Trp Asp Glu Asp Asp Thr Gln Val Gln Val
130 135 140

Ala Ala Glu Asp Asp Gln Asp Asp Asp Glu Glu Glu Glu Gln Leu Pro
145 150 155 160

Gln Gln Arg Asn Gly Lys Lys Thr His Val Tyr Ala Gln Ala Pro Phe
165 170 175

Ala Gly Glu Ala Ile Asn Lys Asn Gly Leu Gln Ile Gly Thr Asn Gly
180 185 190

Ala Ala Thr Glu Gly Asn Lys Glu Ile Tyr Ala Asp Lys Thr Tyr Gln
195 200 205

Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Asn Glu Ala Glu Ser Ser
210 215 220

Val Ala Gly Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys
225 230 235 240

Tyr Gly Ser Tyr Ala Arg Pro Thr Asn Ser Asn Gly Gly Gln Gly Val
245 250 255

Met Val Glu Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe
260 265 270

Phe Ser Thr Ser Ser Gly Gly Thr Pro Lys Leu Val Leu Tyr Ser Glu
275 280 285

Asp Val Asn Met Glu Thr Pro Asp Thr His Leu Ser Tyr Lys Pro Gly
 290 295 300

Lys Ser Asp Asp Asn Ser Lys Ala Met Leu Gly Gln Gln Ser Met Pro
 305 310 315 320

Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met
 325 330 335

Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser
 340 345 350

Gln Leu Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser
 355 360 365

Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser
 370 375 380

Met Trp Asn Gln Ala Val Asp Ser Tyr Asp Pro Asp Val Arg Ile Ile
 385 390 395 400

Glu Asn His Gly Thr Glu Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu
 405 410 415

Gly Gly Ile Gly Val Thr Asp Thr Tyr Gln Ala Ile Lys Ala Thr Asn
 420 425 430

Gly Asn Gly Gly Ala Thr Thr Trp Ala Gln Asp Asn Thr Phe Ala Glu
 435 440 445

Arg Asn Glu Ile Gly Val Gly Asn Asn Phe Ala Met Glu Ile Asn Leu
 450 455 460

Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu Tyr
 465 470 475 480

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

Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro Gly
500 505 510

Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp Tyr
515 520 525

Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu Arg
530 535 540

Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile
545 550 555 560

Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu Pro
565 570 575

Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met Val
580 585 590

Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser Ile
595 600 605

Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala His
610 615 620

Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp
625 630 635 640

Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile
645 650 655

Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp
660 665 670

Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu Thr
675 680 685

Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser
690 695 700

Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys

705		710		715		720
Val	Ala	Ile	Thr	Phe	Asp	Arg
				725		735
Leu	Leu	Thr	Pro	Asn	Glu	Arg
			740			750
Gly	Tyr	Asn	Val	Ala	Gln	Val
		755				765
Gln	Met	Leu	Ala	Asn	Tyr	Pro
	770				775	780
Glu	Ser	Tyr	Lys	Asp	Arg	Pro
785					790	800
Met	Ser	Arg	Gln	Val	Val	Gln
				805		815
Val	Gly	Ile	Ile	His	Gln	Leu
					820	830
Ala	Pro	Thr	Met	Arg	Glu	Tyr
					835	845
Pro	Leu	Ile	Gly	Lys	Thr	Phe
	850				855	860
Leu	Cys	Asp	Arg	Thr	Leu	Met
865					870	880
Ser	Met	Gly	Ala	Leu	Thr	Asn
				885		895
Ser	Ala	His	Ala	Leu	Asp	Glu
			900			910
Pro	Thr	Leu	Leu	Tyr	Val	Arg
		915			920	925

His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu Arg Thr Pro
930 935 940

Phe Ser Ala Gly Asn Ala Thr Thr
945 950

<210> 46
<211> 1033
<212> PRT
<213> Artificial Sequence

<220>
<223> Hexon Polypeptide

<400> 46

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

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

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Ser Cys Glu Trp Asp Glu Asp Asp Thr Gln Val Gln Val
125

