

SEQUENCE LISTING

<110> Numab Innovation AG

<120> NOVEL ANTI-CD3 ANTIBODIES

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<151> 2017-06-05

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<160> 42

<170> PatentIn version 3.5

<210> 1

<211> 13

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<220>

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<400> 1

Gln Ser Ser Gln Ser Val Phe Ser Asn Asn Tyr Leu Ala
1 5 10

<210> 2

<211> 7

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<220>

<223> artificial CDR sequence

<400> 2

Ser Ala Ser Thr Leu Ala Ser
1 5

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<220>

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<400> 3

Leu Gly Ser Tyr Ala Cys Ser Ser Ala Asp Cys Tyr Val
1 5 10

<210> 4

<211> 114

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<213> Artificial Sequence

<220>

<223> artificial VL sequence

<400> 4

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

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

Asn Tyr Leu Ala Trp Phe Gln Gln Lys Pro Gly Gln Ser Pro Lys Arg
35 40 45

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

Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu
65 70 75 80

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

Ser Ser Ala Asp Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val
100 105 110

Leu Gly

<210> 5
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<400> 5

Gly Phe Ser Leu Ser Ser Tyr Asp Met Ser
1 5 10

<210> 6
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<220>
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<400> 6

Ala Ser Tyr Ala Ser Gly Pro Thr Tyr Tyr Ala Ser Trp Ala Lys Gly
1 5 10 15

<210> 7
<211> 12
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<213> Artificial Sequence

<220>
<223> artificial CDR sequence

<400> 7

Arg Gly Gly Trp Thr Gly Thr Ser His Ser Asn Ile
1 5 10

<210> 8
<211> 119
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<213> Artificial Sequence

<220>

<223> artificial VH sequence

<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 Ala Ser Gly Phe Ser Leu Ser Ser Tyr
20 25 30

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

Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr Tyr Ala Ser Trp Ala Lys
50 55 60

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

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

Arg Gly Gly Trp Thr Gly Thr Ser His Ser Asn Ile Trp Gly Gln Gly
100 105 110

Thr Leu Val Thr Val Ser Ser
115

<210> 9

<211> 114

<212> PRT

<213> Artificial Sequence

<220>

<223> artificial VL sequence

<400> 9

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

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

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

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

Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu
65 70 75 80

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

Ser Asn Ala Asp Cys Phe Thr Phe Gly Thr Gly Thr Lys Val Thr Val
100 105 110

Leu Gly

<210> 10
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<220>
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<400> 10

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

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

Gly Met Ile Leu Arg Ala Gly Asn Ile Tyr Tyr Ala Ser Trp Val Lys
50 55 60

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

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

Arg Arg His Tyr Asn Arg Glu Gly Tyr Pro Ile Gly Ile Gly Asp Leu
100 105 110

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 11
<211> 113
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial VL sequence

<400> 11

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

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

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

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

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

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Thr Asn Arg Tyr Ser Asn
85 90 95

Pro Asp Ile Tyr Asn Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu
100 105 110

Gly

<210> 12
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial VH sequence

<400> 12

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 Ala Ser Gly Ile Asp Phe Asn Ser Asn
20 25 30

Tyr Tyr Met Cys Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp
35 40 45

Ile Gly Cys Ile Tyr Val Gly Ser His Val Asn Thr Tyr Tyr Ala Asn
50 55 60

Trp Ala Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr
65 70 75 80

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

Tyr Cys Ala Thr Ser Gly Ser Ser Val Leu Tyr Phe Lys Phe Trp Gly
100 105 110

Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 13
<211> 109
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial VL sequence

<400> 13

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

Thr Val Thr Leu Thr Cys Gly Ser Ser Thr Gly Ala Val Thr Ser Gly
20 25 30

Asn Tyr Pro Asn Trp Val Gln Gln Lys Pro Gly Gln Ala Pro Arg Gly
35 40 45

Leu Ile Gly Gly Thr Lys Phe Leu Ala Pro Gly Thr Pro Ala Arg Phe
50 55 60

Ser Gly Ser Leu Leu Gly Gly Lys Ala Ala Leu Thr Leu Ser Gly Val
65 70 75 80

Gln Pro Glu Asp Glu Ala Glu Tyr Tyr Cys Val Leu Trp Tyr Ser Asn
85 90 95

Arg Trp Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu
100 105

<210> 14
<211> 125
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial VH sequence

