

SEQUENCE LISTING

<110> Blink Biomedical

<120> HUMANIZED, MOUSE OR CHIMERIC ANTI-CD47 MONOCLONAL ANTIBODIES

<130> PAT017/PCT

<160> 176

<170> PatentIn version 3.5

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Lys Tyr Trp Met His
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<223> VT008-AL5-10G7 antibody; heavy chain; CDR2-Kabat

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Gly

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Val Ala Thr Met Val Ala Arg Gly Phe Ala Tyr
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Asp Tyr Tyr Ile Asn
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Trp Ile Phe Pro Gly Ser Gly Leu Thr Tyr Tyr Asn Lys Lys Phe Lys
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Pro Tyr Tyr Gly Ser Arg Trp Asp Tyr Ala Met Asp Tyr
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Lys Ser Ser Gln Ser Leu Leu Asn Ser Asn Asn Gln Lys Asn Tyr Leu
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Asp Tyr Tyr Ile Asn
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Ala

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Phe Ala Ser Thr Lys Glu Ser
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Met Ile His Pro Asn Ser Gly Thr Thr Asn Tyr Asn Glu Lys Phe Lys
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Ser

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Ser His Tyr Tyr Asp Gly His Phe Ser Tyr
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Ser

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Gly Gly Phe Thr Met Asp Phe
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<400> 98

Tyr Ile Tyr Pro Tyr Asn Gly Ile Ser Ser Tyr Asn Gln Lys Phe Lys
 1 5 10 15

Asp

<210> 99

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

<220>
 <223> VT008-AL6-39G2 antibody; heavy chain; CDR3-Kabat

<400> 99

Gly Gly Tyr Thr Met Asp Tyr
 1 5

<210> 100
 <211> 8
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL6-39G2 antibody; heavy chain; CDR1-IMGT

<400> 100

Gly Tyr Ser Phe Thr Gly Tyr Asn
 1 5

<210> 101
 <211> 8
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL6-39G2 antibody; heavy chain; CDR2-IMGT

<400> 101

Ile Tyr Pro Tyr Asn Gly Ile Ser
 1 5

<210> 102
 <211> 9
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL6-39G2 antibody; heavy chain; CDR3-IMGT

<400> 102

Ala Arg Gly Gly Tyr Thr Met Asp Tyr
 1 5

<210> 103
 <211> 16
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL6-39K2 antibody; light chain; CDR1-Kabat

<400> 103

Arg Ser Ser Gln Ser Leu Val Lys Ser Asn Gly Asn Thr Tyr Leu His
 1 5 10 15

<210> 104
 <211> 7
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL6-39K2 antibody; light chain; CDR2-Kabat

<400> 104

Lys Val Ser Asn Arg Phe Ser
 1 5

<210> 105
 <211> 9
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL6-39K2 antibody; light chain; CDR3-Kabat

<400> 105

Ser Gln Thr Thr His Val Pro Tyr Thr
 1 5

<210> 106
 <211> 11
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL6-39K2 antibody; light chain; CDR1-IMGT

<400> 106

Gln Ser Leu Val Lys Ser Asn Gly Asn Thr Tyr
 1 5 10

<210> 107
 <211> 4
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL6-39K2 antibody; light chain; CDR2-IMGT

<400> 107

Lys Val Ser Asn
 1

<210> 108
 <211> 9
 <212> PRT
 <213> Artificial sequence

<220>

<223> VT008-AL6-39K2 antibody; light chain; CDR3-IMGT

<400> 108

Ser Gln Thr Thr His Val Pro Tyr Thr

1 5

<210> 109

<211> 5

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL17-8G5 antibody; heavy chain; CDR1-Kabat

<400> 109

Asp Tyr Tyr Ile Asn

1 5

<210> 110

<211> 17

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL17-8G5 antibody; heavy chain; CDR2-Kabat

<400> 110

Trp Ile Phe Pro Gly Ser Gly Leu Thr Tyr Tyr Asn Lys Lys Phe Lys

1 5 10 15

Gly

<210> 111

<211> 14

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL17-8G5 antibody; heavy chain; CDR3-Kabat

<400> 111

Pro Tyr Tyr Gly Ser Arg Trp Asp Tyr Thr Met Asp Tyr Val

1 5 10

<210> 112

<211> 8

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL17-8G5 antibody; heavy chain; CDR1-IMGT

