SEQUENCE LISTING

<110> The Regents of the University of California
Nishimura, Stephen
Lou, Jianlong
Baron, Jody
Marks, James

<120> Antibodies that Bind Integrin Alpha-V Beta-8

<130> 81906-848664 (209920PC)

<150> 61/524708
<151> 2011-08-17

<150> 61/646111
<151> 2012-05-11

<160> 136

<170> PatentIn version 3.5

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<220>
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<400> 1

Gly Glu Val Ser Ile Gln Leu Arg Pro Gly Ala Glu Ala Asn Phe Met
1 5 10 15

Leu Lys Val His Pro Leu Lys Lys Tyr Pro Val Asp Leu Tyr Tyr Leu
20 25 30

Val Asp Val Ser Ala Ser Met His Asn Asn Ile Glu Lys Leu Asn Ser
35 40 45

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

<210> 2
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<220>
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<400> 2

Gly Glu Val Ser Val Gln Leu His Pro Gly Ala Glu Ala Asn Phe Met
1 5 10 15

Leu Lys Val Arg Pro Leu Lys Lys Tyr Pro Val Asp Leu Tyr Tyr Leu
20 25 30

Val Asp Val Ser Ala Ser Met His Asn Asn Ile Glu Lys Leu Asn Ser
35 40 45

Val Gly Asn Asp Leu Ser Lys Lys Met Ala Leu Tyr
50 55 60

<210> 3
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<223> Xaa is V or I

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<223> Xaa is H or R

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<223> Xaa is L or F

<220>
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<222> (60)..(60)
<223> Xaa is Y or F

<400> 3

Gly Glu Val Ser Xaa Gln Leu Xaa Pro Gly Ala Glu Ala Asn Phe Met
1 5 10 15

Leu Lys Val Xaa Pro Leu Lys Lys Tyr Pro Val Asp Leu Tyr Tyr Leu
20 25 30

Val Asp Val Ser Ala Ser Met His Asn Asn Ile Glu Lys Leu Asn Ser
35 40 45

Val Gly Asn Asp Leu Ser Xaa Lys Met Ala Xaa Xaa
50 55 60

<210> 4
<211> 116
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 4

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Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1               5                  10                  15

Ser Leu Asn Leu Ser Cys Ala Ala Ser Gly Phe Val Phe Ser Arg Tyr
            20                  25                  30

Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile
        35                  40                  45

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

Lys Asp Lys Phe Ile Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
65                  70                  75                  80

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

Ala Cys Leu Ile Thr Thr Glu Asp Tyr Trp Gly Gln Gly Thr Ser Val
            100                 105                 110

Thr Val Ser Ser
        115
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<210> 5
<211> 108
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<220>
<223> Synthetic polypeptide.

<400> 5

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Gln Ile Val Leu Thr Gln Ser Pro Ser Ser Met Tyr Ala Ser Leu Gly
1               5                  10                  15

Glu Arg Val Thr Ile Pro Cys Lys Ala Ser Gln Asp Ile Asn Ser Tyr
            20                  25                  30

Leu Ser Trp Phe Gln Gln Lys Pro Gly Lys Ser Pro Lys Thr Leu Ile
        35                  40                  45

Tyr Arg Ala Asn Arg Leu Val Asp Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Gln Asp Tyr Ser Leu Thr Ile Ser Ser Leu Glu Tyr
65                  70                  75                  80

Glu Asp Met Gly Ile Tyr Tyr Cys Leu Gln Tyr Asp Glu Phe Pro Tyr
                85                  90                  95
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Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Ala
100 105

<210> 6
<211> 116
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 6

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Asn Leu Ser Cys Ala Val Ser Gly Phe Val Phe Ser Arg Tyr
20 25 30

Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile
35 40 45

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

Lys Asp Lys Phe Ile Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
65 70 75 80

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

Ala Cys Leu Ile Thr Thr Glu Asp Tyr Trp Gly Gln Gly Thr Ser Val
100 105 110

Thr Val Ser Ser
115

<210> 7
<211> 108
<212> PRT
<213> Artificial sequence

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<400> 7

Gln Ile Val Leu Thr Gln Ser Pro Ser Ser Met Tyr Ala Ser Leu Gly
1 5 10 15

Glu Arg Val Thr Ile Pro Cys Lys Ala Ser Gln Asp Ile Asn Ser Tyr
20 25 30

Leu Ser Trp Phe Gln Gln Lys Pro Gly Lys Ser Pro Lys Thr Leu Ile
35 40 45

Tyr Tyr Ala Asn Arg Leu Val Asp Gly Val Pro Ser Arg Phe Ser Gly

50 55 60

Ser Gly Ser Gly Gln Asp Tyr Ser Leu Thr Ile Ser Ser Leu Glu Tyr
65 70 75 80

Glu Asp Met Gly Ile Tyr Tyr Cys Leu Gln Tyr Asp Glu Phe Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Ala
100 105

<210> 8
<211> 116
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 8

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Val Ser Gly Phe Val Phe Ser Arg Tyr
20 25 30

Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile
35 40 45

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

Lys Asp Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65 70 75 80

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

Ala Ser Leu Ile Thr Thr Glu Asp Tyr Trp Gly Gln Gly Thr Thr Val
100 105 110

Thr Val Ser Ser
115

<210> 9
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<400> 9

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

```
Glu Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp Ile Asn Ser Tyr
            20                  25                  30

Leu Ser Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
        35                  40                  45

Tyr Tyr Ala Asn Arg Leu Val Asp Gly Val Pro Ala Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Gln Asp Tyr Thr Leu Thr Ile Ser Ser Leu Glu Pro
65                  70                  75                  80

Glu Asp Phe Ala Val Tyr Tyr Cys Leu Gln Tyr Asp Glu Phe Pro Tyr
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
            100                 105
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<210> 10
<211> 115
<212> PRT
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<400> 10

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Ser Tyr
            20                  25                  30

Trp Ile Glu Trp Val Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
        35                  40                  45

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

Lys Gly Arg Ala Thr Val Thr Ala Asp Arg Ser Ser Asn Thr Ala Tyr
65                  70                  75                  80

Met Gln Leu Ser Ser Leu Thr Tyr Gly Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Thr Trp Gly Trp Asp Thr Tyr Trp Asp Gln Gly Thr Ser Val Thr
            100                 105                 110

Val Ser Ser
        115
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<210> 11

<211> 108
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<400> 11

Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asn Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 12
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 12

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr Tyr
20 25 30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

Gly His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

```
Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
            100                 105                 110

Val Ser Ser
        115


<210>  13
<211>  108
<212>  PRT
<213>  Artificial sequence

<220>
<223>  Synthetic polypeptide.

<400>  13

Asp Ile Glu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1               5                   10                  15

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

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Thr Leu Leu Ile
        35                  40                  45

Tyr Tyr Thr Ser Asn Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65                  70                  75                  80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Lys Leu Pro Tyr
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
            100                 105


<210>  14
<211>  45
<212>  PRT
<213>  Artificial sequence

<220>
<223>  Synthetic polypeptide.

<400>  14

Leu Gly Pro Glu Cys Gly Trp Cys Val Gln Glu Asp Phe Ile Ser Gly
1               5                   10                  15

Gly Ser Arg Ser Glu Arg Cys Asp Ile Val Ser Asn Leu Ile Ser Lys
            20                  25                  30

Gly Cys Ser Val Asp Ser Ile Glu Tyr Pro Ser Val His
        35                  40                  45
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<210> 15
<211> 45
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 15

Leu Gly Pro Glu Cys Gly Trp Cys Val Gln Glu Asp Phe Val Ser Gly
1 5 10 15

Gly Ser Gly Ser Glu Arg Cys Asp Thr Val Ser Ser Leu Ile Ser Lys
20 25 30

Gly Cys Pro Val Asp Ser Ile Glu Tyr Leu Ser Val His
35 40 45

<210> 16
<211> 45
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<223> Xaa is G or R

<220>
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<223> Xaa is T or I

<220>
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<222> (28)..(28)
<223> Xaa is S or N

<220>
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<222> (35)..(35)
<223> Xaa is P or S

<220>
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<222> (42)..(42)
<223> Xaa is L or P