<400> 14

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

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

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

Ala Arg Ile Arg Ser Lys Tyr Asn Asn Tyr Ala Thr Tyr Tyr Ala Asp
50 55 60

Ser Val Lys Asp Arg Phe Thr Ile Ser Arg Asp Asp Ser Lys Asn Thr
65 70 75 80

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

Tyr Cys Val Arg His Gly Asn Phe Gly Asn Ser Tyr Ile Ser Tyr Trp
100 105 110

Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
115 120 125

<210> 15

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> artificial linker sequence

<400> 15

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
1 5 10 15

Gly Gly Gly Ser
20

<210> 16
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial linker sequence

<400> 16

Gly Gly Gly Gly Ser
1 5

<210> 17
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial FW4 sequence

<400> 17

Phe Gly Thr Gly Thr Lys Val Thr Val Leu Gly
1 5 10

<210> 18
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial FW4 sequence

<400> 18

Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
1 5 10

<210> 19
<211> 207
<212> PRT
<213> Homo sapiens

<400> 19

Met Gln Ser Gly Thr His Trp Arg Val Leu Gly Leu Cys Leu Leu Ser
1 5 10 15

Val Gly Val Trp Gly Gln Asp Gly Asn Glu Glu Met Gly Gly Ile Thr
20 25 30

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

Cys Pro Gln Tyr Pro Gly Ser Glu Ile Leu Trp Gln His Asn Asp Lys
50 55 60

Asn Ile Gly Gly Asp Glu Asp Asp Lys Asn Ile Gly Ser Asp Glu Asp
65 70 75 80

His Leu Ser Leu Lys Glu Phe Ser Glu Leu Glu Gln Ser Gly Tyr Tyr
85 90 95

Val Cys Tyr Pro Arg Gly Ser Lys Pro Glu Asp Ala Asn Phe Tyr Leu
100 105 110

Tyr Leu Arg Ala Arg Val Cys Glu Asn Cys Met Glu Met Asp Val Met
115 120 125

Ser Val Ala Thr Ile Val Ile Val Asp Ile Cys Ile Thr Gly Gly Leu
130 135 140

Leu Leu Leu Val Tyr Tyr Trp Ser Lys Asn Arg Lys Ala Lys Ala Lys
145 150 155 160

Pro Val Thr Arg Gly Ala Gly Ala Gly Gly Arg Gln Arg Gly Gln Asn
165 170 175

Lys Glu Arg Pro Pro Pro Val Pro Asn Pro Asp Tyr Glu Pro Ile Arg
180 185 190

Lys Gly Gln Arg Asp Leu Tyr Ser Gly Leu Asn Gln Arg Arg Ile

195

200

205

<210> 20
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<220>
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<400> 20

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

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

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

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

Ser Arg Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80

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

Thr Phe Gly Thr Gly Thr Lys Val Thr Val Leu Gly
 100 105

<210> 21
 <211> 120
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> artificial VH sequence

<400> 21

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 Ala Ser Gly Phe Asn Ile Lys Asp Thr
20 25 30

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

Ala Arg Ile Tyr Pro Thr Asn Gly Tyr Thr Arg Tyr Ala Asp Ser Val
50 55 60

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

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

Ser Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 22
<211> 112
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial VL sequence

<400> 22

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

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

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

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

Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu
65 70 75 80

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

Ser Ser Asp Thr Ala Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
100 105 110

<210> 23
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial VH sequence

<400> 23

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 Ala Ser Gly Phe Ser Leu Ser Ser Asn
20 25 30