130

135

140

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

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

Val Lys Ala Gly Gln Thr Val Leu Val Leu Glu Ala Met Lys Met Glu
 180 185 190

Thr Glu Ile Asn Ala Pro Thr Asp Gly Lys Val Glu Lys Val Leu Val
 195 200 205

Lys Glu Arg Asp Ala Val Gln Gly Gly Gln Gly Leu Ile Lys Ile Gly
 210 215 220

Gly Gly Thr Glu Glu Glu Glu Gln Leu Pro Gln Gln Arg Asn Gly Lys
 225 230 235 240

Lys Thr His Val Tyr Ala Gln Ala Pro Phe Ala Gly Glu Ala Ile Asn
 245 250 255

Lys Asn Gly Leu Gln Ile Gly Thr Asn Gly Ala Ala Thr Glu Gly Asn
 260 265 270

Lys Glu Ile Tyr Ala Asp Lys Thr Tyr Gln Pro Glu Pro Gln Ile Gly
 275 280 285

Glu Ser Gln Trp Asn Glu Ala Glu Ser Ser Val Ala Gly Gly Arg Val
 290 295 300

Leu Lys Lys Thr Thr Pro Met Lys Pro Cys Tyr Gly Ser Tyr Ala Arg
 305 310 315 320

Pro Thr Asn Ser Asn Gly Gly Gln Gly Val Met Val Glu Gln Asn Gly
 325 330 335

Lys Leu Glu Ser Gln Val Glu Met Gln Phe Phe Ser Thr Ser Val Asn
 340 345 350

Ala Met Asn Glu Ala Asn Ala Ile Gln Pro Lys Leu Val Leu Tyr Ser
355 360 365

Glu Asp Val Asn Met Glu Thr Pro Asp Thr His Leu Ser Tyr Lys Pro
370 375 380

Gly Lys Ser Asp Asp Asn Ser Lys Ala Met Leu Gly Gln Gln Ser Met
385 390 395 400

Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu
405 410 415

Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala
420 425 430

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

Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe
450 455 460

Ser Met Trp Asn Gln Ala Val Asp Ser Tyr Asp Pro Asp Val Arg Ile
465 470 475 480

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

Leu Gly Gly Ile Gly Val Thr Asp Thr Tyr Gln Ala Ile Lys Ala Thr
500 505 510

Asn Gly Asn Gly Gly Ala Thr Thr Trp Ala Gln Asp Asn Thr Phe Ala
515 520 525

Glu Arg Asn Glu Ile Gly Val Gly Asn Asn Phe Ala Met Glu Ile Asn
530 535 540

Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu
545 550 555 560

Tyr Leu Pro Asp Lys Leu Lys Tyr Asn Pro Thr Asn Val Glu Ile Ser
565 570 575

Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro
580 585 590

Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp
595 600 605

Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu
610 615 620

Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His
625 630 635 640

Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu
645 650 655

Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met
660 665 670

Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser
675 680 685

Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala
690 695 700

His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn
705 710 715 720

Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro
725 730 735

Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn
740 745 750

Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu
755 760 765

Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly
770 775 780

Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys
785 790 795 800

Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp
805 810 815

Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly
820 825 830

Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu
835 840 845

Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile
850 855 860

Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln
865 870 875 880

Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp Tyr Gln
885 890 895

Gln Val Gly Ile Ile His Gln His Asn Asn Ser Gly Phe Val Gly Tyr
900 905 910

Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn Val Pro
915 920 925

Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln Lys Lys
930 935 940

Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe
945 950 955 960

Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu Tyr Ala
965 970 975

Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp

980

985

990

Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val Val Arg
 995 1000 1005

Val His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu Arg
 1010 1015 1020

Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
 1025 1030

<210> 47

<211> 1021

<212> PRT

<213> Artificial Sequence

<220>

<223> Hexon Polypeptide

<400> 47

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
 1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
 20 25 30

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
 35 40 45

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

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
 65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
 85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Ser Cys Glu Trp Asp Glu Asp Asp Thr Gln Val Gln Val
130 135 140