<400> 16

Leu Gly Pro Glu Cys Gly Trp Cys Val Gln Glu Asp Phe Xaa Ser Gly
1 5 10 15

Gly Ser Xaa Ser Glu Arg Cys Asp Xaa Val Ser Xaa Leu Ile Ser Lys

20 25 30

Gly Cys Xaa Val Asp Ser Ile Glu Tyr Xaa Ser Val His
35 40 45

<210> 17
<211> 769
<212> PRT
<213> Homo sapiens

<400> 17

Met Cys Gly Ser Ala Leu Ala Phe Phe Thr Ala Ala Phe Val Cys Leu
1 5 10 15

Gln Asn Asp Arg Arg Gly Pro Ala Ser Phe Leu Trp Ala Ala Trp Val
20 25 30

Phe Ser Leu Val Leu Gly Leu Gly Gln Gly Glu Asp Asn Arg Cys Ala
35 40 45

Ser Ser Asn Ala Ala Ser Cys Ala Arg Cys Leu Ala Leu Gly Pro Glu
50 55 60

Cys Gly Trp Cys Val Gln Glu Asp Phe Ile Ser Gly Gly Ser Arg Ser
65 70 75 80

Glu Arg Cys Asp Ile Val Ser Asn Leu Ile Ser Lys Gly Cys Ser Val
85 90 95

Asp Ser Ile Glu Tyr Pro Ser Val His Val Ile Ile Pro Thr Glu Asn
100 105 110

Glu Ile Asn Thr Gln Val Thr Pro Gly Glu Val Ser Ile Gln Leu Arg
115 120 125

Pro Gly Ala Glu Ala Asn Phe Met Leu Lys Val His Pro Leu Lys Lys
130 135 140

Tyr Pro Val Asp Leu Tyr Tyr Leu Val Asp Val Ser Ala Ser Met His
145 150 155 160

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

Met Ala Phe Phe Ser Arg Asp Phe Arg Leu Gly Phe Gly Ser Tyr Val
180 185 190

Asp Lys Thr Val Ser Pro Tyr Ile Ser Ile His Pro Glu Arg Ile His
195 200 205

Asn Gln Cys Ser Asp Tyr Asn Leu Asp Cys Met Pro Pro His Gly Tyr
210 215 220

```
Ile His Val Leu Ser Leu Thr Glu Asn Ile Thr Glu Phe Glu Lys Ala
225                 230                 235                 240

Val His Arg Gln Lys Ile Ser Gly Asn Ile Asp Thr Pro Glu Gly Gly
                245                 250                 255

Phe Asp Ala Met Leu Gln Ala Ala Val Cys Glu Ser His Ile Gly Trp
            260                 265                 270

Arg Lys Glu Ala Lys Arg Leu Leu Leu Val Met Thr Asp Gln Thr Ser
        275                 280                 285

His Leu Ala Leu Asp Ser Lys Leu Ala Gly Ile Val Val Pro Asn Asp
    290                 295                 300

Gly Asn Cys His Leu Lys Asn Asn Val Tyr Val Lys Ser Thr Thr Met
305                 310                 315                 320

Glu His Pro Ser Leu Gly Gln Leu Ser Glu Lys Leu Ile Asp Asn Asn
                325                 330                 335

Ile Asn Val Ile Phe Ala Val Gln Gly Lys Gln Phe His Trp Tyr Lys
            340                 345                 350

Asp Leu Leu Pro Leu Leu Pro Gly Thr Ile Ala Gly Glu Ile Glu Ser
        355                 360                 365

Lys Ala Ala Asn Leu Asn Asn Leu Val Val Glu Ala Tyr Gln Lys Leu
    370                 375                 380

Ile Ser Glu Val Lys Val Gln Val Glu Asn Gln Val Gln Gly Ile Tyr
385                 390                 395                 400

Phe Asn Ile Thr Ala Ile Cys Pro Asp Gly Ser Arg Lys Pro Gly Met
                405                 410                 415

Glu Gly Cys Arg Asn Val Thr Ser Asn Asp Glu Val Leu Phe Asn Val
            420                 425                 430

Thr Val Thr Met Lys Lys Cys Asp Val Thr Gly Gly Lys Asn Tyr Ala
        435                 440                 445

Ile Ile Lys Pro Ile Gly Phe Asn Glu Thr Ala Lys Ile His Ile His
    450                 455                 460

Arg Asn Cys Ser Cys Gln Cys Glu Asp Asn Arg Gly Pro Lys Gly Lys
465                 470                 475                 480

Cys Val Asp Glu Thr Phe Leu Asp Ser Lys Cys Phe Gln Cys Asp Glu
                485                 490                 495
```

Asn Lys Cys His Phe Asp Glu Asp Gln Phe Ser Ser Glu Ser Cys Lys
500 505 510

Ser His Lys Asp Gln Pro Val Cys Ser Gly Arg Gly Val Cys Val Cys
515 520 525

Gly Lys Cys Ser Cys His Lys Ile Lys Leu Gly Lys Val Tyr Gly Lys
530 535 540

Tyr Cys Glu Lys Asp Asp Phe Ser Cys Pro Tyr His His Gly Asn Leu
545 550 555 560

Cys Ala Gly His Gly Glu Cys Glu Ala Gly Arg Cys Gln Cys Phe Ser
565 570 575

Gly Trp Glu Gly Asp Arg Cys Gln Cys Pro Ser Ala Ala Ala Gln His
580 585 590

Cys Val Asn Ser Lys Gly Gln Val Cys Ser Gly Arg Gly Thr Cys Val
595 600 605

Cys Gly Arg Cys Glu Cys Thr Asp Pro Arg Ser Ile Gly Arg Phe Cys
610 615 620

Glu His Cys Pro Thr Cys Tyr Thr Ala Cys Lys Glu Asn Trp Asn Cys
625 630 635 640

Met Gln Cys Leu His Pro His Asn Leu Ser Gln Ala Ile Leu Asp Gln
645 650 655

Cys Lys Thr Ser Cys Ala Leu Met Glu Gln Gln His Tyr Val Asp Gln
660 665 670

Thr Ser Glu Cys Phe Ser Ser Pro Ser Tyr Leu Arg Ile Phe Phe Ile
675 680 685

Ile Phe Ile Val Thr Phe Leu Ile Gly Leu Leu Lys Val Leu Ile Ile
690 695 700

Arg Gln Val Ile Leu Gln Trp Asn Ser Asn Lys Ile Lys Ser Ser Ser
705 710 715 720

Asp Tyr Arg Val Ser Ala Ser Lys Lys Asp Lys Leu Ile Leu Gln Ser
725 730 735

Val Cys Thr Arg Ala Val Thr Tyr Arg Arg Glu Lys Pro Glu Glu Ile
740 745 750

Lys Met Asp Ile Ser Lys Leu Asn Ala His Glu Thr Phe Arg Cys Asn
755 760 765

Phe

<210> 18
<211> 120
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 18

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

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asp Tyr
20 25 30

Leu Ile Glu Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Val Ile Asn Pro Glu Thr Gly Gly Thr Asn Tyr Asn Ala Lys Phe
50 55 60

Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Ser Ala Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Gly Asp Ser Ala Val Tyr Phe Cys
85 90 95

Ala Arg Glu Ala Gly Asn Tyr Ile Tyr Ala Met Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Ser Val Thr Val Ser Ser
115 120

<210> 19
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 19

Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Glu Thr Val Thr Ile Thr Cys Arg Ala Ser Val Asn Ile Tyr Ser Tyr
20 25 30

Leu Val Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Leu Leu Val
35 40 45

His Asn Ala Lys Thr Leu Ala Glu Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

```
Ser Gly Ser Gly Thr Gln Phe Ser Leu Lys Ile Asn Ser Leu Gln Pro
65                  70                  75                  80

Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His His His Gly Thr Pro Tyr
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
            100                 105
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<210> 20
<211> 120
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 20

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

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asp Tyr
            20                  25                  30

Leu Ile Glu Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Val Ile Asn Pro Glu Thr Gly Gly Thr Asn Tyr Asn Ala Lys Phe
    50                  55                  60

Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Ser Ala Tyr
65                  70                  75                  80

Met Gln Leu Ser Ser Leu Thr Ser Gly Asp Ser Ala Val Tyr Phe Cys
                85                  90                  95

Ala Arg Glu Ala Gly Asn Tyr Ile Tyr Ala Met Asp Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Ser Val Thr Val Ser Ser
        115                 120
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<210> 21
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 21

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Asp Ile Glu Met Thr Gln Thr Pro Ala Ser Leu Ser Ala Ser Val Gly
1               5                   10                  15
```

Glu Thr Val Thr Ile Thr Cys Arg Ala Ser Glu Asn Ile Tyr Ser Tyr
20 25 30

Leu Val Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Val Leu Val
35 40 45

Tyr Asn Ala Lys Thr Leu Ala Glu Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

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

Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His His Asn Gly Thr Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 22
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 22

Asp Ile Val Met Thr Gln Ser Pro Ala Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Glu Thr Val Thr Ile Thr Cys Arg Ala Ser Val Asn Ile Tyr Ser Tyr
20 25 30

Leu Val Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Leu Leu Val
35 40 45

His Asn Ala Lys Thr Leu Ala Glu Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

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

Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His His His Gly Thr Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 23
<211> 108
<212> PRT
<213> Artificial sequence

<220>

<223> Synthetic polypeptide.

<400> 23

Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Phe Ser Asn Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 24
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 24

Asp Ile Leu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Lys Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asn Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 25
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 25

Asp Ile Val Met Thr Gln Thr Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asp Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 26
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 26

Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Arg Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asn Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 27
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 27

Asp Ile Lys Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Glu Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 28
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 28

Asp Ile Glu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly

```
    50                  55                  60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65                  70                  75                  80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Phe Ser Asn Leu Pro Tyr
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
            100                 105


<210>  29
<211>  108
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic polypeptide.

<400>  29

Asp Ile Leu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1               5                   10                  15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
            20                  25                  30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
        35                  40                  45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65                  70                  75                  80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asp Leu Pro Tyr
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
            100                 105


<210>  30
<211>  108
<212>  PRT
<213>  Artificial sequence

<220>
<223>  Synthetic polypeptide.

<400>  30

Asp Ile Glu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1               5                   10                  15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
            20                  25                  30
```

```
Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
        35                  40                  45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65                  70                  75                  80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asp Leu Pro Tyr
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
            100                 105
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<210> 31
<211> 120
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 31

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

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asp Tyr
            20                  25                  30

Leu Ile Glu Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Val Ile Asn Pro Glu Thr Gly Gly Thr Asn Tyr Asn Ala Lys Phe
    50                  55                  60

Arg Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Ser Ala Tyr
65                  70                  75                  80

Met Gln Leu Ser Ser Leu Thr Ser Gly Asp Ser Ala Val Tyr Phe Cys
                85                  90                  95

Ala Arg Glu Ala Gly Asn Tyr Ile Tyr Ala Met Asp Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Ser Val Thr Val Ser Ser
        115                 120
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<210> 32
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 32

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Ser Tyr
20 25 30

Trp Ile Glu Trp Val Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

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

Lys Gly Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65 70 75 80

Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
100 105 110

Val Ser Ser
115

<210> 33
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 33

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr Asn
20 25 30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

Gly His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

```
Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
            100                 105                 110

Val Ser Ser
        115


<210>  34
<211>  115
<212>  PRT
<213>  Artificial sequence

<220>
<223>  Synthetic polypeptide.

