SEQUENCE LISTING

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<120> ANTI-C16ORF54 ANTIBODIES AND METHODS OF USE THEREOF

<130> 13390-004-228

<140>
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<150> 61/834,870
<151> 2013-06-13

<160> 319

<170> FastSEQ for Windows Version 4.0

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<213> homo sapiens

<220>
<223> human C16orf54

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Ala Trp Glu Ala Ala Pro Trp Pro Ser Leu Pro Cys Gly Pro Cys Ile
20 25 30
Pro Ile Met Leu Val Leu Ala Thr Leu Ala Ala Leu Phe Ile Leu Thr
35 40 45
Thr Ala Val Leu Ala Glu Arg Leu Phe Arg Arg Ala Leu Arg Pro Asp
50 55 60
Pro Ser His Arg Ala Pro Thr Leu Val Trp Arg Pro Gly Gly Glu Leu
65 70 75 80
Trp Ile Glu Pro Met Gly Thr Ala Arg Glu Arg Ser Glu Asp Trp Tyr
85 90 95
Gly Ser Ala Val Pro Leu Leu Thr Asp Arg Ala Pro Glu Pro Pro Thr
100 105 110
Gln Val Gly Thr Leu Glu Ala Arg Ala Thr Ala Pro Pro Ala Pro Ser
115 120 125
Ala Pro Asn Ser Ala Pro Ser Asn Leu Gly Pro Gln Thr Val Leu Glu
130 135 140
Val Pro Ala Arg Ser Thr Phe Trp Gly Pro Gln Pro Trp Glu Gly Arg
145 150 155 160
Pro Pro Ala Thr Gly Leu Val Ser Trp Ala Glu Pro Glu Gln Arg Pro
165 170 175
Glu Ala Ser Val Gln Phe Gly Ser Pro Gln Ala Arg Arg Gln Arg Pro
180 185 190
Gly Ser Pro Asp Pro Glu Trp Gly Leu Gln Pro Arg Val Thr Leu Glu
195 200 205
Gln Ile Ser Ala Phe Trp Lys Arg Glu Gly Arg Thr Ser Val Gly Phe
210 215 220

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<212> DNA
<213> homo sapiens

<220>
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ctggctgcgc tcttcatcct caccaccgct gtgttggctg aacgcctgtt ccgccgtgct 180
ctccgcccag accccagcca ccgtgcaccc accctggtgt ggcgcccagg aggagagctg 240
tggattgagc ccatgggcac cgcccgagag cgctctgagg actggtatgg ctctgcggtc 300
cccctgctga cagatcgggc ccctgagcct cccacccagg tgggcacttt ggaggcccga 360
gcaacagccc cacctgcccc ctcagcccca aattctgctc ccagcaactt gggcccccag 420
accgtactgg aggtcccagc ccggagcacc ttctgggggc cccagccctg ggaggggagg 480
ccccccgcca caggcctggt gagctgggct gaacccgagc agaggccaga ggccagcgtc 540
cagtttggga gcccccaggc caggaggcag cggccaggga gcccggatcc tgagtggggc 600
ctccagccac gggtcacctt ggagcagatc tcagctttct ggaagcgtga aggccggacc 660
agtgtggggt tctga   675

<210> 3
<211> 414
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<220>
<223> R29-7-2A heavy chain variable region

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tgtgtagcct ctggattctc cttcaatacc cacgccatga actgggtccg tcaggctcca 180
ggaaagggtt tggaatgggt tgctcgcata agaagtaaaa gtaataatta tgcaagatat 240
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tatctgcaaa tgaacaactt gaaaactgag gacacagcca tgtattactg tgtaaaacag 360
ggggacgggg ggtttgctta ctggggccaa gggaccctgg tcactgtctc tgca   414

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<212> PRT
<213> Artificial Sequence

<220>
<223> R29-7-2A heavy chain variable region

<400> 4
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Val Pro Cys Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Ile Gln
            20   25   30
Pro Lys Gly Ser Leu Lys Leu Ser Cys Val Ala Ser Gly Phe Ser Phe
        35   40   45
Asn Thr His Ala Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
    50   55   60
Glu Trp Val Ala Arg Ile Arg Ser Lys Ser Asn Asn Tyr Ala Arg Tyr
65   70   75   80
Tyr Ala Asp Ser Val Lys Asp Arg Phe Thr Ile Ser Arg Asp Asp Ser
                85   90   95
Gln Ser Ile Leu Tyr Leu Gln Met Asn Asn Leu Lys Thr Glu Asp Thr
            100   105   110
Ala Met Tyr Tyr Cys Val Lys Gln Gly Asp Gly Gly Phe Ala Tyr Trp
        115   120   125
Gly Gln Gly Thr Leu Val Thr Val Ser Ala
    130   135