Ala Ala Glu Asp Asp Gln Asp Asp Asp Glu Glu Glu Glu Gln Leu Pro
145 150 155 160

Gln Gln Arg Asn Gly Lys Lys Thr His Val Tyr Ala Gln Ala Pro Phe
165 170 175

Ala Gly Glu Ala Ile Asn Lys Asn Gly Leu Gln Ile Gly Thr Asn Gly
180 185 190

Ala Ala Thr Glu Gly Asn Lys Glu Ile Tyr Ala Asp Lys Thr Tyr Gln
195 200 205

Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Asn Glu Ala Glu Ser Ser
210 215 220

Val Ala Gly Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys
225 230 235 240

Tyr Gly Ser Tyr Ala Arg Pro Thr Asn Ser Asn Gly Gly Gln Gly Val
245 250 255

Met Val Glu Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe
260 265 270

Phe Ser Thr Ser Thr Gly Glu Ile Pro Ala Pro Leu Ala Gly Thr Val
275 280 285

Ser Lys Ile Leu Val Lys Glu Gly Asp Thr Val Lys Ala Gly Gln Thr
290 295 300

Val Leu Val Leu Glu Ala Met Lys Met Glu Thr Glu Ile Asn Ala Pro
305 310 315 320

Thr Asp Gly Lys Val Glu Lys Val Leu Val Lys Glu Arg Asp Ala Val

325	330	335
Gln Gly Gly Gln Gly Leu Ile Lys Ile Gly Gly Gly Thr Pro Lys Leu		
340	345	350
Val Leu Tyr Ser Glu Asp Val Asn Met Glu Thr Pro Asp Thr His Leu		
355	360	365
Ser Tyr Lys Pro Gly Lys Ser Asp Asp Asn Ser Lys Ala Met Leu Gly		
370	375	380
Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp Asn		
385	390	400
Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val Leu		
405	410	415
Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp Arg		
420	425	430
Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly Asp Arg		
435	440	445
Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr Asp Pro		
450	455	460
Asp Val Arg Ile Ile Glu Asn His Gly Thr Glu Asp Glu Leu Pro Asn		
465	470	475
Tyr Cys Phe Pro Leu Gly Gly Ile Gly Val Thr Asp Thr Tyr Gln Ala		
485	490	495
Ile Lys Ala Thr Asn Gly Asn Gly Gly Ala Thr Thr Trp Ala Gln Asp		
500	505	510
Asn Thr Phe Ala Glu Arg Asn Glu Ile Gly Val Gly Asn Asn Phe Ala		
515	520	525
Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser		
530	535	540

Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Asn Pro Thr Asn
545 550 555 560

Val Glu Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg
565 570 575

Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg
580 585 590

Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg
595 600 605

Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr
610 615 620

Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn
625 630 635 640

Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys
645 650 655

Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val
660 665 670

Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe
675 680 685

Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg
690 695 700

Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn
705 710 715 720

Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile
725 730 735

Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu
740 745 750

Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr
755 760 765

Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn
770 775 780

His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp
785 790 795 800

Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg
805 810 815

Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys
820 825 830

Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln
835 840 845

Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe
850 855 860

Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr
865 870 875 880

Lys Asp Tyr Gln Gln Val Gly Ile Ile His Gln His Asn Asn Ser Gly
885 890 895

Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro
900 905 910

Ala Asn Val Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile
915 920 925

Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe
930 935 940

Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn
945 950 955 960

Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val
965 970 975

Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe
980 985 990

Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu Thr Val
995 1000 1005

Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
1010 1015 1020

<210> 48

<211> 1015

<212> PRT

<213> Artificial Sequence

<220>

<223> Hexon Polypeptide

<400> 48

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

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

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Ser Cys Glu Trp Asp Glu Asp Asp Thr Gln Val Gln Val
130 135 140