<400>  34

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr Tyr
            20                  25                  30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
        35                  40                  45

Gly His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe
    50                  55                  60

Lys Gly Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65                  70                  75                  80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
            100                 105                 110

Val Ser Ser
        115


<210>  35
<211>  115
<212>  PRT
<213>  Artificial sequence

<220>
<223>  Synthetic polypeptide.

<400>  35

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr Asn
            20                  25                  30
```

```
Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
        35                  40                  45

Gly His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe
    50                  55                  60

Lys Gly Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65                  70                  75                  80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
            100                 105                 110

Val Ser Ser
        115


<210>  36
<211>  115
<212>  PRT
<213>  Artificial sequence

<220>
<223>  Synthetic polypeptide.

<400>  36

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr Tyr
            20                  25                  30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
        35                  40                  45

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

Lys Gly Arg Ala Thr Val Thr Ala Asp Arg Ser Ser Asn Thr Ala Tyr
65                  70                  75                  80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
            100                 105                 110

Val Ser Ser
        115


<210>  37
<211>  115
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<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 37

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Ser Phe Ser Thr Asn
20 25 30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

Gly His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Asp Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
100 105 110

Val Ser Ser
115

<210> 38
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 38

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr His
20 25 30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

Gly His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65 70 75 80

```
Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
            100                 105                 110

Val Ser Ser
        115


<210>  39
<211>  115
<212>  PRT
<213>  Artificial sequence

<220>
<223>  Synthetic polypeptide.

<400>  39

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr Tyr
            20                  25                  30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
        35                  40                  45

Gly His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe
    50                  55                  60

Lys Gly Lys Ala Val Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65                  70                  75                  80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
            100                 105                 110

Val Ser Ser
        115


<210>  40
<211>  5
<212>  PRT
<213>  Artificial sequence

<220>
<223>  Synthetic polypeptide.

<400>  40

Asp Tyr Leu Ile Glu
1               5
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<210> 41
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 41

Val Ile Asn Pro Glu Thr Gly Gly Thr Asn Tyr Asn Ala Lys Phe Lys
1 5 10 15

Gly

<210> 42
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 42

Glu Ala Gly Asn Tyr Ile Tyr Ala Met Asp Tyr
1 5 10

<210> 43
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 43

Arg Ala Ser Val Asn Ile Tyr Ser Tyr Leu Val
1 5 10

<210> 44
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 44

Asn Ala Lys Thr Leu Ala Glu
1 5

<210> 45
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 45

Gln His His His Gly Thr Pro Tyr Thr
1 5

<210> 46
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 46

Val Ile Asn Pro Glu Thr Gly Gly Thr Asn Tyr Asn Ala Lys Phe Arg
1 5 10 15

Gly

<210> 47
<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 47

Asp Ile Val Met Thr Gln Ser Pro Ala Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Glu Thr Val Thr Ile Thr Cys
20

<210> 48
<211> 5
<212> PRT
<213> Artificial sequence

<220>
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<400> 48

Ser Tyr Trp Ile Glu
1 5

<210> 49
<211> 17
<212> PRT
<213> Artificial sequence

<220>
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<400> 49

Asp Ile Leu Pro Gly Ser Gly Thr Thr Asn Tyr Asn Glu Lys Phe Lys
1 5 10 15

Gly

<210> 50
<211> 6
<212> PRT
<213> Artificial sequence

<220>
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<400> 50

Trp Gly Trp Asp Thr Tyr
1 5

<210> 51
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 51

Ser Ala Ser Gln Gly Ile Ser Asn Tyr Leu Asn
1 5 10

<210> 52
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 52

Tyr Thr Ser Ser Leu His Ser
1 5

<210> 53
<211> 9
<212> PRT
<213> Artificial sequence

<220>
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<400> 53

Gln Gln Tyr Ser Asn Leu Pro Tyr Thr
1 5

<210> 54
<211> 6
<212> PRT
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<220>
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<400> 54

Trp Gly Trp Asp Ser Tyr
1 5

<210> 55
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 55

Gln Gln Phe Ser Asn Leu Pro Tyr Thr
1 5

<210> 56
<211> 32
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 56

Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr Leu Gln
1 5 10 15

Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala Arg
20 25 30

<210> 57
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 57

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
1 5 10

<210> 58
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 58

Thr Tyr Trp Ile Glu
1 5

<210> 59
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 59

His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe Lys
1 5 10 15

Gly

<210> 60
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 60

Trp Gly Trp Asp Ser Tyr
1 5

<210> 61
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 61

Ser Thr Ser Gln Asp Ile Ser Ser Ser Leu Asn
1 5 10

<210> 62
<211> 7
<212> PRT
<213> Artificial sequence

<220>
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<400> 62

Tyr Thr Ser Asn Leu His Ser
1 5

<210> 63
<211> 9
<212> PRT
<213> Artificial sequence

<220>
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<400> 63

Gln Gln Tyr Ser Lys Leu Pro Tyr Thr
1 5

<210> 64
<211> 5
<212> PRT
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<220>
<223> Synthetic polypeptide.

<400> 64

Thr Asn Trp Ile Glu
1 5

<210> 65
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 65

Ser Ala Ser Gln Gly Ile Ser Lys Tyr Leu Asn
1 5 10

<210> 66
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 66

Tyr Thr Ser Ser Leu His Ser
1 5

<210> 67
<211> 9
<212> PRT
<213> Artificial sequence

<220>
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<400> 67

Gln Gln Tyr Ser Asn Leu Pro Tyr Thr
1 5

<210> 68
<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 68

Asp Ile Leu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys
20

<210> 69
<211> 15
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 69

Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Thr Tyr
1 5 10 15

<210> 70
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 70

Ser Ala Ser Gln Gly Ile Ser Asn Tyr Leu Asn
1 5 10

<210> 71
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 71

Gln Gln Tyr Ser Asp Leu Pro Tyr Thr
1 5

<210> 72
<211> 30
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 72

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser
20 25 30

<210> 73
<211> 23
<212> PRT

<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 73

Asp Ile Val Met Thr Gln Thr Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys
20

<210> 74
<211> 32
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 74

Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr Met Gln
1 5 10 15

Leu Thr Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala Arg
20 25 30

<210> 75
<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 75

Asp Ile Leu Met Thr Gln Thr Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Arg Cys
20

<210> 76
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 76

Asp Ile Leu Pro Gly Ser Gly Thr Thr Asn Tyr Asn Glu Lys Phe Lys
1 5 10 15

Gly

<210> 77
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 77

Gln Gln Tyr Ser Glu Leu Pro Tyr Thr
1 5

<210> 78
<211> 32
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 78

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

Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala Arg
20 25 30

<210> 79
<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 79

Asp Ile Lys Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys
20

<210> 80
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 80

Gln Gln Phe Ser Asn Leu Pro Tyr Thr
1 5

<210> 81
<211> 30
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 81

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Ser Phe Ser
20 25 30

<210> 82
<211> 32
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 82

Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr Met Gln
1 5 10 15

Leu Ser Ser Leu Thr Ser Asp Asp Ser Ala Val Tyr Tyr Cys Ala Arg
20 25 30

<210> 83
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 83

Thr His Trp Ile Glu
1 5

<210> 84
<211> 30
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 84

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser
20 25 30

<210> 85
<211> 30
<212> PRT
<213> Artificial sequence

<220>

<223> Synthetic polypeptide.

<400> 85

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser
20 25 30

<210> 86
<211> 32
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 86

Lys Ala Val Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr Met Gln
1 5 10 15

Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala Arg
20 25 30

<210> 87
<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 87

Asp Ile Glu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys
20

<210> 88
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 88

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Ser Tyr
20 25 30

Trp Ile Glu Trp Val Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

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

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

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
100 105 110

Val Ser Ser
115

<210> 89
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 89

Asp Ile Lys Met Thr Gln Thr Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asn Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 90
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 90

Asp Ile Leu Pro Gly Ser Gly Thr Thr Asn Tyr Asn Glu Lys Phe Glu
1 5 10 15

Gly

<210> 91
<211> 14
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 91

Trp Val Lys Gln Arg Pro Gly His Gly Phe Glu Trp Ile Gly
1 5 10

<210> 92
<211> 32
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 92

Arg Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr Met Gln
1 5 10 15

Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala Arg
20 25 30

<210> 93
<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 93

Asp Ile Lys Met Thr Gln Thr Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys
20

<210> 94
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 94

Arg Tyr Trp Met Ser

1 5

<210> 95
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 95

Glu Ile Asn Pro Asp Ser Ser Thr Ile Asn Tyr Thr Ser Ser Leu Lys
1 5 10 15

Asp

<210> 96
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 96

Leu Ile Thr Thr Glu Asp Tyr
1 5

<210> 97
<211> 10
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 97

Lys Ala Ser Gln Asp Ile Asn Ser Tyr Leu
1 5 10

<210> 98
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 98

Arg Ala Asn Arg Leu Val Asp
1 5

<210> 99
<211> 9
<212> PRT
<213> Artificial sequence

<220>

<223> Synthetic polypeptide.

<400> 99

Leu Gln Tyr Asp Glu Phe Pro Tyr Thr
1 5

<210> 100
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 100

Tyr Ala Asn Arg Leu Val Asp
1 5

<210> 101

<400> 101
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<210> 102
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 102

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr Tyr
20 25 30

Trp Ile Glu Trp Val Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

Gly His Thr Leu Pro Gly Ser Gly Thr Thr Asn Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Arg Ala Thr Ile Thr Ala Asp Arg Pro Ser Asn Thr Ser Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Tyr Gly Asp Ser Ala Val Phe Tyr Cys
85 90 95

Ala Thr Trp Gly Trp Asp Thr Tyr Trp Asp His Gly Thr Ser Val Thr
100 105 110

Val Ser Ser
115

<210> 103

<400> 103
000

<210> 104
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 104

Asp Ile Glu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Thr Ser Gln Asp Val Ser Ser Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Thr Leu Leu Ile
35 40 45

Tyr Tyr Ala Ser Asn Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Ala Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asn Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Ala
100 105

<210> 105
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 105

Ser Thr Ser Gln Asp Val Ser Ser Tyr Leu Asn
1 5 10

<210> 106
<211> 29
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 106

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

1 5 10 15

Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser
20 25

<210> 107
<211> 7
<212> PRT
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<220>
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<400> 107
Tyr Ala Ser Asn Leu His Ser
1 5

<210> 108
<211> 11
<212> PRT
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<220>
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<400> 108
Trp Asp His Gly Thr Ser Val Thr Val Ser Ser
1 5 10

<210> 109

<400> 109
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<210> 110

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<210> 111

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<210> 112
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<220>
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<400> 112

Thr Tyr Trp Ile Glu
1 5

<210> 113
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 113

His Thr Leu Pro Gly Ser Gly Thr Thr Asn Tyr Asn Glu Lys Phe Lys
1 5 10 15

Gly

<210> 114
<211> 32
<212> PRT
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<220>
<223> Synthetic polypeptide.

<400> 114

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

Leu Ser Ser Leu Thr Tyr Gly Asp Ser Ala Val Phe Tyr Cys Ala Thr
20 25 30

<210> 115
<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 115

Asp Ile Met Met Thr Gln Thr Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys
20

<210> 116
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 116

Asp Tyr Leu Ile Glu
1 5

<210> 117
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 117

Val Ile Asn Pro Glu Thr Gly Gly Thr Asn Tyr Asn Ala Lys Phe Lys
1 5 10 15

Gly

<210> 118
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 118

Glu Ala Gly Asn Tyr Ile Tyr Ala Met Asp Tyr
1 5 10

<210> 119
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 119

Arg Ala Ser Val Asn Ile Tyr Ser Tyr Leu Val
1 5 10

<210> 120
<211> 7
<212> PRT
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<220>
<223> Synthetic polypeptide.

<400> 120

Asn Ala Lys Thr Leu Ala Glu
1 5

<210> 121
<211> 9
<212> PRT
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<220>
<223> Synthetic polypeptide.

<400> 121

Gln His His His Gly Thr Pro Tyr Thr
1 5

<210> 122
<211> 5
<212> PRT

<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 122

Val Gly Thr Ser Pro
1 5

<210> 123
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 123

Ile Arg Ile Asn Ser
1 5

<210> 124
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 124

Val Arg Ile Asn Ser
1 5

<210> 125
<211> 5
<212> PRT
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<220>
<223> Synthetic polypeptide.

<400> 125

Ile Gly Ile Asn Pro
1 5

<210> 126
<211> 5
<212> PRT
<213> Artificial sequence

<220>
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<400> 126

Ile Gly Ile Asn Ser
1 5

<210> 127
<211> 6

<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 127

Arg Lys Met Ala Phe Phe
1 5

<210> 128
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 128

Lys Lys Met Ala Leu Tyr
1 5

<210> 129
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 129

Arg Lys Met Ala Leu Tyr
1 5

<210> 130
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 130

Arg Lys Met Ala Phe Tyr
1 5

<210> 131
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 131

Lys Lys Met Ala Phe Tyr
1 5

<210> 132

<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 132

Lys Lys Met Ala Leu Phe
1 5

<210> 133
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 133

Lys Lys Met Ala Phe Phe
1 5

<210> 134
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 134

Arg Lys Met Ala Leu Phe
1 5

<210> 135
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 135

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr Tyr
20 25 30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

Gly His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65 70 75 80