<400> 112

Gly Tyr Thr Phe Thr Asp Tyr Tyr
1 5

<210> 113
<211> 8
<212> PRT
<213> Artificial sequence

<220>
<223> VL008-AL17-8G5 antibody; heavy chain; CDR2-IMGT

<400> 113

Ile Phe Pro Gly Ser Gly Leu Thr
1 5

<210> 114
<211> 15
<212> PRT
<213> Artificial sequence

<220>
<223> VL008-AL17-8G5 antibody; heavy chain; CDR3-IMGT

<400> 114

Ala Arg Pro Tyr Tyr Gly Ser Arg Trp Asp Tyr Thr Met Asp Tyr
1 5 10 15

<210> 115
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> VL008-AL17-8K7 antibody; light chain; CDR1-Kabat

<400> 115

Lys Ser Ser Gln Asn Leu Leu Asn Ser Asn Asn Gln Lys Asn His Leu
1 5 10 15

Ala

<210> 116
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> VL008-AL17-8K7 antibody; light chain; CDR2-Kabat

<400> 116

Phe Ala Ser Thr Arg Glu Ser
1 5

<210> 117

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

<220>
 <223> VL008-AL17-8K7 antibody; light chain; CDR3-Kabat

<400> 117

Gln Gln His Tyr Thr Thr Pro Tyr Thr
 1 5

<210> 118
 <211> 12
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VL008-AL17-8K7 antibody; light chain; CDR1-IMGT

<400> 118

Gln Asn Leu Leu Asn Ser Asn Asn Gln Lys Asn His
 1 5 10

<210> 119
 <211> 4
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VL008-AL17-8K7 antibody; light chain; CDR2-IMGT

<400> 119

Phe Ala Ser Thr
 1

<210> 120
 <211> 9
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VL008-AL17-8K7 antibody; light chain; CDR3-IMGT

<400> 120

Gln Gln His Tyr Thr Thr Pro Tyr Thr
 1 5

<210> 121
 <211> 120
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL5-10G7 antibody; variable region heavy chain

<400> 121

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

Ser Val Lys Leu Ser Cys Lys Thr Ser Gly Tyr Thr Phe Thr Lys Tyr
 20 25 30

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

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

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

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

Ala Arg Val Ala Thr Met Val Ala Arg Gly Phe Ala Tyr Trp Gly Gln
 100 105 110

Gly Thr Leu Val Thr Val Ser Ala
 115 120

<210> 122

<211> 107

<212> PRT

<213> Artificial sequence

<220>

<223> VT008-AL5-10K7 antibody; variable region light chain

<400> 122

Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser Thr Ser Val Gly
 1 5 10 15

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

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

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

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

Glu Asp Met Ala Val Tyr Tyr Cys Gln Gln Tyr Tyr Ser Ile Pro Trp
 85 90 95

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

<210> 123
 <211> 116
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL6-14G1 antibody; variable region heavy chain

<400> 123

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

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

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

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

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

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

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

Thr Val Ser Ser
 115

<210> 124
 <211> 112
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL6-16K1 antibody; variable region light chain

<400> 124

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

Asp Gln Ala Ser Ile Ser Cys Arg Ala Ser Gln Ser Leu Val His Ser
 20 25 30

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

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

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

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys Ser Gln Ser
 85 90 95

Thr His Val Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys
 100 105 110

<210> 125

<211> 116

<212> PRT

<213> Artificial sequence

<220>

<223> VT008-AL6-18G1 antibody; variable region heavy chain

<400> 125

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

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

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

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

Lys Ser Lys Ala Thr Leu Thr Val Asp Lys Pro Ser Ser Ile 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

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

Thr Val Ser Ser
 115

<210> 126

<211> 112

<212> PRT

<213> Artificial sequence

<220>

<223> VT008-AL6-18K21 antibody; variable region light chain

<400> 126

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

Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Val His Ser
20 25 30

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

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

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

Ser Arg Val Glu Ala Glu Asp Leu Gly Ile Tyr Phe Cys Phe Gln Ser
85 90 95

Thr His Val Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105 110

<210> 127

<211> 122

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL17-7K6 antibody; variable region light chain

<400> 127

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

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

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

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

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

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

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

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

<210> 128
 <211> 113
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VL008-AL17-7K6 antibody; variable region light chain

<400> 128

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

Gln Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
 20 25 30

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

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

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

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

His Tyr Thr Thr Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile
 100 105 110

Lys

<210> 129
 <211> 118
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VL008-AL18-14G4 antibody; variable region heavy chain