Ala Ala Glu Asp Asp Gln Asp Asp Asp Glu Glu Glu Glu Gln Leu Pro
145 150 155 160

Gln Gln Arg Asn Gly Lys Lys Thr His Val Tyr Ala Gln Ala Pro Phe
165 170 175

Ala Gly Glu Ala Ile Asn Lys Asn Gly Leu Gln Ile Gly Thr Asn Gly
180 185 190

Ala Ala Thr Glu Gly Asn Lys Glu Ile Tyr Ala Asp Lys Thr Tyr Gln
195 200 205

Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Asn Glu Ala Glu Ser Ser
210 215 220

Val Ala Gly Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys
225 230 235 240

Tyr Gly Ser Tyr Ala Arg Pro Thr Asn Ser Asn Gly Gly Gln Gly Val
245 250 255

Met Val Glu Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe
260 265 270

Phe Ser Thr Ser Ser Ser Asn Phe Thr Arg Glu Gly Asn Val Thr Tyr
275 280 285

Lys Glu Glu Met Asp Lys Val Lys Asn Cys Ser Phe Asn Val Thr Thr
290 295 300

Gly Ile Arg Asp Lys Lys Gln Lys Val Asn Ala Leu Phe Tyr Arg Leu
305 310 315 320

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

Leu Ile Asn Ser Gly Gly Thr Pro Lys Leu Val Leu Tyr Ser Glu Asp
340 345 350

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

Ser Asp Asp Asn Ser Lys Ala Met Leu Gly Gln Gln Ser Met Pro Asn
370 375 380

Arg Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr
385 390 395 400

Tyr Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln
405 410 415

Leu Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr
420 425 430

Gln Leu Leu Leu Asp Ser Ile Gly Asp Arg Thr Arg Tyr Phe Ser Met
435 440 445

Trp Asn Gln Ala Val Asp Ser Tyr Asp Pro Asp Val Arg Ile Ile Glu
450 455 460

Asn His Gly Thr Glu Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu Gly
465 470 475 480

Gly Ile Gly Val Thr Asp Thr Tyr Gln Ala Ile Lys Ala Thr Asn Gly
485 490 495

Asn Gly Gly Ala Thr Thr Trp Ala Gln Asp Asn Thr Phe Ala Glu Arg
500 505 510

Asn Glu Ile Gly Val Gly Asn Asn Phe Ala Met Glu Ile Asn Leu Asn
515 520 525

Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu

530

535

540

Pro Asp Lys Leu Lys Tyr Asn Pro Thr Asn Val Glu Ile Ser Asp Asn
 545 550 555 560

Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val Ala Pro Gly Leu
 565 570 575

Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met
 580 585 590

Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu Arg Tyr
 595 600 605

Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln
 610 615 620

Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu Leu Leu Pro Gly
 625 630 635 640

Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met Val Leu
 645 650 655

Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly Ala Ser Ile Lys
 660 665 670

Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn
 675 680 685

Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln
 690 695 700

Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro
 705 710 715 720

Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala
 725 730 735

Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro
 740 745 750

Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile
755 760 765

Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val
770 775 780

Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu
785 790 795 800

Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val Asp Gly Glu Gly
805 810 815

Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln
820 825 830

Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu
835 840 845

Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met
850 855 860

Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val
865 870 875 880

Gly Ile Ile His Gln His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala
885 890 895

Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn Val Pro Tyr Pro
900 905 910

Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln Lys Lys Phe Leu
915 920 925

Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser
930 935 940

Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser
945 950 955 960

Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro Met Asp Glu Pro
965 970 975

Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val Val Arg Val His
980 985 990

Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu Arg Thr Pro Phe
995 1000 1005

Ser Ala Gly Asn Ala Thr Thr
1010 1015

<210> 49
<211> 987
<212> PRT
<213> Artificial Sequence

<220>
<223> Hexon Polypeptide

<400> 49

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

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

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Ser Cys Glu Trp Asp Glu Asp Asp Thr Gln Val Gln Val
130 135 140

Ala Ala Glu Asp Asp Gln Asp Asp Asp Glu Glu Glu Glu Gln Leu Pro
145 150 155 160

Gln Gln Arg Asn Gly Lys Lys Thr His Val Tyr Ala Gln Ala Pro Phe
165 170 175

Ala Gly Glu Ala Ile Asn Lys Asn Gly Leu Gln Ile Gly Thr Asn Gly
180 185 190

Ala Ala Thr Glu Gly Asn Lys Glu Ile Tyr Ala Asp Lys Thr Tyr Gln
195 200 205

Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Asn Glu Ala Glu Ser Ser
210 215 220