```
Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
            100                 105                 110

Val Ser Ser
        115
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<210> 136
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide.

<400> 136

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Asp Ile Met Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1               5                   10                  15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
            20                  25                  30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
        35                  40                  45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65                  70                  75                  80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asn Leu Pro Tyr
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
            100                 105
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SEQUENCE LISTING

<110> The Regents of the University of California
Nishimura, Stephen
Lou, Jianlong
Baron, Jody
Marks, James

<120> Antibodies That Bind Integrin Alpha-V Beta-8

<130> 81906-848664

<140> WO PCT/US12/51373
<141> 2012-08-17

<150> US 61/524708
<151> 2011-08-17

<150> US 61/646111
<151> 2012-05-11

<160> 136

<170> PatentIn version 3.5

<210> 1
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<212> PRT
<213> Artificial sequence

<220>
<223> synthetic region of human integrin beta8 including 37E1B5 epitope, amino acids 121-180

<400> 1

Gly Glu Val Ser Ile Gln Leu Arg Pro Gly Ala Glu Ala Asn Phe Met
1 5 10 15

Leu Lys Val His Pro Leu Lys Lys Tyr Pro Val Asp Leu Tyr Tyr Leu
20 25 30

Val Asp Val Ser Ala Ser Met His Asn Asn Ile Glu Lys Leu Asn Ser
35 40 45

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

<210> 2
<211> 60
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic homologous murine region of human integrin beta8 including 37E1B5 epitope

<400> 2

Gly Glu Val Ser Val Gln Leu His Pro Gly Ala Glu Ala Asn Phe Met
1 5 10 15

Leu Lys Val Arg Pro Leu Lys Lys Tyr Pro Val Asp Leu Tyr Tyr Leu
20 25 30

Val Asp Val Ser Ala Ser Met His Asn Asn Ile Glu Lys Leu Asn Ser
35 40 45

Val Gly Asn Asp Leu Ser Lys Lys Met Ala Leu Tyr
50 55 60

<210> 3
<211> 60
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic alignment sequence of human integrin beta8 including 37E1B5 epitope and mouse homologous region

<220>
<221> VARIANT
<222> (5)..(5)
<223> Xaa = Val or Ile

<220>
<221> VARIANT
<222> (8)..(8)
<223> Xaa = His or Arg

<220>
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<222> (20)..(20)
<223> Xaa = Arg or His

<220>
<221> VARIANT
<222> (55)..(55)
<223> Xaa = Lys or Arg

<220>
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<222> (59)..(59)
<223> Xaa = Leu or Phe

<220>
<221> VARIANT
<222> (60)..(60)
<223> Xaa Tyr or Phe

<400> 3

Gly Glu Val Ser Xaa Gln Leu Xaa Pro Gly Ala Glu Ala Asn Phe Met
1 5 10 15

Leu Lys Val Xaa Pro Leu Lys Lys Tyr Pro Val Asp Leu Tyr Tyr Leu
20 25 30

Val Asp Val Ser Ala Ser Met His Asn Asn Ile Glu Lys Leu Asn Ser
35 40 45

Val Gly Asn Asp Leu Ser Xaa Lys Met Ala Xaa Xaa
50 55 60

<210> 4

<211> 116
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain (VH) of 37E1 monoclonal antibody

<400> 4

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Asn Leu Ser Cys Ala Ala Ser Gly Phe Val Phe Ser Arg Tyr
20 25 30

Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile
35 40 45

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

Lys Asp Lys Phe Ile Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
65 70 75 80

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

Ala Cys Leu Ile Thr Thr Glu Asp Tyr Trp Gly Gln Gly Thr Ser Val
100 105 110

Thr Val Ser Ser
115

<210> 5
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain (VL) of 37E1 monoclonal antibody

<400> 5

Gln Ile Val Leu Thr Gln Ser Pro Ser Ser Met Tyr Ala Ser Leu Gly
1 5 10 15

Glu Arg Val Thr Ile Pro Cys Lys Ala Ser Gln Asp Ile Asn Ser Tyr
20 25 30

Leu Ser Trp Phe Gln Gln Lys Pro Gly Lys Ser Pro Lys Thr Leu Ile
35 40 45

Tyr Arg Ala Asn Arg Leu Val Asp Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Gln Asp Tyr Ser Leu Thr Ile Ser Ser Leu Glu Tyr
65 70 75 80

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Glu Asp Met Gly Ile Tyr Tyr Cys Leu Gln Tyr Asp Glu Phe Pro Tyr
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Ala
            100                 105
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<210> 6
<211> 116
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain (VH) of 37E1B5 monoclonal antibody

<400> 6

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Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1               5                   10                  15