<400> 129

Gln Val Gln Leu Lys Gln Ser Gly Ala Glu Leu Val Arg Pro Gly Ala

1 5 10 15
 Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr Asp Tyr
 20 25 30
 Tyr Ile Asn Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
 35 40 45
 Ala Arg Ile Tyr Pro Gly Ile Gly Asn Thr Tyr Tyr Asn Lys Lys Phe
 50 55 60
 Lys Gly Lys Ala Thr Leu Thr Ala Glu Lys Ser Ser Ser Thr Ala Tyr
 65 70 75 80
 Met Gln Leu Asn Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Phe Cys
 85 90 95
 Ala Arg Gly His Tyr Gly Arg Gly Met Asp Tyr Trp Gly Gln Gly Thr
 100 105 110
 Ser Val Thr Val Ser Ser
 115
 <210> 130
 <211> 113
 <212> PRT
 <213> Artificial sequence
 <220>
 <223> VL008-AL18-14K1 antibody; variable region light chain
 <400> 130
 Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Ala Met Ser Val Gly
 1 5 10 15
 Gln Lys Val Thr Met Asn Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
 20 25 30
 Ile Asp Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
 35 40 45
 Ser Pro Lys Leu Leu Val Tyr Phe Ala Ser Thr Lys Glu Ser Gly Val
 50 55 60
 Pro Asp Arg Phe Ile Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
 65 70 75 80
 Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Asp Tyr Phe Cys Gln Gln
 85 90 95

His Tyr Ser Thr Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile
 100 105 110

Lys

<210> 131
 <211> 119
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VL008-AL13-8G5 antibody; variable region heavy chain

<400> 131

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

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

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

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

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

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

Thr Arg Ser His Tyr Tyr Asp Gly His Phe Ser Tyr Trp Gly Gln Gly
 100 105 110

Thr Leu Val Thr Val Ser Ala
 115

<210> 132
 <211> 112
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VL008-AL13-8K3 antibody; variable region light chain

<400> 132

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

Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser

20

25

30

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

Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
 50 55 60

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

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

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

<210> 133

<211> 116

<212> PRT

<213> Artificial sequence

<220>

<223> VT008-AL6-10G3 antibody; variable region heavy chain

<400> 133

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

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

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

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

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

Thr Val Ser Ser
 115

<210> 134
 <211> 112
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL6-10K1 antibody; variable region light chain

<400> 134

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

Asp His Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu His Ser
 20 25 30

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

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

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

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys Phe Gln Ser
 85 90 95

Thr His Val Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
 100 105 110

<210> 135
 <211> 116
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL6-20G7 antibody; variable region heavy chain

<400> 135

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

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

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

Gly Tyr Ile Asn Pro Arg Ser Asp Asp Thr Lys Tyr Asn Gln Lys Phe
 50 55 60

Arg Asp Arg Ala Thr Leu Thr Ala Asp Lys Ser Ser Thr Thr Ala Tyr

65

70

75

80

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

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

Thr Val Ser Ser
 115

<210> 136
 <211> 112
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL6-20K7 antibody; variable region light chain

<400> 136

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

Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu His Ser
 20 25 30

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

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

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

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys Ser Gln Gly
 85 90 95

Thr His Val Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
 100 105 110

<210> 137
 <211> 116
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL6-39G2 antibody; variable region heavy chain

<400> 137

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

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

Asn Ile Tyr Trp Val Lys Gln Ser His Gly Asn Ile Leu Asp Trp Ile
35 40 45

Gly Tyr Ile Tyr Pro Tyr Asn Gly Ile Ser Ser Tyr Asn Gln Lys Phe
50 55 60

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

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

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

Thr Val Ser Ser
115

<210> 138
<211> 112
<212> PRT
<213> Artificial sequence

<220>
<223> VT008-AL6-39K2 antibody; variable region light chain
<400> 138

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

Glu Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Val Lys Ser
20 25 30

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

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

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

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

Thr His Val Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys

100

105

110

<210> 139
 <211> 122
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VL008-AL17-8G5 antibody; variable region heavy chain

<400> 139

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

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

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

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

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

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

Ala Arg Pro Tyr Tyr Gly Ser Arg Trp Asp Tyr Thr Met Asp Tyr Trp
 100 105 110

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

<210> 140
 <211> 113
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VL008-AL17-8K7 antibody; variable region light chain

<400> 140

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

Gln Lys Ala Thr Met Ser Cys Lys Ser Ser Gln Asn Leu Leu Asn Ser
 20 25 30

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

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

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

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

His Tyr Thr Thr Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile
100 105 110

Lys

<210> 141
<211> 118
<212> PRT
<213> Artificial sequence

<220>
<223> VL008-AL18-14G4 antibody; humanized variable region heavy chain;
VH1

<400> 141

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

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

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

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

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

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

Ala Arg Gly His Tyr Gly Arg Gly Met Asp Tyr Trp Gly Gln Gly Thr
100 105 110

Leu Val Thr Val Ser Ser
115

<210> 142
 <211> 118
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VL008-AL18-14G4 antibody; humanized variable region heavy chain;
 VH2