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

Gly Ile Ile Ser Val Gly Gly Phe Thr Tyr Tyr Ala Ser Trp Ala Lys
50 55 60

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

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

Arg Asp Arg His Gly Gly Asp Ser Ser Gly Ala Phe Tyr Leu Trp Gly
100 105 110

Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 24

<211> 110

<212> PRT

<213> Artificial Sequence

<220>

<223> artificial VL sequence

<400> 24

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

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

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

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

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

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

Phe Gly Ala Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
100 105 110

<210> 25
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
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<400> 25

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 Ala Ser Gly Phe Ser Phe Ser Ser Ser
20 25 30

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

Val Gly Cys Val Phe Thr Gly Asp Gly Thr Thr Tyr Tyr Ala Ser Trp
50 55 60

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

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

Cys Ala Arg Pro Val Ser Val Tyr Tyr Tyr Gly Met Asp Leu Trp Gly
100 105 110

Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 26
<211> 497
<212> PRT
<213> Artificial Sequence

<220>
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<400> 26

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

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

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

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

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

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Thr Asn Arg Tyr Ser Asn
85 90 95

Pro Asp Ile Tyr Asn Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu
100 105 110

Gly Gly Gly Gly Gly Ser Glu Val Gln Leu Val Glu Ser Gly Gly Gly
115 120 125

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

Phe Ser Leu Ser Ser Tyr Asp Met Ser Trp Val Arg Gln Ala Pro Gly
145 150 155 160

Lys Gly Leu Ala Trp Ile Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr
165 170 175

Tyr Ala Ser Trp Ala Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser
180 185 190

Lys Asn Thr Val Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr
195 200 205

Ala Thr Tyr Phe Cys Ala Arg Gly Gly Trp Thr Gly Thr Ser His Ser
210 215 220

Asn Ile Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Gly Gly Gly
225 230 235 240

Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
245 250 255

Ser Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val
260 265 270

Gly Asp Arg Val Thr Ile Thr Cys Gln Ser Ser Gln Ser Val Phe Ser
275 280 285

Asn Asn Tyr Leu Ala Trp Phe Gln Gln Lys Pro Gly Gln Ser Pro Lys
290 295 300

Arg Leu Ile Tyr Ser Ala Ser Thr Leu Ala Ser Gly Val Pro Ser Arg
305 310 315 320

Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser
325 330 335

Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Leu Gly Ser Tyr Ala
340 345 350

Cys Ser Ser Ala Asp Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr
355 360 365

Val Leu Gly Gly Gly Gly Gly Ser Glu Val Gln Leu Val Glu Ser Gly
370 375 380

Gly Gly Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala

385 390 395 400

Ser Gly Ile Asp Phe Asn Ser Asn Tyr Tyr Met Cys Trp Val Arg Gln
405 410 415

Ala Pro Gly Lys Gly Leu Glu Trp Ile Gly Cys Ile Tyr Val Gly Ser
420 425 430

His Val Asn Thr Tyr Tyr Ala Asn Trp Ala Lys Gly Arg Phe Thr Ile
435 440 445

Ser Arg Asp Asn Ser Lys Asn Thr Val Tyr Leu Gln Met Asn Ser Leu
450 455 460

Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Thr Ser Gly Ser Ser
465 470 475 480

Val Leu Tyr Phe Lys Phe Trp Gly Gln Gly Thr Leu Val Thr Val Ser
485 490 495

Ser

<210> 27
<211> 491
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial diabody sequence

<400> 27

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

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

Val Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile

35

40

45

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

Ser Arg Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80

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

Thr Phe Gly Thr Gly Thr Lys Val Thr Val Leu Gly Gly Gly Gly Gly
 100 105 110

Ser Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly
 115 120 125

Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Leu Ser Ser
 130 135 140

Tyr Asp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Ala Trp
 145 150 155 160

Ile Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr Tyr Ala Ser Trp Ala
 165 170 175

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Val Tyr
 180 185 190

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Thr Tyr Phe Cys
 195 200 205

Ala Arg Gly Gly Trp Thr Gly Thr Ser His Ser Asn Ile Trp Gly Gln
 210 215 220

Gly Thr Leu Val Thr Val Ser Ser Gly Gly Gly Gly Ser Gly Gly Gly
 225 230 235 240

Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Asp Ile Gln Met
245 250 255

Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly Asp Arg Val Thr
260 265 270