Val Ala Gly Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys
225 230 235 240

Tyr Gly Ser Tyr Ala Arg Pro Thr Asn Ser Asn Gly Gly Gln Gly Val
245 250 255

Met Val Glu Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe
260 265 270

Phe Ser Thr Ser Ser Gln Ala Glu Pro Asp Arg Ala His Tyr Asn Ile
275 280 285

Val Thr Phe Cys Cys Lys Cys Asp Gln Leu Leu Arg Arg Glu Val Tyr
290 295 300

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

Tyr Ser Glu Asp Val Asn Met Glu Thr Pro Asp Thr His Leu Ser Tyr
325 330 335

Lys Pro Gly Lys Ser Asp Asp Asn Ser Lys Ala Met Leu Gly Gln Gln
340 345 350

Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg Asp Asn Phe Ile
355 360 365

Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly
370 375 380

Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr
385 390 395 400

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

Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr Asp Pro Asp Val
420 425 430

Arg Ile Ile Glu Asn His Gly Thr Glu Asp Glu Leu Pro Asn Tyr Cys
435 440 445

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

Ala Thr Asn Gly Asn Gly Gly Ala Thr Thr Trp Ala Gln Asp Asn Thr
465 470 475 480

Phe Ala Glu Arg Asn Glu Ile Gly Val Gly Asn Asn Phe Ala Met Glu
485 490 495

Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ser Asn Ile
500 505 510

Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Asn Pro Thr Asn Val Glu
515 520 525

Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn Lys Arg Val Val
530 535 540

Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly Ala Arg Trp Ser
545 550 555 560

Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala
565 570 575

Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro
580 585 590

Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Asn Leu Leu
595 600 605

Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val
610 615 620

Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Val Asp Gly
625 630 635 640

Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala Thr Phe Phe Pro
645 650 655

Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp
660 665 670

Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu
675 680 685

Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser
690 695 700

Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr Arg Leu Lys Thr
705 710 715 720

Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro Tyr Tyr Thr Tyr
725 730 735

Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr

740

745

750

Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly
 755 760 765

Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Ser Val
 770 775 780

Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp
 785 790 795 800

Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly Tyr Gln Gly Phe
 805 810 815

Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn
 820 825 830

Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr Lys Tyr Lys Asp
 835 840 845

Tyr Gln Gln Val Gly Ile Ile His Gln His Asn Asn Ser Gly Phe Val
 850 855 860

Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala Tyr Pro Ala Asn
 865 870 875 880

Val Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp Ser Ile Thr Gln
 885 890 895

Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile Pro Phe Ser Ser
 900 905 910

Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Leu Leu
 915 920 925

Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe Glu Val Asp Pro
 930 935 940

Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu Val Phe Asp Val
 945 950 955 960

Val Arg Val His Gln Pro His Arg Gly Val Ile Glu Thr Val Tyr Leu
965 970 975

Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
980 985

<210> 50
<211> 959
<212> PRT
<213> Artificial Sequence

<220>
<223> Hexon Polypeptide

<400> 50

Met Ala Thr Pro Ser Met Met Pro Gln Trp Ser Tyr Met His Ile Ser
1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

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

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Ser Cys Glu Trp Asp Glu Asp Asp Thr Gln Val Gln Val

130

135

140

Ala Ala Glu Asp Asp Gln Asp Asp Asp Glu Glu Glu Glu Gln Leu Pro
 145 150 155 160

Gln Gln Arg Asn Gly Lys Lys Thr His Val Tyr Ala Gln Ala Pro Phe
 165 170 175

Ala Gly Glu Ala Ile Asn Lys Asn Gly Leu Gln Ile Gly Thr Asn Gly
 180 185 190

Ala Ala Thr Glu Gly Asn Lys Glu Ile Tyr Ala Asp Lys Thr Tyr Gln
 195 200 205

Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Asn Glu Ala Glu Ser Ser
 210 215 220