<400> 142

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

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

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

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

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

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

Ala Arg Gly His Tyr Gly Arg Gly Met Asp Tyr Trp Gly Gln Gly Thr
 100 105 110

Leu Val Thr Val Ser Ser
 115

<210> 143
 <211> 118
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VL008-AL18-14G4 antibody; humanized variable region heavy chain;
 VH3

<400> 143

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

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

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

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

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

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

Ala Arg Gly His Tyr Gly Arg Gly Met Asp Tyr Trp Gly Gln Gly Thr
 100 105 110

Ala Val Thr Val Ser Ser
 115

<210> 144

<211> 118

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL18-14G4 antibody; humanized variable region heavy chain;
 VH4

<400> 144

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

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

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

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

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

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

Ala Arg Gly His Tyr Gly Arg Gly Met Asp Tyr Trp Gly Gln Gly Thr
 100 105 110

Thr Val Thr Val Ser Ser
 115

<210> 145

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

<220>
 <223> VL008-AL18-14G4 antibody; humanized variable region heavy chain;
 VH5

<400> 145

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

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

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

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

Lys Gly Arg Val Thr Met Thr Arg Tyr Thr Ser Ile Ser Thr Ala Tyr
 65 70 75 80

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

Ala Arg Gly His Tyr Gly Arg Gly Met Asp Tyr Trp Gly Gln Gly Thr
 100 105 110

Thr Val Thr Val Ser Ser
 115

<210> 146
 <211> 113
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VL008-AL18-14K1 antibody; humanized variable region light chain;
 VL1

<400> 146

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

Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
 20 25 30

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

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

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

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

His Tyr Ser Thr Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile
 100 105 110

Lys

<210> 147
 <211> 113
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VL008-AL18-14K1 antibody; humanized variable region light chain;
 VL2

<400> 147

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

Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
 20 25 30

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

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

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

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

His Tyr Ser Thr Pro Trp Thr Phe Gly Gly Gly Thr Lys Val Glu Ile
 100 105 110

Lys

<210> 148
 <211> 113

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL18-14K1 antibody; humanized variable region light chain;
VL3

<400> 148

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

Glu	Arg	Ala	Thr	Ile	Asn	Cys	Lys	Ser	Ser	Gln	Ser	Leu	Leu	Asn	Ser
			20					25					30		

Ile	Asp	Gln	Lys	Asn	Tyr	Leu	Ala	Trp	Tyr	Gln	Gln	Lys	Ala	Gly	Gln
		35					40					45			

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

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

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

His	Tyr	Ser	Thr	Pro	Trp	Thr	Phe	Gly	Gly	Gly	Thr	Lys	Val	Glu	Ile
			100					105					110		

Lys

<210> 149

<211> 113

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL18-14K1 antibody; humanized variable region light chain;
VL4

<400> 149

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

Glu	Arg	Ala	Thr	Ile	Asn	Cys	Lys	Ser	Ser	Gln	Ser	Leu	Leu	Asn	Ser
			20					25					30		

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

Pro	Pro	Lys	Leu	Leu	Ile	Tyr	Phe	Ala	Ser	Thr	Lys	Glu	Ser	Gly	Val
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

50

55

60

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

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

His Tyr Ser Thr Pro Trp Thr Phe Gly Gly Gly Ala Lys Val Glu Ile
100 105 110

Lys

<210> 150

<211> 113

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL18-14K1 antibody; humanized variable region light chain;
VL5