Ile Thr Cys Gln Ser Ser Gln Ser Val Phe Ser Asn Asn Tyr Leu Ala
275 280 285

Trp Phe Gln Gln Lys Pro Gly Gln Ser Pro Lys Arg Leu Ile Tyr Ser
290 295 300

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

Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp
325 330 335

Phe Ala Thr Tyr Tyr Cys Leu Gly Ser Tyr Ala Cys Ser Ser Ala Asp
340 345 350

Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu Gly Gly Gly
355 360 365

Gly Gly Ser Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
370 375 380

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asn Ile
385 390 395 400

Lys Asp Thr Tyr Ile His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
405 410 415

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

Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Ala Asp Thr Ser Lys Asn

435

440

445

Thr Ala Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val
 450 455 460

Tyr Tyr Cys Ser Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr
 465 470 475 480

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
 485 490

<210> 28

<211> 253

<212> PRT

<213> Artificial Sequence

<220>

<223> artificial scFv sequence

<400> 28

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

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

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

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

Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu
 65 70 75 80

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

Ser Ser Ala Asp Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val

100

105

110

Leu Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
 115 120 125

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

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
 145 150 155 160

Phe Ser Leu Ser Ser Tyr Asp Met Ser Trp Val Arg Gln Ala Pro Gly
 165 170 175

Lys Gly Leu Glu Trp Ile Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr
 180 185 190

Tyr Ala Ser Trp Ala Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser
 195 200 205

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

Ala Thr Tyr Phe Cys Ala Arg Gly Gly Trp Thr Gly Thr Ser His Ser
 225 230 235 240

Asn Ile Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
 245 250

<210> 29

<211> 253

<212> PRT

<213> Artificial Sequence

<220>

<223> artificial scFv sequence

<400> 29

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly

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

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

Ala Thr Tyr Phe Cys Ala Arg Gly Gly Trp Thr Gly Thr Ser His Ser
225 230 235 240

Asn Ile Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
245 250

<210> 30

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<212> PRT

<213> Artificial Sequence

<220>

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<400> 30

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

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

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

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

Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu
65 70 75 80

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

Ser Ser Ala Asp Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val
100 105 110

Leu Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
115 120 125

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

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
145 150 155 160

Phe Ser Leu Ser Ser Tyr Asp Met Ser Trp Val Arg Gln Ala Pro Gly
165 170 175

Lys Gly Leu Glu Trp Ile Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr
180 185 190

Tyr Ala Ser Trp Ala Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser
195 200 205

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

Ala Thr Tyr Phe Cys Ala Arg Gly Gly Trp Thr Gly Thr Ser His Ser
225 230 235 240

Asn Ile Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
245 250

<210> 31
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<212> PRT
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<223> artificial scFv sequence

<400> 31

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

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

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

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

Ser Gly Ser Gly Ser Gly Thr His Phe Thr Leu Thr Ile Ser Ser Leu
65 70 75 80

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

Ser Ser Ala Asp Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val
100 105 110

Leu Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
115 120 125

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

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
145 150 155 160

Phe Ser Leu Ser Ser Tyr Asp Met Ser Trp Val Arg Gln Ala Pro Gly
165 170 175

Lys Gly Leu Glu Trp Ile Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr
180 185 190

Tyr Ala Ser Trp Ala Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser
195 200 205

Lys Asn Thr Val Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr

210

215

220

Ala Thr Tyr Phe Cys Ala Arg Gly Gly Trp Thr Gly Thr Ser His Ser
 225 230 235 240

Asn Ile Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
 245 250

<210> 32

<211> 253

<212> PRT

<213> Artificial Sequence

<220>

<223> artificial scFv sequence

<400> 32

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

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

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

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

Ser Gly Ser Gly Ser Gly Thr His Phe Thr Leu Thr Ile Ser Ser Leu
 65 70 75 80

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

Ser Ser Ala Asp Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val
 100 105 110