Ser Leu Asn Leu Ser Cys Ala Val Ser Gly Phe Val Phe Ser Arg Tyr
            20                  25                  30

Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile
        35                  40                  45

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

Lys Asp Lys Phe Ile Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
65                  70                  75                  80

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

Ala Cys Leu Ile Thr Thr Glu Asp Tyr Trp Gly Gln Gly Thr Ser Val
            100                 105                 110

Thr Val Ser Ser
        115
```

<210> 7
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain (VL) of 37E1B5 monoclonal antibody

<400> 7

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Gln Ile Val Leu Thr Gln Ser Pro Ser Ser Met Tyr Ala Ser Leu Gly
1               5                   10                  15

Glu Arg Val Thr Ile Pro Cys Lys Ala Ser Gln Asp Ile Asn Ser Tyr
            20                  25                  30
```

```
Leu Ser Trp Phe Gln Gln Lys Pro Gly Lys Ser Pro Lys Thr Leu Ile
        35                  40                  45

Tyr Tyr Ala Asn Arg Leu Val Asp Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Gln Asp Tyr Ser Leu Thr Ile Ser Ser Leu Glu Tyr
65                  70                  75                  80

Glu Asp Met Gly Ile Tyr Tyr Cys Leu Gln Tyr Asp Glu Phe Pro Tyr
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Ala
            100                 105
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<210> 8
<211> 116
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain (VH) of humanized 37E1B5 (Hu37E1B5) monoclonal antibody

<400> 8

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Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1               5                   10                  15

Ser Leu Arg Leu Ser Cys Ala Val Ser Gly Phe Val Phe Ser Arg Tyr
            20                  25                  30

Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile
        35                  40                  45

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

Lys Asp Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65                  70                  75                  80

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

Ala Ser Leu Ile Thr Thr Glu Asp Tyr Trp Gly Gln Gly Thr Thr Val
            100                 105                 110

Thr Val Ser Ser
        115
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<210> 9
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain (VL) of humanized 37E1B5 (Hu37E1B5) monoclonal antibody

<400> 9

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

Glu Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp Ile Asn Ser Tyr
20 25 30

Leu Ser Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45

Tyr Tyr Ala Asn Arg Leu Val Asp Gly Val Pro Ala Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Gln Asp Tyr Thr Leu Thr Ile Ser Ser Leu Glu Pro
65 70 75 80

Glu Asp Phe Ala Val Tyr Tyr Cys Leu Gln Tyr Asp Glu Phe Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 10
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region of 11E8 monoclonal antibody

<400> 10

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Ser Tyr
20 25 30

Trp Ile Glu Trp Val Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

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

Lys Gly Arg Ala Thr Val Thr Ala Asp Arg Ser Ser Asn Thr Ala Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Tyr Gly Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Thr Trp Gly Trp Asp Thr Tyr Trp Asp Gln Gly Thr Ser Val Thr

100 105 110

Val Ser Ser
115

<210> 11
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region of 11E8 monoclonal antibody

<400> 11

Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asn Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 12
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region of 14E5 monoclonal antibody

<400> 12

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr Tyr
20 25 30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

Gly His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
100 105 110

Val Ser Ser
115

<210> 13
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region of 14E5 monoclonal antibody

<400> 13

Asp Ile Glu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

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

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Thr Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Asn Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Lys Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 14
<211> 45
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic region of human integrin beta8 including 6B9 and 4F1 epitope, amino acids 61-105

<400> 14

Leu Gly Pro Glu Cys Gly Trp Cys Val Gln Glu Asp Phe Ile Ser Gly
1 5 10 15

Gly Ser Arg Ser Glu Arg Cys Asp Ile Val Ser Asn Leu Ile Ser Lys
20 25 30

Gly Cys Ser Val Asp Ser Ile Glu Tyr Pro Ser Val His
35 40 45

<210> 15
<211> 45
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic homologous murine region of human integrin beta8 including 6B9 and 4F1 epitope

<400> 15

Leu Gly Pro Glu Cys Gly Trp Cys Val Gln Glu Asp Phe Val Ser Gly
1 5 10 15

Gly Ser Gly Ser Glu Arg Cys Asp Thr Val Ser Ser Leu Ile Ser Lys
20 25 30

Gly Cys Pro Val Asp Ser Ile Glu Tyr Leu Ser Val His
35 40 45

<210> 16
<211> 45
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic alignment sequence of human integrin beta8 including 6B9 and 4F1 epitope and mouse homologous region

<220>
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<223> Xaa = Val or Ile

<220>
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<222> (19)..(19)
<223> Xaa + Gly or Arg

<220>
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<222> (25)..(25)
<223> Xaa = Thr or Ile

<220>
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<222> (28)..(28)
<223> Xaa = Ser or Asn

<220>
<221> VARIANT
<222> (35)..(35)
<223> Xaa = Pro or Ser

<220>

<221> VARIANT
<222> (42)..(42)
<223> Xaa = Leu or Pro

<400> 16

Leu Gly Pro Glu Cys Gly Trp Cys Val Gln Glu Asp Phe Xaa Ser Gly
1 5 10 15

Gly Ser Xaa Ser Glu Arg Cys Asp Xaa Val Ser Xaa Leu Ile Ser Lys
20 25 30

Gly Cys Xaa Val Asp Ser Ile Glu Tyr Xaa Ser Val His
35 40 45

<210> 17
<211> 769
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<222> (1)..(769)
<223> human integrin beta8 full length sequence

<400> 17

Met Cys Gly Ser Ala Leu Ala Phe Phe Thr Ala Ala Phe Val Cys Leu
1 5 10 15

Gln Asn Asp Arg Arg Gly Pro Ala Ser Phe Leu Trp Ala Ala Trp Val
20 25 30

Phe Ser Leu Val Leu Gly Leu Gly Gln Gly Glu Asp Asn Arg Cys Ala
35 40 45

Ser Ser Asn Ala Ala Ser Cys Ala Arg Cys Leu Ala Leu Gly Pro Glu
50 55 60

Cys Gly Trp Cys Val Gln Glu Asp Phe Ile Ser Gly Gly Ser Arg Ser
65 70 75 80

Glu Arg Cys Asp Ile Val Ser Asn Leu Ile Ser Lys Gly Cys Ser Val
85 90 95

Asp Ser Ile Glu Tyr Pro Ser Val His Val Ile Ile Pro Thr Glu Asn
100 105 110

Glu Ile Asn Thr Gln Val Thr Pro Gly Glu Val Ser Ile Gln Leu Arg
115 120 125

Pro Gly Ala Glu Ala Asn Phe Met Leu Lys Val His Pro Leu Lys Lys
130 135 140

Tyr Pro Val Asp Leu Tyr Tyr Leu Val Asp Val Ser Ala Ser Met His
145 150 155 160

```
Asn Asn Ile Glu Lys Leu Asn Ser Val Gly Asn Asp Leu Ser Arg Lys
                165                 170                 175

Met Ala Phe Phe Ser Arg Asp Phe Arg Leu Gly Phe Gly Ser Tyr Val
            180                 185                 190

Asp Lys Thr Val Ser Pro Tyr Ile Ser Ile His Pro Glu Arg Ile His
        195                 200                 205

Asn Gln Cys Ser Asp Tyr Asn Leu Asp Cys Met Pro Pro His Gly Tyr
    210                 215                 220

Ile His Val Leu Ser Leu Thr Glu Asn Ile Thr Glu Phe Glu Lys Ala
225                 230                 235                 240

Val His Arg Gln Lys Ile Ser Gly Asn Ile Asp Thr Pro Glu Gly Gly
                245                 250                 255

Phe Asp Ala Met Leu Gln Ala Ala Val Cys Glu Ser His Ile Gly Trp
            260                 265                 270

Arg Lys Glu Ala Lys Arg Leu Leu Leu Val Met Thr Asp Gln Thr Ser
        275                 280                 285

His Leu Ala Leu Asp Ser Lys Leu Ala Gly Ile Val Val Pro Asn Asp
    290                 295                 300

Gly Asn Cys His Leu Lys Asn Asn Val Tyr Val Lys Ser Thr Thr Met
305                 310                 315                 320

Glu His Pro Ser Leu Gly Gln Leu Ser Glu Lys Leu Ile Asp Asn Asn
                325                 330                 335

Ile Asn Val Ile Phe Ala Val Gln Gly Lys Gln Phe His Trp Tyr Lys
            340                 345                 350

Asp Leu Leu Pro Leu Leu Pro Gly Thr Ile Ala Gly Glu Ile Glu Ser
        355                 360                 365

Lys Ala Ala Asn Leu Asn Asn Leu Val Val Glu Ala Tyr Gln Lys Leu
    370                 375                 380

Ile Ser Glu Val Lys Val Gln Val Glu Asn Gln Val Gln Gly Ile Tyr
385                 390                 395                 400

Phe Asn Ile Thr Ala Ile Cys Pro Asp Gly Ser Arg Lys Pro Gly Met
                405                 410                 415

Glu Gly Cys Arg Asn Val Thr Ser Asn Asp Glu Val Leu Phe Asn Val
            420                 425                 430
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Thr Val Thr Met Lys Lys Cys Asp Val Thr Gly Gly Lys Asn Tyr Ala
        435                 440                 445

Ile Ile Lys Pro Ile Gly Phe Asn Glu Thr Ala Lys Ile His Ile His
    450                 455                 460

Arg Asn Cys Ser Cys Gln Cys Glu Asp Asn Arg Gly Pro Lys Gly Lys
465                 470                 475                 480