<400> 150

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

Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
20 25 30

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

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

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

Ile Ser Gly Leu Gln Ala Glu Asp Val Ala Val Tyr Phe Cys Gln Gln
85 90 95

His Tyr Ser Thr Pro Trp Thr Phe Gly Gly Gly Thr Lys Val Glu Ile
100 105 110

Arg

<210> 151

<211> 323

<212> PRT

<213> Homo sapiens

<400> 151

Met Trp Pro Leu Val Ala Ala Leu Leu Leu Gly Ser Ala Cys Cys Gly
 1 5 10 15

Ser Ala Gln Leu Leu Phe Asn Lys Thr Lys Ser Val Glu Phe Thr Phe
 20 25 30

Cys Asn Asp Thr Val Val Ile Pro Cys Phe Val Thr Asn Met Glu Ala
 35 40 45

Gln Asn Thr Thr Glu Val Tyr Val Lys Trp Lys Phe Lys Gly Arg Asp
 50 55 60

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

Phe Ser Ser Ala Lys Ile Glu Val Ser Gln Leu Leu Lys Gly Asp Ala
 85 90 95

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

Thr Cys Glu Val Thr Glu Leu Thr Arg Glu Gly Glu Thr Ile Ile Glu
 115 120 125

Leu Lys Tyr Arg Val Val Ser Trp Phe Ser Pro Asn Glu Asn Ile Leu
 130 135 140

Ile Val Ile Phe Pro Ile Phe Ala Ile Leu Leu Phe Trp Gly Gln Phe
 145 150 155 160

Gly Ile Lys Thr Leu Lys Tyr Arg Ser Gly Gly Met Asp Glu Lys Thr
 165 170 175

Ile Ala Leu Leu Val Ala Gly Leu Val Ile Thr Val Ile Val Ile Val
 180 185 190

Gly Ala Ile Leu Phe Val Pro Gly Glu Tyr Ser Leu Lys Asn Ala Thr
 195 200 205

Gly Leu Gly Leu Ile Val Thr Ser Thr Gly Ile Leu Ile Leu Leu His
 210 215 220

Tyr Tyr Val Phe Ser Thr Ala Ile Gly Leu Thr Ser Phe Val Ile Ala
 225 230 235 240

Ile Leu Val Ile Gln Val Ile Ala Tyr Ile Leu Ala Val Val Gly Leu

245

250

255

Ser Leu Cys Ile Ala Ala Cys Ile Pro Met His Gly Pro Leu Leu Ile
 260 265 270

Ser Gly Leu Ser Ile Leu Ala Leu Ala Gln Leu Leu Gly Leu Val Tyr
 275 280 285

Met Lys Phe Val Ala Ser Asn Gln Lys Thr Ile Gln Pro Pro Arg Lys
 290 295 300

Ala Val Glu Glu Pro Leu Asn Ala Phe Lys Glu Ser Lys Gly Met Met
 305 310 315 320

Asn Asp Glu

<210> 152
 <211> 7
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL18-14K1 antibody; light chain; CDR2-Kabat; CD4+ T cell
 epitope corrected

<400> 152

Tyr Ala Ser Thr Lys Glu Ser
 1 5

<210> 153
 <211> 4
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VT008-AL18-14K1 antibody; light chain; CDR2-IMGT; CD4+ T cell
 epitope corrected

<400> 153

Tyr Ala Ser Thr
 1

<210> 154
 <211> 113
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VL008-AL18-14K1 antibody; variable region light chain; CD4+ T
 cell epitope corrected

<400> 154

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

1 5 10 15
 Gln Lys Val Thr Met Asn Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
 20 25 30
 Ile Asp Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
 35 40 45
 Ser Pro Lys Leu Leu Val Tyr Tyr Ala Ser Thr Lys Glu Ser Gly Val
 50 55 60
 Pro Asp Arg Phe Ile Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
 65 70 75 80
 Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Asp Tyr Phe Cys Gln Gln
 85 90 95
 His Tyr Ser Thr Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile
 100 105 110

Lys

<210> 155
 <211> 113
 <212> PRT
 <213> Artificial sequence

 <220>
 <223> VL008-AL18-14K1 antibody; humanized variable region light chain;
 VL1; CD4+ T cell epitope corrected

 <400> 155

Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
 1 5 10 15
 Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
 20 25 30
 Ile Asp Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
 35 40 45
 Pro Pro Lys Leu Leu Ile Tyr Tyr Ala Ser Thr Lys Glu Ser Gly Val
 50 55 60
 Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
 65 70 75 80
 Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln
 85 90 95

His Tyr Ser Thr Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile
 100 105 110

Lys

<210> 156

<211> 113

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL18-14K1 antibody; humanized variable region light chain;
 VL2; CD4+ T cell epitope corrected

<400> 156

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

Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
 20 25 30

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

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

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

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

His Tyr Ser Thr Pro Trp Thr Phe Gly Gly Gly Thr Lys Val Glu Ile
 100 105 110

Lys

<210> 157

<211> 113

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL18-14K1 antibody; humanized variable region light chain;
 VL3; CD4+ T cell epitope corrected

<400> 157

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

Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
20 25 30

Ile Asp Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Ala Gly Gln
35 40 45

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

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

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

His Tyr Ser Thr Pro Trp Thr Phe Gly Gly Gly Thr Lys Val Glu Ile
100 105 110

Lys

<210> 158

<211> 113

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL18-14K1 antibody; humanized variable region light chain;
VL4; CD4+ T cell epitope corrected

<400> 158

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

Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
20 25 30

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

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

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

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

His Tyr Ser Thr Pro Trp Thr Phe Gly Gly Gly Ala Lys Val Glu Ile
 100 105 110

Lys

<210> 159
 <211> 113
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VL008-AL18-14K1 antibody; humanized variable region light chain;
 VL5; CD4+ T cell epitope corrected