Leu Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly

115

120

125

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

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
 145 150 155 160

Phe Ser Leu Ser Ser Tyr Asp Met Ser Trp Val Arg Gln Ala Pro Gly
 165 170 175

Lys Gly Leu Glu Trp Ile Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr
 180 185 190

Tyr Ala Ser Trp Ala Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser
 195 200 205

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

Ala Val Tyr Tyr Cys Ala Arg Gly Gly Trp Thr Gly Thr Ser His Ser
 225 230 235 240

Asn Ile Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
 245 250

<210> 33

<211> 253

<212> PRT

<213> Artificial Sequence

<220>

<223> artificial scFv sequence

<400> 33

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

Asp Arg Val Thr Ile Thr Cys Gln Ser Ser Gln Ser Val Phe Ser Asn

20

25

30

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

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

Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu
 65 70 75 80

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

Ser Ser Ala Asp Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val
 100 105 110

Leu Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
 115 120 125

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

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
 145 150 155 160

Phe Ser Leu Ser Ser Tyr Asp Met Ser Trp Val Arg Gln Ala Pro Gly
 165 170 175

Lys Gly Leu Glu Trp Ile Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr
 180 185 190

Tyr Ala Ser Trp Ala Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser
 195 200 205

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

Ala Val Tyr Tyr Cys Ala Arg Gly Gly Trp Thr Gly Thr Ser His Ser
225 230 235 240

Asn Ile Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
245 250

<210> 34
<211> 253
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial scFv sequence

<400> 34

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

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

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

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

Ser Gly Ser Gly Ser Gly Thr His Phe Thr Leu Thr Ile Ser Ser Leu
65 70 75 80

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

Ser Ser Ala Asp Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val
100 105 110

Leu Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
115 120 125

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

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
145 150 155 160

Phe Ser Leu Ser Ser Tyr Asp Met Ser Trp Val Arg Gln Ala Pro Gly
165 170 175

Lys Gly Leu Glu Trp Ile Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr
180 185 190

Tyr Ala Ser Trp Ala Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser
195 200 205

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

Ala Val Tyr Tyr Cys Ala Arg Gly Gly Trp Thr Gly Thr Ser His Ser
225 230 235 240

Asn Ile Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
245 250

<210> 35

<211> 253

<212> PRT

<213> Artificial Sequence

<220>

<223> artificial scFv sequence

<400> 35

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

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

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

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

Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu
65 70 75 80

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

Ser Ser Ala Asp Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val
100 105 110

Leu Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
115 120 125

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

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
145 150 155 160

Phe Ser Leu Ser Ser Tyr Asp Met Ser Trp Val Arg Gln Ala Pro Gly
165 170 175

Lys Gly Leu Ala Trp Ile Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr
180 185 190

Tyr Ala Ser Trp Ala Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser
195 200 205

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

Ala Val Tyr Tyr Cys Ala Arg Gly Gly Trp Thr Gly Thr Ser His Ser

225 230 235 240

$\langle 210 \rangle$	36
$\langle 211 \rangle$	253
$\langle 212 \rangle$	PRT
$\langle 213 \rangle$	Artificial Sequence

<400> 36

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

Asn Tyr Leu Ala Trp Phe Gln Gln Lys Pro Gly Gln Ser Pro Lys Arg
35 40 45

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

Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu
65 70 75 80

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

Ser Ser Ala Asp Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val
100 105 110

Leu Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
115 120 125

Ser Gly Gly Gly Gly Ser Glu Val Gln Leu Val Glu Ser Gly Gly Gly

130

135

140

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
 145 150 155 160

Phe Ser Leu Ser Ser Tyr Asp Met Ser Trp Val Arg Gln Ala Pro Gly
 165 170 175

Lys Gly Leu Glu Trp Ile Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr
 180 185 190

Tyr Ala Ser Trp Ala Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser
 195 200 205

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

Ala Val Tyr Tyr Cys Ala Arg Gly Gly Trp Thr Gly Thr Ser His Ser
 225 230 235 240

Asn Ile Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
 245 250

<210> 37

<211> 253

<212> PRT

<213> Artificial Sequence

<220>

<223> artificial scFv sequence

<400> 37

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

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

Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Arg

35

40

45

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

Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu
 65 70 75 80

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

Ser Ser Ala Asp Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val
 100 105 110