Cys Val Asp Glu Thr Phe Leu Asp Ser Lys Cys Phe Gln Cys Asp Glu
                485                 490                 495

Asn Lys Cys His Phe Asp Glu Asp Gln Phe Ser Ser Glu Ser Cys Lys
            500                 505                 510

Ser His Lys Asp Gln Pro Val Cys Ser Gly Arg Gly Val Cys Val Cys
        515                 520                 525

Gly Lys Cys Ser Cys His Lys Ile Lys Leu Gly Lys Val Tyr Gly Lys
    530                 535                 540

Tyr Cys Glu Lys Asp Asp Phe Ser Cys Pro Tyr His His Gly Asn Leu
545                 550                 555                 560

Cys Ala Gly His Gly Glu Cys Glu Ala Gly Arg Cys Gln Cys Phe Ser
                565                 570                 575

Gly Trp Glu Gly Asp Arg Cys Gln Cys Pro Ser Ala Ala Ala Gln His
            580                 585                 590

Cys Val Asn Ser Lys Gly Gln Val Cys Ser Gly Arg Gly Thr Cys Val
        595                 600                 605

Cys Gly Arg Cys Glu Cys Thr Asp Pro Arg Ser Ile Gly Arg Phe Cys
    610                 615                 620

Glu His Cys Pro Thr Cys Tyr Thr Ala Cys Lys Glu Asn Trp Asn Cys
625                 630                 635                 640

Met Gln Cys Leu His Pro His Asn Leu Ser Gln Ala Ile Leu Asp Gln
                645                 650                 655

Cys Lys Thr Ser Cys Ala Leu Met Glu Gln Gln His Tyr Val Asp Gln
            660                 665                 670

Thr Ser Glu Cys Phe Ser Ser Pro Ser Tyr Leu Arg Ile Phe Phe Ile
        675                 680                 685

Ile Phe Ile Val Thr Phe Leu Ile Gly Leu Leu Lys Val Leu Ile Ile
    690                 695                 700
```

```
Arg Gln Val Ile Leu Gln Trp Asn Ser Asn Lys Ile Lys Ser Ser Ser
705                 710                 715                 720

Asp Tyr Arg Val Ser Ala Ser Lys Lys Asp Lys Leu Ile Leu Gln Ser
                725                 730                 735

Val Cys Thr Arg Ala Val Thr Tyr Arg Arg Glu Lys Pro Glu Glu Ile
            740                 745                 750

Lys Met Asp Ile Ser Lys Leu Asn Ala His Glu Thr Phe Arg Cys Asn
        755                 760                 765

Phe
```

<210> 18
<211> 120
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region of 6B9 monoclonal antibody

<400> 18

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

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asp Tyr
            20                  25                  30

Leu Ile Glu Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Val Ile Asn Pro Glu Thr Gly Gly Thr Asn Tyr Asn Ala Lys Phe
    50                  55                  60

Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Ser Ala Tyr
65                  70                  75                  80

Met Gln Leu Ser Ser Leu Thr Ser Gly Asp Ser Ala Val Tyr Phe Cys
                85                  90                  95

Ala Arg Glu Ala Gly Asn Tyr Ile Tyr Ala Met Asp Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Ser Val Thr Val Ser Ser
        115                 120
```

<210> 19
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region of 6B9 monoclonal antibody

<400> 19

```
Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Ser Ala Ser Val Gly
1               5                  10                  15

Glu Thr Val Thr Ile Thr Cys Arg Ala Ser Val Asn Ile Tyr Ser Tyr
            20                  25                  30

Leu Val Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Leu Leu Val
        35                  40                  45

His Asn Ala Lys Thr Leu Ala Glu Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

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

Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His His His Gly Thr Pro Tyr
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
            100                 105
```

<210> 20
<211> 122
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region of 4F1 monoclonal antibody

<400> 20

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

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Tyr
            20                  25                  30

Leu Ile Glu Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Val Ile Asn Pro Gly Thr Gly Gly Thr Asn Tyr Asn Lys Lys Phe
    50                  55                  60

Lys Val Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala Tyr
65                  70                  75                  80

Met Gln Leu Gly Gly Leu Thr Phe Asp Asp Ser Ala Val Tyr Phe Cys
                85                  90                  95

Ala Arg Glu Gly Asn Ala Arg Thr Tyr Tyr Tyr Ala Met Asp Tyr Trp
            100                 105                 110
```

Gly Gln Gly Thr Ser Val Thr Val Ser Ser
115 120

<210> 21
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region of 4F1 monoclonal antibody

<400> 21

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

Glu Thr Val Thr Ile Thr Cys Arg Ala Ser Glu Asn Ile Tyr Ser Tyr
20 25 30

Leu Val Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Val Leu Val
35 40 45

Tyr Asn Ala Lys Thr Leu Ala Glu Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

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

Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His His Asn Gly Thr Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 22
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region (VK) of 6B9Mut1 monoclonal antibody

<400> 22

Asp Ile Val Met Thr Gln Ser Pro Ala Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Glu Thr Val Thr Ile Thr Cys Arg Ala Ser Val Asn Ile Tyr Ser Tyr
20 25 30

Leu Val Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Leu Leu Val
35 40 45

His Asn Ala Lys Thr Leu Ala Glu Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

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

Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His His His Gly Thr Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 23
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region (VK) of 11E8Mut28 monoclonal antibody

<400> 23

Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Phe Ser Asn Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 24
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region (VK) of 14E5Mut11 monoclonal antibody

<400> 24

Asp Ile Leu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Lys Tyr
20 25 30

```
Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
        35                  40                  45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65                  70                  75                  80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asn Leu Pro Tyr
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
            100                 105
```

<210> 25
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region (VK) of 14E5Mut42 monoclonal antibody

<400> 25

```
Asp Ile Val Met Thr Gln Thr Pro Ser Ser Leu Ser Ala Ser Leu Gly
1               5                   10                  15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
            20                  25                  30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
        35                  40                  45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65                  70                  75                  80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asp Leu Pro Tyr
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
            100                 105
```

<210> 26
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region (VK) of 14E5Mut54 monoclonal antibody

<400> 26

Asp Ile Val Met Thr Gln Thr Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Arg Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asn Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 27
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region (VK) of 14E5Mut68 monoclonal antibody

<400> 27

Asp Ile Lys Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Glu Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 28
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region (VK) of 14E5Mut65 monoclonal antibody

<400> 28

Asp Ile Lys Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Phe Ser Asn Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 29
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region (VK) of 14E5Mut83 monoclonal antibody

<400> 29

Asp Ile Leu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asp Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 30
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region (VK) of 14E5Mut95 monoclonal antibody

<400> 30

Asp Ile Glu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asp Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 31
<211> 120
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region (VH) of 6B9Mut1 monoclonal antibody

<400> 31

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

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asp Tyr
20 25 30

Leu Ile Glu Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Val Ile Asn Pro Glu Thr Gly Gly Thr Asn Tyr Asn Ala Lys Phe
50 55 60

Arg Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Ser Ala Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Gly Asp Ser Ala Val Tyr Phe Cys
85 90 95

Ala Arg Glu Ala Gly Asn Tyr Ile Tyr Ala Met Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Ser Val Thr Val Ser Ser
115 120

<210> 32
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region (VH) of 11E8Mut94 monoclonal antibody

<400> 32

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Ser Tyr
20 25 30

Trp Ile Glu Trp Val Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

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

Lys Gly Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65 70 75 80

Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
100 105 110

Val Ser Ser
115

<210> 33
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region (VH) of 14E5Mut11 monoclonal antibody

<400> 33

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr Asn
20 25 30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

Gly His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
100 105 110

Val Ser Ser
115

<210> 34
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region (VH) of 14E5Mut42 monoclonal antibody

<400> 34

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr Tyr
20 25 30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

Gly His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65 70 75 80

```
Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
            100                 105                 110

Val Ser Ser
        115
```

<210> 35
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region (VH) of 14E5Mut54 monoclonal antibody

<400> 35

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr Asn
            20                  25                  30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
        35                  40                  45

Gly His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe
    50                  55                  60

Lys Gly Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65                  70                  75                  80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
            100                 105                 110

Val Ser Ser
        115
```

<210> 36
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region (VH) of 14E5Mut68 monoclonal antibody

<400> 36

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

```
Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr Tyr
            20                  25                  30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
        35                  40                  45

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

Lys Gly Arg Ala Thr Val Thr Ala Asp Arg Ser Ser Asn Thr Ala Tyr
65                  70                  75                  80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
            100                 105                 110

Val Ser Ser
        115
```

<210> 37
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region (VH) of 14E5Mut65 monoclonal antibody

<400> 37

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Ser Phe Ser Thr Asn
            20                  25                  30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
        35                  40                  45

Gly His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe
    50                  55                  60

Lys Gly Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65                  70                  75                  80