<400> 159

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

Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
 20 25 30

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

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

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

Ile Ser Gly Leu Gln Ala Glu Asp Val Ala Val Tyr Phe Cys Gln Gln
 85 90 95

His Tyr Ser Thr Pro Trp Thr Phe Gly Gly Gly Thr Lys Val Glu Ile
 100 105 110

Arg

<210> 160
 <211> 153
 <212> PRT
 <213> Artificial sequence

<220>
 <223> hu-sCD47-6His; extracellular domain of human CD47 antigen with
 6His-tag

<400> 160

Met Trp Pro Leu Val Ala Ala Leu Leu Leu Gly Ser Ala Cys Cys Gly
 1 5 10 15

Ser Ala Gln Leu Leu Phe Asn Lys Thr Lys Ser Val Glu Phe Thr Phe
 20 25 30

Cys Asn Asp Thr Val Val Ile Pro Cys Phe Val Thr Asn Met Glu Ala
 35 40 45

Gln Asn Thr Thr Glu Val Tyr Val Lys Trp Lys Phe Lys Gly Arg Asp
 50 55 60

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

Phe Ser Ser Ala Lys Ile Glu Val Ser Gln Leu Leu Lys Gly Asp Ala
 85 90 95

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

Thr Cys Glu Val Thr Glu Leu Thr Arg Glu Gly Glu Thr Ile Ile Glu
 115 120 125

Leu Lys Tyr Arg Val Val Ser Trp Phe Ser Pro Ala Ser Ser Ser Gly
 130 135 140

Ser Ser Ser His His His His His
 145 150

<210> 161

<211> 981

<212> DNA

<213> Artificial sequence

<220>

<223> hu-IgG4 S228P; nucleotide sequence of human IgG4 S228P mutant

<400> 161

gctagcacca agggccctc tgtgtttcct ctggccctt gctcccgtc cacctccgaa 60

tctacagccg ctctgggctg cctcgtgaaa gactacttcc ccgagcctgt gacagtgtcc 120

tggaactctg gcgccctgac cagcggagtg cataccttcc ctgctgtgct gcagtcctcc 180

ggcctgtact ccctgtcctc cgtcgtgaca gtgccctcca gctctctggg caccaagacc 240

tatacctgca acgtggacca caagccctcc aacaccaagg tggacaagag agtggaatct 300

aagtacggcc ctccctgccc cccttgtcct gccctgaat ttctgggcgg accctccgtg 360

ttcctgttcc ccccaaagcc taaggacacc ctgatgatct cccggacccc cgaagtgacc 420

tgcgtggtgg tggatgtgtc tcaggaagat cccgaggtgc agttcaattg gtacgtggac 480

ggcgtggaag tgcataatgc caagaccaag cctcgggaag aacagttcaa ctccacctac 540

cgggtggtgt ccgtgctgac cgtgctgcac caggattggc tgaacggcaa agagtacaag 600

```

tgcaaggtgt ccaacaaggg cctgcccagc tccatcgaaa agaccatctc caaggccaag    660
ggccagcccc gggaaccca ggtgtacaca ctgcctccat cccaggaaga gatgaccaag    720
aaccaggtgt ccctgacctg tctcgtgaag ggattctacc cctccgatat cgccgtggaa    780
tgggagtcca acggccagcc tgagaacaac tacaagacca cccccctgt gctggactcc    840
gacggctcct tcttcctgta ctctgcctg accgtggaca agtcccggtg gcaggaaggc    900
aacgtgttct cctgctccgt gatgcacgag gccctgcaca accactacac ccagaagtcc    960
ctgtctctgt ccctgggcaa g                                           981

```

<210> 162

<211> 327

<212> PRT

<213> Artificial sequence

<220>

<223> huIgG4_S228P; amino acid sequence of human IgG4 S228P mutant

<400> 162

```

Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg
1              5              10              15

```

```

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

```

```

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

```

```

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

```

```

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

```

```

Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys
          85              90              95

```

```

Arg Val Glu Ser Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro
          100              105              110

```

```

Glu Phe Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys
          115              120              125

```

```

Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val
          130              135              140

```

```

Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp
145              150              155              160