Leu Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
 115 120 125

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

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
 145 150 155 160

Phe Ser Leu Ser Ser Tyr Asp Met Ser Trp Val Arg Gln Ala Pro Gly
 165 170 175

Lys Gly Leu Ala Trp Ile Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr
 180 185 190

Tyr Ala Ser Trp Ala Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser
 195 200 205

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

Ala Val Tyr Tyr Cys Ala Arg Gly Gly Trp Thr Gly Thr Ser His Ser
 225 230 235 240

Asn Ile Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
245 250

<210> 38
<211> 253
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial scFv sequence

<400> 38

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

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

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

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

Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu
65 70 75 80

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

Ser Ser Ala Asp Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val
100 105 110

Leu Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
115 120 125

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

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
145 150 155 160

Phe Ser Leu Ser Ser Tyr Asp Met Ser Trp Val Arg Gln Ala Pro Gly
165 170 175

Lys Gly Leu Ala Trp Ile Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr
180 185 190

Tyr Ala Ser Trp Ala Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser
195 200 205

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

Ala Val Tyr Tyr Cys Ala Arg Gly Gly Trp Thr Gly Thr Ser His Ser
225 230 235 240

Asn Ile Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
245 250

<210> 39
<211> 253
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial scFv sequence

<400> 39

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

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

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

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

Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu
65 70 75 80

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

Ser Ser Ala Asp Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val
100 105 110

Leu Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
115 120 125

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

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
145 150 155 160

Phe Ser Leu Ser Ser Tyr Asp Met Ser Trp Val Arg Gln Ala Pro Gly
165 170 175

Lys Gly Leu Ala Trp Ile Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr
180 185 190

Tyr Ala Ser Trp Ala Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser
195 200 205

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

Ala Thr Tyr Phe Cys Ala Arg Gly Gly Trp Thr Gly Thr Ser His Ser
225 230 235 240

Asn Ile Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser

245

250

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

<220>
 <223> artificial scFv sequence

<400> 40

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

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

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

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

Ser Gly Ser Gly Ser Gly Thr Gln Phe Thr Leu Thr Ile Ser Ser Leu
 65 70 75 80

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

Ser Ser Ala Asp Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val
 100 105 110

Leu Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
 115 120 125

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

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly

145 150 155 160

Lys Gly Leu Ala Trp Ile Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr
180 185 190

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

Asn Ile Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
245 250

<220>
<223> artificial scFv sequence

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

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

50

55

60

Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu
65 70 75 80

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

Ser Ser Ala Asp Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val
100 105 110

Leu Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
115 120 125

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

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Val Ser Gly
145 150 155 160

Phe Ser Leu Ser Ser Tyr Asp Met Ser Trp Val Arg Gln Ala Pro Gly
165 170 175

Lys Gly Leu Ala Trp Ile Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr
180 185 190

Tyr Ala Ser Trp Ala Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser
195 200 205

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

Ala Val Tyr Tyr Cys Ala Arg Gly Gly Trp Thr Gly Thr Ser His Ser
225 230 235 240

Asn Ile Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
245 250

<210> 42
<211> 253
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial scFv sequence

<400> 42

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

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

Asn Tyr Leu Ala Trp Phe Gln Gln Lys Pro Gly Lys Ala Pro Lys Arg
35 40 45

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

Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu
65 70 75 80

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

Ser Ser Ala Asp Cys Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val
100 105 110

Leu Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
115 120 125

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

Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly
145 150 155 160

Phe Ser Leu Ser Ser Tyr Asp Met Ser Trp Val Arg Gln Ala Pro Gly
165 170 175

Lys Gly Leu Glu Trp Ile Gly Ala Ser Tyr Ala Ser Gly Pro Thr Tyr
180 185 190

Tyr Ala Ser Trp Ala Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser
195 200 205

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

Ala Val Tyr Tyr Cys Ala Arg Gly Gly Trp Thr Gly Thr Ser His Ser
225 230 235 240

Asn Ile Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
245 250