Met Gln Leu Ser Ser Leu Thr Ser Asp Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
            100                 105                 110
```

Val Ser Ser
115

<210> 38
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region (VH) of 14E5Mut83 monoclonal antibody

<400> 38

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr His
20 25 30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

Gly His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
100 105 110

Val Ser Ser
115

<210> 39
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region (VH) of 14E5Mut95 monoclonal antibody

<400> 39

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr Tyr
20 25 30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

Gly His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Lys Ala Val Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
100 105 110

Val Ser Ser
115

<210> 40
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR1 of 6B9 monoclonal antibody

<400> 40

Asp Tyr Leu Ile Glu
1 5

<210> 41
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR2 of 6B9 monoclonal antibody

<400> 41

Val Ile Asn Pro Glu Thr Gly Gly Thr Asn Tyr Asn Ala Lys Phe Lys
1 5 10 15

Gly

<210> 42
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR3 of 6B9 monoclonal antibody

<400> 42

Glu Ala Gly Asn Tyr Ile Tyr Ala Met Asp Tyr
1 5 10

<210> 43
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR1 of 6B9 monoclonal antibody

<400> 43

Arg Ala Ser Val Asn Ile Tyr Ser Tyr Leu Val
1 5 10

<210> 44
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR2 of 6B9 monoclonal antibody

<400> 44

Asn Ala Lys Thr Leu Ala Glu
1 5

<210> 45
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR3 of 6B9 monoclonal antibody

<400> 45

Gln His His His Gly Thr Pro Tyr Thr
1 5

<210> 46
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR2 of affinity matured 6B9 monoclonal antibody (6B9Mut1)

<400> 46

Val Ile Asn Pro Glu Thr Gly Gly Thr Asn Tyr Asn Ala Lys Phe Arg
1 5 10 15

Gly

<210> 47
<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain framework region FR1 of affinity matured 6B9 monoclonal antibody (6B9Mut1)

<400> 47

Asp Ile Val Met Thr Gln Ser Pro Ala Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Glu Thr Val Thr Ile Thr Cys
20

<210> 48
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR1 of 11E8 monoclonal antibody

<400> 48

Ser Tyr Trp Ile Glu
1 5

<210> 49
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR2 of 11E8 monoclonal antibody

<400> 49

Asp Ile Leu Pro Gly Ser Gly Thr Thr Asn Tyr Asn Glu Lys Phe Lys
1 5 10 15

Gly

<210> 50
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR3 of 11E8 monoclonal antibody

<400> 50

Trp Gly Trp Asp Thr Tyr
1 5

<210> 51
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR1 of 11E8 monoclonal antibody

<400> 51

Ser Ala Ser Gln Gly Ile Ser Asn Tyr Leu Asn
1 5 10

<210> 52
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR2 of 11E8 monoclonal antibody

<400> 52

Tyr Thr Ser Ser Leu His Ser
1 5

<210> 53
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR3 of 11E8 monoclonal antibody

<400> 53

Gln Gln Tyr Ser Asn Leu Pro Tyr Thr
1 5

<210> 54
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR3 of affinity matured 11E8 monoclonal antibody (11E8Mut28 and 11E8Mut94)

<400> 54

Trp Gly Trp Asp Ser Tyr
1 5

<210> 55
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR3 of affinity matured 11E8 monoclonal antibody (11E8Mut28)

<400> 55

Gln Gln Phe Ser Asn Leu Pro Tyr Thr
1 5

<210> 56
<211> 32
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain framework region FR3 of affinity matured 11E8 monoclonal antibody (11E8Mut28)

<400> 56

Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr Leu Gln
1 5 10 15

Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala Arg
20 25 30

<210> 57
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain framework region FR4 of affinity matured 11E8 monoclonal antibody (11E8Mut28 and 11E8Mut94)

<400> 57

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
1 5 10

<210> 58
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR1 of 14E5 monoclonal antibody

<400> 58

Thr Tyr Trp Ile Glu
1 5

<210> 59
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR2 of 14E5 monoclonal antibody

<400> 59

His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe Lys
1 5 10 15

Gly

<210> 60
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR3 of 14E5 monoclonal antibody

<400> 60

Trp Gly Trp Asp Ser Tyr
1 5

<210> 61
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR1 of 14E5 monoclonal antibody

<400> 61

Ser Thr Ser Gln Asp Ile Ser Ser Ser Leu Asn
1 5 10

<210> 62
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR2 of 14E5 monoclonal antibody

<400> 62

Tyr Thr Ser Asn Leu His Ser
1 5

<210> 63
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR3 of 14E5 monoclonal antibody

<400> 63

Gln Gln Tyr Ser Lys Leu Pro Tyr Thr
1 5

<210> 64
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR1 of affinity matured 14E5 monoclonal antibody (14E5Mut11, 14E5Mut54 and 14E5Mut65)

<400> 64

Thr Asn Trp Ile Glu
1 5

<210> 65
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR1 of affinity matured 14E5 monoclonal antibody (14E5Mut11)

<400> 65

Ser Ala Ser Gln Gly Ile Ser Lys Tyr Leu Asn
1 5 10

<210> 66
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR2 of affinity matured 14E5 monoclonal antibody (14E5Mut11, 14E5Mut42, 14E5Mut54, 14E5Mut68, 14E5Mut65 and 14E5Mut83)

<400> 66

Tyr Thr Ser Ser Leu His Ser
1 5

<210> 67
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR3 of affinity matured 14E5 monoclonal antibody (14E5Mut11)

<400> 67

Gln Gln Tyr Ser Asn Leu Pro Tyr Thr
1 5

<210> 68
<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain framework region FR1 of affinity matured 14E5 monoclonal antibody (14E5Mut11 and 14E5Mut83)

<400> 68

Asp Ile Leu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys
20

<210> 69
<211> 15
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain framework region FR2 of affinity matured 14E5 monoclonal antibody (14E5Mut11, 14E5Mut42, 14E5Mut54, 14E5Mut68, 14E5Mut65, 14E5Mut83 and 14E5Mut95)

<400> 69

Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Thr Tyr
1 5 10 15

<210> 70
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR1 of affinity matured 14E5 monoclonal antibody (14E5Mut42, 14E5Mut54, 14E5Mut68, 14E5Mut65, 14E5Mut83 and 14E5Mut95)

<400> 70

Ser Ala Ser Gln Gly Ile Ser Asn Tyr Leu Asn
1 5 10

<210> 71
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR3 of affinity matured 14E5 monoclonal antibody (14E5Mut42, 14E5Mut83 and 14E5Mut95)

<400> 71

Gln Gln Tyr Ser Asp Leu Pro Tyr Thr
1 5

<210> 72
<211> 30
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain framework region FR1 of affinity matured 14E5 monoclonal antibody (14E5Mut42)

<400> 72

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser
20 25 30

<210> 73

<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain framework region FR1 of affinity matured
14E5 monoclonal antibody (14E5Mut42)

<400> 73

Asp Ile Val Met Thr Gln Thr Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys
20

<210> 74
<211> 32
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain framework region FR3 of affinity matured
14E5 monoclonal antibody (14E5Mut54)

<400> 74

Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr Met Gln
1 5 10 15

Leu Thr Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala Arg
20 25 30

<210> 75
<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain framework region FR1 of affinity matured
14E5 monoclonal antibody (14E5Mut54)

<400> 75

Asp Ile Leu Met Thr Gln Thr Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Arg Cys
20

<210> 76
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR2 of affinity matured
14E5 monoclonal antibody (14E5Mut68)

<400> 76

Asp Ile Leu Pro Gly Ser Gly Thr Thr Asn Tyr Asn Glu Lys Phe Lys
1 5 10 15

Gly

<210> 77
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR3 of affinity matured 14E5 monoclonal antibody (14E5Mut68)

<400> 77

Gln Gln Tyr Ser Glu Leu Pro Tyr Thr
1 5

<210> 78
<211> 32
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain framework region FR3 of affinity matured 14E5 monoclonal antibody (14E5Mut68)

<400> 78

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

Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala Arg
20 25 30

<210> 79
<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain framework region FR1 of affinity matured 14E5 monoclonal antibody (14E5Mut68)

<400> 79

Asp Ile Lys Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys
20

<210> 80
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR3 of affinity matured 14E5 monoclonal antibody (14E5Mut65)

<400> 80

Gln Gln Phe Ser Asn Leu Pro Tyr Thr
1 5

<210> 81
<211> 30
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain framework region FR1 of affinity matured 14E5 monoclonal antibody (14E5Mut65)

<400> 81

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Ser Phe Ser
20 25 30

<210> 82
<211> 32
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain framework region FR3 of affinity matured 14E5 monoclonal antibody (14E5Mut65)

<400> 82

Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr Met Gln
1 5 10 15

Leu Ser Ser Leu Thr Ser Asp Asp Ser Ala Val Tyr Tyr Cys Ala Arg
20 25 30

<210> 83
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR1 of affinity matured 14E5 monoclonal antibody (14E5Mut83)

<400> 83

Thr His Trp Ile Glu
1 5

<210> 84
<211> 30
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain framework region FR1 of affinity matured 14E5 monoclonal antibody (14E5Mut83)

<400> 84

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser
20 25 30

<210> 85
<211> 30
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain framework region FR1 of affinity matured 14E5 monoclonal antibody (14E5Mut95)

<400> 85

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser
20 25 30

<210> 86
<211> 32
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain framework region FR3 of affinity matured 14E5 monoclonal antibody (14E5Mut95)

<400> 86

Lys Ala Val Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr Met Gln
1 5 10 15

Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala Arg
20 25 30

<210> 87
<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain framework region FR1 of affinity matured 14E5 monoclonal antibody (14E5Mut95)

<400> 87

Asp Ile Glu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys
20

<210> 88