Val Ala Gly Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro Cys
 225 230 235 240

Tyr Gly Ser Tyr Ala Arg Pro Thr Asn Ser Asn Gly Gly Gln Gly Val
 245 250 255

Met Val Glu Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln Phe
 260 265 270

Phe Ser Thr Ser Val Asn Ala Met Asn Glu Ala Asn Ala Ile Gln Pro
 275 280 285

Lys Leu Val Leu Tyr Ser Glu Asp Val Asn Met Glu Thr Pro Asp Thr
 290 295 300

His Leu Ser Tyr Lys Pro Gly Lys Ser Asp Asp Asn Ser Lys Ala Met
 305 310 315 320

Leu Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe Arg
 325 330 335

Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly
 340 345 350

Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln
355 360 365

Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile Gly
370 375 380

Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr
385 390 395 400

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

Pro Asn Tyr Cys Phe Pro Leu Gly Gly Ile Gly Val Thr Asp Thr Tyr
420 425 430

Gln Ala Ile Lys Ala Thr Asn Gly Asn Gly Gly Ala Thr Thr Trp Ala
435 440 445

Gln Asp Asn Thr Phe Ala Glu Arg Asn Glu Ile Gly Val Gly Asn Asn
450 455 460

Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg Asn Phe Leu
465 470 475 480

Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys Tyr Asn Pro
485 490 495

Thr Asn Val Glu Ile Ser Asp Asn Pro Asn Thr Tyr Asp Tyr Met Asn
500 505 510

Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile Asn Leu Gly
515 520 525

Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro Phe Asn His
530 535 540

His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly
545 550 555 560

Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile
565 570 575

Lys Asn Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe
580 585 590

Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly Asn Asp Leu
595 600 605

Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys Leu Tyr Ala
610 615 620

Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met
625 630 635 640

Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala
645 650 655

Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile
660 665 670

Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ala Phe Thr
675 680 685

Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Tyr Asp Pro
690 695 700

Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr
705 710 715 720

Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp Ser Ser Val
725 730 735

Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile
740 745 750

Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met
755 760 765

Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr Asn Ile Gly
770 775 780

Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg Met Tyr Ser
785 790 795 800

Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Asp Thr
805 810 815

Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Ile His Gln His Asn Asn
820 825 830

Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu Gly Gln Ala
835 840 845

Tyr Pro Ala Asn Val Pro Tyr Pro Leu Ile Gly Lys Thr Ala Val Asp
850 855 860

Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu Trp Arg Ile
865 870 875 880

Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly
885 890 895

Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Thr Phe
900 905 910

Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val Leu Phe Glu
915 920 925

Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu
930 935 940

Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
945 950 955

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<211> 962
<212> PRT
<213> Artificial Sequence

<220>

<223> Hexon Polypeptide

<400> 51

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Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

Arg Ala Thr Glu Thr Tyr Phe Ser Leu Asn Asn Lys Phe Arg Asn Pro
35 40 45

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

Thr Leu Arg Phe Ile Pro Val Asp Arg Glu Asp Thr Ala Tyr Ser Tyr
65 70 75 80

Lys Ala Arg Phe Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Ser Cys Glu Trp Glu Gln Asn Glu Thr Ala Gln Val Asp
130 135 140

