

SEQUENCE LISTING

<110> Numab Innovation AG

<120> NOVEL ANTI-CD3 ANTIBODIES

<130> 114035P877PC

<150> US 62/515,293

<151> 2017-06-05

<150> EP17203832.5

<151> 2017-11-27

<160> 42

<170> PatentIn version 3.5

<210> 1

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<400> 1

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

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<400> 2

Ser Ala Ser Thr Leu Ala Ser
1 5

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<400> 3

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

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<211> 114

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<220>

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<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
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<213> Artificial Sequence

<220>
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<400> 7

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

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<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
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<220>

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<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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<213> Artificial Sequence

<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

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<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
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<213> Artificial Sequence

<220>
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<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

<211> 108

<212> PRT

<213> Artificial Sequence

<220>

<223> artificial VL sequence

<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
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<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>
<223> artificial VH sequence

<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
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<213> Artificial Sequence

<220>
<223> artificial diabody sequence

<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
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<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					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> 30
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 <212> PRT

<213> Artificial Sequence

<220>

<223> artificial scFv sequence

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

 <220>
 <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
 Asn Ile Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
 245 250

<210> 36

<211> 253

<212> PRT

<213> Artificial Sequence

<220>

<223> artificial scFv sequence

<400> 36

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 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

<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

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> 41

<211> 253

<212> PRT

<213> Artificial Sequence

<220>

<223> artificial scFv sequence

<400> 41

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 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								