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region (VH) of 11E8Mut94 monoclonal antibody

<400> 88

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Ser Tyr
20 25 30

Trp Ile Glu Trp Val Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

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

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

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
100 105 110

Val Ser Ser
115

<210> 89
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region (VK) of 11E8Mut94 monoclonal antibody

<400> 89

Asp Ile Lys Met Thr Gln Thr Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asn Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 90
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR2 of affinity matured 11E8 monoclonal antibody (11E8Mut94)

<400> 90

Asp Ile Leu Pro Gly Ser Gly Thr Thr Asn Tyr Asn Glu Lys Phe Glu
1 5 10 15

Gly

<210> 91
<211> 14
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain framework region FR2 of affinity matured 11E8 monoclonal antibody (11E8Mut94)

<400> 91

Trp Val Lys Gln Arg Pro Gly His Gly Phe Glu Trp Ile Gly
1 5 10

<210> 92
<211> 32
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain framework region FR3 of affinity matured 11E8 monoclonal antibody (11E8Mut94)

<400> 92

Arg Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr Met Gln
1 5 10 15

Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala Arg
20 25 30

<210> 93
<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain framework region FR1 of affinity matured

11E8 monoclonal antibody (11E8Mut94)

<400> 93

Asp Ile Lys Met Thr Gln Thr Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys
20

<210> 94
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR1 of 37E1, 37E1B5 and Hu37E1B5 monoclonal antibody

<400> 94

Arg Tyr Trp Met Ser
1 5

<210> 95
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR2 of 37E1, 37E1B5 and Hu37E1B5 monoclonal antibody

<400> 95

Glu Ile Asn Pro Asp Ser Ser Thr Ile Asn Tyr Thr Ser Ser Leu Lys
1 5 10 15

Asp

<210> 96
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR3 of 37E1, 37E1B5 and Hu37E1B5 monoclonal antibody

<400> 96

Leu Ile Thr Thr Glu Asp Tyr
1 5

<210> 97
<211> 10
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR1 of 37E1, 37E1B5 and Hu37E1B5 monoclonal antibody

<400> 97

Lys Ala Ser Gln Asp Ile Asn Ser Tyr Leu
1 5 10

<210> 98
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR2 of 37E1 monoclonal antibody

<400> 98

Arg Ala Asn Arg Leu Val Asp
1 5

<210> 99
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR3 of 37E1, 37E1B5 and Hu37E1B5 monoclonal antibody

<400> 99

Leu Gln Tyr Asp Glu Phe Pro Tyr Thr
1 5

<210> 100
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR2 of 37E1B5 and Hu37E1B5 monoclonal antibody

<400> 100

Tyr Ala Asn Arg Leu Val Asp
1 5

<210> 101

<400> 101
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<210> 102
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region (VH) of 11E8Mut39 monoclonal antibody

<400> 102

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

1 5 10 15

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr Tyr
20 25 30

Trp Ile Glu Trp Val Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

Gly His Thr Leu Pro Gly Ser Gly Thr Thr Asn Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Arg Ala Thr Ile Thr Ala Asp Arg Pro Ser Asn Thr Ser Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Tyr Gly Asp Ser Ala Val Phe Tyr Cys
85 90 95

Ala Thr Trp Gly Trp Asp Thr Tyr Trp Asp His Gly Thr Ser Val Thr
100 105 110

Val Ser Ser
115

<210> 103

<400> 103
000

<210> 104
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region (VK) of 11E8Mut39 monoclonal antibody

<400> 104

Asp Ile Glu Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Thr Ser Gln Asp Val Ser Ser Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Thr Leu Leu Ile
35 40 45

Tyr Tyr Ala Ser Asn Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Ala Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asn Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Ala
100 105

<210> 105
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR1 of affinity matured 11E8 monoclonal antibody (11E8Mut39)

<400> 105

Ser Thr Ser Gln Asp Val Ser Ser Tyr Leu Asn
1 5 10

<210> 106
<211> 30
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain framework region FR1 of affinity matured 11E8 monoclonal antibody (11E8Mut39)

<400> 106

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser
20 25 30

<210> 107
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR2 of affinity matured 11E8 monoclonal antibody (11E8Mut39)

<400> 107

Tyr Ala Ser Asn Leu His Ser
1 5

<210> 108
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain framework region FR4 of affinity matured 11E8 monoclonal antibody (11E8Mut39)

<400> 108

Trp Asp His Gly Thr Ser Val Thr Val Ser Ser
1 5 10

<210> 109

<400> 109
000

<210> 110

<400> 110
000

<210> 111
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic polypeptide

<400> 111

Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Ala
1 5 10

<210> 112
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR1 of affinity matured 11E8 monoclonal antibody (11E8Mut39)

<400> 112

Thr Tyr Trp Ile Glu
1 5

<210> 113
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR2 of affinity matured 11E8 monoclonal antibody (11E8Mut39)

<400> 113

His Thr Leu Pro Gly Ser Gly Thr Thr Asn Tyr Asn Glu Lys Phe Lys
1 5 10 15

Gly

<210> 114
<211> 32
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain framework region FR3 of affinity matured 11E8 monoclonal antibody (11E8Mut39)

<400> 114

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

Leu Ser Ser Leu Thr Tyr Gly Asp Ser Ala Val Phe Tyr Cys Ala Thr
20 25 30

<210> 115
<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain framework region FR1 of affinity matured 11E8 monoclonal antibody (11E8Mut39)

<400> 115

Asp Ile Met Met Thr Gln Thr Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys
20

<210> 116
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR1 of 4F1 monoclonal antibody

<400> 116

Asn Tyr Leu Ile Glu
1 5

<210> 117
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR2 of 4F1 monoclonal antibody

<400> 117

Val Ile Asn Pro Gly Thr Gly Gly Thr Asn Tyr Asn Lys Lys Phe Lys
1 5 10 15

Val

<210> 118
<211> 13
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region CDR3 of 4F1 monoclonal

antibody

<400> 118

Glu Gly Asn Ala Arg Thr Tyr Tyr Tyr Ala Met Asp Tyr
1 5 10

<210> 119
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR1 of 4F1 monoclonal antibody

<400> 119

Arg Ala Ser Glu Asn Ile Tyr Ser Tyr Leu Val
1 5 10

<210> 120
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR2 of 4F1 monoclonal antibody

<400> 120

Asn Ala Lys Thr Leu Ala Glu
1 5

<210> 121
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region CDR3 of 4F1 monoclonal antibody

<400> 121

Gln His His Asn Gly Thr Pro Tyr Thr
1 5

<210> 122
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic homologous murine region of human integrin beta8 including 6B9 and 4F1 epitope

<400> 122

Val Gly Thr Ser Pro
1 5

<210> 123

<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic region of human integrin beta8 including 6B9 and 4F1 epitope

<400> 123

Ile Arg Ile Asn Ser
1 5

<210> 124
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic region of human integrin beta8 including 6B9 and 4F1 epitope with amino acid swapping

<400> 124

Val Arg Ile Asn Ser
1 5

<210> 125
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic region of human integrin beta8 including 6B9 and 4F1 epitope with amino acid swapping

<400> 125

Ile Gly Ile Asn Pro
1 5

<210> 126
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic region of human integrin beta8 including 6B9 and 4F1 epitope with amino acid swapping

<400> 126

Ile Gly Ile Asn Ser
1 5

<210> 127
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic region of human integrin beta8 including 37E1B5, 14E5 and 11E8 epitope

<400> 127

Arg Lys Met Ala Phe Phe
1 5

<210> 128
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic homologous murine region of human integrin beta8 including 37E1B5, 14E5 and 11E8 epitope

<400> 128

Lys Lys Met Ala Leu Tyr
1 5

<210> 129
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic region of human integrin beta8 including 37E1B5, 14E5 and 11E8 epitope with amino acid swapping

<400> 129

Arg Lys Met Ala Leu Tyr
1 5

<210> 130
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic region of human integrin beta8 including 37E1B5, 14E5 and 11E8 epitope with amino acid swapping

<400> 130

Arg Lys Met Ala Phe Tyr
1 5

<210> 131
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic region of human integrin beta8 including 37E1B5, 14E5 and 11E8 epitope with amino acid swapping

<400> 131

Lys Lys Met Ala Phe Tyr
1 5

<210> 132
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic region of human integrin beta8 including 37E1B5, 14E5 and 11E8 epitope with amino acid swapping

<400> 132

Lys Lys Met Ala Leu Phe
1 5

<210> 133
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic region of human integrin beta8 including 37E1B5, 14E5 and 11E8 epitope with amino acid swapping

<400> 133

Lys Lys Met Ala Phe Phe
1 5

<210> 134
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic region of human integrin beta8 including 37E1B5, 14E5 and 11E8 epitope with amino acid swapping

<400> 134

Arg Lys Met Ala Leu Phe
1 5

<210> 135
<211> 115
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic heavy chain variable region (VH) of 14E5Mut93 monoclonal antibody

<400> 135

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

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Thr Tyr
20 25 30

Trp Ile Glu Trp Ile Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
35 40 45

Gly His Ile Leu Pro Gly Ser Val Ile Thr Asn Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Lys Ala Ala Ile Thr Ala Asp Thr Ser Ser Asn Thr Ser Tyr

65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Trp Gly Trp Asp Ser Tyr Trp Gly Gln Gly Thr Leu Val Thr
100 105 110

Val Ser Ser
115

<210> 136
<211> 108
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic light chain variable region (VK) of 14E5Mut93 monoclonal antibody

<400> 136

Asp Ile Met Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

Tyr Tyr Thr Ser Ser Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro
65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Asn Leu Pro Tyr
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105