```

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

Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu
195 200 205

Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg
210 215 220

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

Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp
245 250 255

Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys
260 265 270

Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser
275 280 285

Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser
290 295 300

Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser
305 310 315 320

Leu Ser Leu Ser Leu Gly Lys
325

<210> 163

<211> 981

<212> DNA

<213> Artificial sequence

 $\langle 220 \rangle$

<223> hu-IgG4 S228P-L235E; nucleotide sequence of human IgG4 S228P
double mutant

<400> 163

gctagcacca agggccccctc tgtgttttctt ctggccccctt gctcccggtc cacctccgaa 60

tctacagccg ctctgggctg cctcgtgaaa gactacttcc ccgagcctgt gacagtgtcc 120

tggaactctg gcgccctgac cagcggagtg cataccttcc ctgctgtgct gcagtcctcc 180

ggcctgtact ccctgtcttc cgtcgtgaca gtgccctcca gctctctggg caccaagacc 240

tatacctgca acgtggacca caagccctcc aacaccaagg tggacaagag agtggaatct 300

```

aagtacggcc ctccctgccc ccctgtcct gccctgaat ttgaaggcgg accctccgtg 360
ttcctgttcc ccccaaagcc taaggacacc ctgatgatct cccggacccc cgaagtgacc 420
tgcgtgggtg tggtatgtgc tcaggaagat cccgaggtgc agttcaattg gtacgtggac 480
ggcgtggaag tgcataatgc caagaccaag cctcgggaag aacagttcaa ctccacctac 540
cgggtgggtg ccgtgctgac cgtgctgcac caggattggc tgaacggcaa agagtacaag 600
tgcaagggtg ccaacaaggg cctgcccagc tccatcgaaa agaccatctc caaggccaag 660
ggccagcccc gggaaccca ggtgtacaca ctgcctccat cccaggaaga gatgaccaag 720
aaccaggtgt ccctgacctg tctcgtgaag ggattctacc cctccgatat cgccgtggaa 780
tgggagtcca acggccagcc tgagaacaac tacaagacca cccccctgt gctggactcc 840
gacggctcct tcttctgta ctctgcctg accgtggaca agtcccgtg gcaggaaggc 900
aacgtgttct cctgctccgt gatgcacgag gccctgcaca accactacac ccagaagtcc 960
ctgtctctgt ccctgggcaa g 981

```

<210> 164

<211> 327

<212> PRT

<213> Artificial sequence

<220>

<223> huIgG4_S228P_L235E; amino acid sequence of human IgG4 S228P_L235E double mutant

<400> 164

```

Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg
1           5           10           15

```

```

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

```

```

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

```

```

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

```

```

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

```

```

Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys
85           90           95

```

```

Arg Val Glu Ser Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro
100          105          110

```

```

Glu Phe Glu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys

```

115 120
Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val
130 135 140
Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp
145 150 155 160
Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe
165 170 175
Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp
180 185 190
Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu
195 200 205
Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg
210 215 220
Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys
225 230 235 240
Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp
245 250 255
Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys
260 265 270
Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser
275 280 285
Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser
290 295 300
Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser
305 310 315 320
Leu Ser Leu Ser Leu Gly Lys
325

<210> 165
<211> 444
<212> PRT
<213> Artificial sequence

<220>
<223> h20-H2-L5Y; heavy chain in huIgG4_S228P format

<400> 165

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

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

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

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

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

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

Ala Arg Gly His Tyr Gly Arg Gly Met Asp Tyr Trp Gly Gln Gly Thr
 100 105 110

Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro
 115 120 125

Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly
 130 135 140

Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn
 145 150 155 160

Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln
 165 170 175

Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser
 180 185 190

Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn Val Asp His Lys Pro Ser
 195 200 205

Asn Thr Lys Val Asp Lys Arg Val Glu Ser Lys Tyr Gly Pro Pro Cys
 210 215 220

Pro Pro Cys Pro Ala Pro Glu Phe Leu Gly Gly Pro Ser Val Phe Leu
 225 230 235 240

Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu
 245 250 255

Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln

260

265

270

Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys
 275 280 285

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

Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys
 305 310 315 320

Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys
 325 330 335

Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser
 340 345 350

Gln Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys
 355 360 365

Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
 370 375 380

Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly
 385 390 395 400

Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln
 405 410 415

Glu Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
 420 425 430

His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly
 435 440

<210> 166

<211> 444

<212> PRT

<213> Artificial sequence

<220>

<223> h20-H2 ; heavy chain in hu-IgG4_S228P_L325E format

<400> 166

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

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

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

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

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

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

Ala Arg Gly His Tyr Gly Arg Gly Met Asp Tyr Trp Gly Gln Gly Thr
 100 105 110

Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro
 115 120 125

Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly
 130 135 140

Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn
 145 150 155 160

Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln
 165 170 175

Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser
 180 185 190

Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn Val Asp His Lys Pro Ser
 195 200 205