Ala Gln Glu Leu Asp Glu Glu Glu Asn Glu Ala Asn Glu Ala Gln Ala
145 150 155 160

Arg Glu Gln Glu Gln Ala Lys Lys Thr His Val Tyr Ala Gln Ala Pro
165 170 175

Leu Ser Gly Glu Ala Ile Asn Lys Asn Gly Leu Gln Ile Gly Thr Asn
180 185 190

Gly Ala Ala Thr Glu Gly Asn Lys Glu Ile Tyr Ala Asp Lys Thr Tyr
195 200 205

Gln Pro Glu Pro Gln Ile Gly Glu Ser Gln Trp Asn Glu Ala Glu Ser
210 215 220

Ser Val Ala Gly Gly Arg Val Leu Lys Lys Thr Thr Pro Met Lys Pro
225 230 235 240

Cys Tyr Gly Ser Tyr Ala Arg Pro Thr Asn Ser Asn Gly Gly Gln Gly
245 250 255

Val Met Val Glu Gln Asn Gly Lys Leu Glu Ser Gln Val Glu Met Gln
260 265 270

Phe Phe Ser Thr Ser Val Asn Ala Met Asn Glu Ala Asn Ala Ile Gln
275 280 285

Pro Lys Leu Val Leu Tyr Ser Glu Asp Val Asn Met Glu Thr Pro Asp
290 295 300

Thr His Leu Ser Tyr Lys Pro Gly Lys Ser Asp Asp Asn Ser Lys Ala
305 310 315 320

Met Leu Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Ala Phe
325 330 335

Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met
340 345 350

Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu
355 360 365

Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Ile
370 375 380

Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser
385 390 395 400

Tyr Asp Pro Asp Val Arg Ile Ile Glu Asn His Gly Thr Glu Asp Glu

405

410

415

Leu Pro Asn Tyr Cys Phe Pro Leu Gly Gly Ile Gly Ile Thr Asp Thr
 420 425 430

Phe Gln Ala Val Lys Thr Thr Ala Ala Asn Gly Asp Gln Gly Asn Thr
 435 440 445

Thr Trp Gln Lys Asp Ser Thr Phe Ala Glu Arg Asn Glu Ile Gly Val
 450 455 460

Gly Asn Asn Phe Ala Met Glu Ile Asn Leu Asn Ala Asn Leu Trp Arg
 465 470 475 480

Asn Phe Leu Tyr Ser Asn Ile Ala Leu Tyr Leu Pro Asp Lys Leu Lys
 485 490 495

Tyr Asn Pro Thr Asn Val Glu Ile Ser Asp Asn Pro Asn Thr Tyr Asp
 500 505 510

Tyr Met Asn Lys Arg Val Val Ala Pro Gly Leu Val Asp Cys Tyr Ile
 515 520 525

Asn Leu Gly Ala Arg Trp Ser Leu Asp Tyr Met Asp Asn Val Asn Pro
 530 535 540

Phe Asn His Pro Arg His Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu
 545 550 555 560

Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe
 565 570 575

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

Trp Asn Phe Arg Lys Asp Val Asn Met Val Leu Gln Ser Ser Leu Gly
 595 600 605

Asn Asp Leu Arg Val Asp Gly Ala Ser Ile Lys Phe Asp Ser Ile Cys
 610 615 620

Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu
625 630 635 640

Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr
645 650 655

Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn
660 665 670

Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp
675 680 685

Ala Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly
690 695 700

Tyr Asp Pro Tyr Tyr Thr Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly
705 710 715 720

Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ala Ile Thr Phe Asp
725 730 735

Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu
740 745 750

Phe Glu Ile Lys Arg Ser Val Asp Gly Glu Gly Tyr Asn Val Ala Gln
755 760 765

Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala Asn Tyr
770 775 780

Asn Ile Gly Tyr Gln Gly Phe Tyr Ile Pro Glu Ser Tyr Lys Asp Arg
785 790 795 800

Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val
805 810 815

Asp Asp Thr Lys Tyr Lys Asp Tyr Gln Gln Val Gly Ile Ile His Gln
820 825 830

His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Glu
835 840 845

Gly Gln Ala Tyr Pro Ala Asn Val Pro Tyr Pro Leu Ile Gly Lys Thr
850 855 860

Ala Val Asp Ser Ile Thr Gln Lys Lys Phe Leu Cys Asp Arg Thr Leu
865 870 875 880

Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr
885 890 895

Asp Leu Gly Gln Asn Leu Leu Tyr Ala Asn Ser Ala His Ala Leu Asp
900 905 910

Met Thr Phe Glu Val Asp Pro Met Asp Glu Pro Thr Leu Leu Tyr Val
915 920 925

Leu Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly
930 935 940

Val Ile Glu Thr Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala
945 950 955 960

Thr Thr