Asn Thr Lys Val Asp Lys Arg Val Glu Ser Lys Tyr Gly Pro Pro Cys
 210 215 220

Pro Pro Cys Pro Ala Pro Glu Phe Glu Gly Gly Pro Ser Val Phe Leu
 225 230 235 240

Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu
 245 250 255

Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln
 260 265 270

Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys
 275 280 285

Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu

290 295 300
 Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys
 305 310 315 320
 Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys
 325 330 335
 Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser
 340 345 350
 Gln Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys
 355 360 365
 Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
 370 375 380
 Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly
 385 390 395 400
 Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln
 405 410 415
 Glu Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
 420 425 430
 His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly
 435 440

 <210> 167
 <211> 220
 <212> PRT
 <213> Artificial sequence

 <220>
 <223> h20-L5Y antibody; light chain

 <400> 167

 Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
 1 5 10 15
 Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
 20 25 30
 Ile Asp Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
 35 40 45
 Pro Pro Lys Leu Leu Ile Tyr Tyr Ala Ser Thr Lys Glu Ser Gly Val
 50 55 60

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

Ile Ser Gly Leu Gln Ala Glu Asp Val Ala Val Tyr Phe Cys Gln Gln
85 90 95

His Tyr Ser Thr Pro Trp Thr Phe Gly Gly Gly Thr Lys Val Glu Ile
100 105 110

Arg Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp
115 120 125

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

Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu
145 150 155 160

Gln Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp
165 170 175

Ser Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr
180 185 190

Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser
195 200 205

Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
210 215 220

<210> 168

<211> 119

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL13-8G5 antibody; humanized variable region heavy chain;
VH1m

<400> 168

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

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

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

Gly Met Ile His Pro Asn Ser Gly Thr Thr Asn Tyr Asn Gln Lys Phe
50 55 60

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

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

Thr Arg Ser His Tyr Tyr Asp Gly His Phe Ser Tyr Trp Gly Gln Gly
100 105 110

Thr Leu Val Thr Val Ser Ser
115

<210> 169

<211> 119

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL13-8G5 antibody; humanized variable region heavy chain;
VH2m

<400> 169

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

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

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

Gly Met Ile His Pro Asn Ser Gly Thr Thr Asn Tyr Asn Gln Lys Phe
50 55 60

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

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

Thr Arg Ser His Tyr Tyr Asp Gly His Phe Ser Tyr Trp Gly Gln Gly
100 105 110

Thr Leu Val Thr Val Ser Ser
115

<210> 170

<211> 119

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL13-8G5 antibody; humanized variable region heavy chain;
VH3

<400> 170

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

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

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

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

Lys	Ser	Arg	Val	Thr	Met	Thr	Arg	Asp	Thr	Ser	Thr	Ser	Thr	Val	Tyr
65					70					75					80

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

Thr	Arg	Ser	His	Tyr	Tyr	Asp	Gly	His	Phe	Ser	Tyr	Trp	Gly	Gln	Gly
			100					105					110		

Thr	Leu	Val	Thr	Val	Ser	Ser
						115

<210> 171

<211> 119

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL13-8G5 antibody; humanized variable region heavy chain;
VH4

<400> 171

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

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

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

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

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

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

Thr Arg Ser His Tyr Tyr Asp Gly His Phe Ser Tyr Trp Gly Gln Gly
100 105 110

Thr Met Val Thr Val Ser Ser
115

<210> 172

<211> 112

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL13-8K3 antibody; humanized variable region light chain;
VL1

<400> 172

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

Glu Arg Ala Thr Phe Asn Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
20 25 30

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

Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

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

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

Ser Tyr Asn Leu Trp Thr Phe Gly Gly Gly Thr Lys Val Glu Val Lys
100 105 110

<210> 173

<211> 112

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL13-8K3 antibody; humanized variable region light chain;
VL2

<400> 173

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

Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
 20 25 30

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

Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
 50 55 60

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

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

Ser Tyr Asn Leu Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
 100 105 110

<210> 174

<211> 112

<212> PRT

<213> Artificial sequence

<220>

<223> VL008-AL13-8K3 antibody; humanized variable region light chain;
 VL3

<400> 174

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

Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
 20 25 30

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

Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
 50 55 60

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

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

Ser Tyr Asn Leu Trp Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
 100 105 110

<210> 175
 <211> 112
 <212> PRT
 <213> Artificial sequence

<220>
 <223> VL008-AL13-8K3 antibody; humanized variable region light chain;
 VL4

<400> 175

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

Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
 20 25 30

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

Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
 50 55 60

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

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

Ser Tyr Asn Leu Trp Thr Phe Gly Gln Gly Thr Arg Leu Glu Ile Lys
 100 105 110

<210> 176
 <211> 107
 <212> PRT
 <213> Artificial sequence

<220>
 <223> Constant region of human kappa light chain

<400> 176

Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu
 1 5 10 15

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

Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln
 35 40 45

Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser
 50 55 60

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

Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser
 85 90 95

Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
 100 105