<210> 5
<211> 399

<212> DNA
<213> Artificial Sequence

<220>
<223> R29-7-2A light chain variable region

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atgagctgca agtccagtca gagcctttta tatagtagca atcaaaagaa ctacttggcc 180
tggtaccagc agagaccagg gcagtctcct aaactactga tttactgggc atccgctagg 240
gaatctgggg tccctgatcg cttcacaggc agtggatctg ggacagattt cactctcacc 300
atcagcagtg tgaaggctga agacctggca gtttattact gtcagcaata ttatagctat 360
cctcccacgt tcggtgctgg gaccaaggtg gagctgaaa 399

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

<220>
<223> R29-7-2A light chain variable region

<400> 6
Met Asp Ser Gln Ala Gln Val Leu Met Leu Leu Leu Leu Trp Val Ser
 1   5   10   15
Gly Thr Cys Gly Asp Ile Val Met Ser Gln Ser Pro Ser Ser Leu Ala
            20   25   30
Val Ser Val Gly Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser
        35   40   45
Leu Leu Tyr Ser Ser Asn Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln
    50   55   60
Arg Pro Gly Gln Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Ala Arg
65   70   75   80
Glu Ser Gly Val Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp
                85   90   95
Phe Thr Leu Thr Ile Ser Ser Val Lys Ala Glu Asp Leu Ala Val Tyr
            100   105   110
Tyr Cys Gln Gln Tyr Tyr Ser Tyr Pro Pro Thr Phe Gly Ala Gly Thr
        115   120   125
Lys Val Glu Leu Lys
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<210> 7
<211> 417
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-7-1C heavy chain variable region

<400> 7
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cagcttcagg agtcgggacc tggcctggtg aaaccttctc agtctctgtc cctcacctgc 120
actgtcactg gctactcaat caccagtgat tatgcctgga actggatccg gcagtttcca 180
ggaaacaaac tggagtggat gggctacata agctacagtg gtagtattag gtacaaccca 240
tctctcaaaa gtcgaatctc tatcactcga gacacatcca agaaccagtt cttcctgcag 300
ttgaattctg tgactactga ggacacagcc acatattact gtgcaagaga gaagtatgat 360
aactattact atgctatgga ctactggggt caaggaacct cagtcaccgt ctcctca 417

<210> 8
<211> 139
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-7-1C heavy chain variable region

<400> 8
Met Arg Val Leu Ile Leu Leu Trp Leu Phe Thr Ala Phe Pro Gly Ile
 1   5   10   15
Leu Ser Asp Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro
            20   25   30
Ser Gln Ser Leu Ser Leu Thr Cys Thr Val Thr Gly Tyr Ser Ile Thr
        35   40   45
Ser Asp Tyr Ala Trp Asn Trp Ile Arg Gln Phe Pro Gly Asn Lys Leu
    50   55   60
Glu Trp Met Gly Tyr Ile Ser Tyr Ser Gly Ser Ile Arg Tyr Asn Pro
65   70   75   80
Ser Leu Lys Ser Arg Ile Ser Ile Thr Arg Asp Thr Ser Lys Asn Gln
                85   90   95
Phe Phe Leu Gln Leu Asn Ser Val Thr Thr Glu Asp Thr Ala Thr Tyr
            100   105   110
Tyr Cys Ala Arg Glu Lys Tyr Asp Asn Tyr Tyr Tyr Ala Met Asp Tyr
        115   120   125
Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser
    130   135

<210> 9
<211> 396
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-7-1C light chain variable region

<400> 9
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gacattgtaa tgtcacagtc tccatcctcc ctagctgtgt cagttggaga gaaggttact 120
ctgagctgca agtccagtca gaacctttta tatagtacca atcaaaagaa ctacttggcc 180
tggtaccagc agaaaccagg gcagtctcct aaactgctga tttactgggc atccactagg 240
gaatctgggg tccctgatcg cttcacaggc agtggatctg ggacagattt cactctcacc 300
atcagcagtg tgaaggctga ggacctggca gtttattact gtcagcaata ttatagctat 360
cggacgttcg gtggaggcac caagctggaa atcaaa   396

<210> 10
<211> 132
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-7-1C light chain variable region

<400> 10
Met Asp Ser Gln Ala Gln Val Leu Met Leu Leu Leu Leu Trp Val Ser
 1   5   10   15
Gly Thr Cys Gly Asp Ile Val Met Ser Gln Ser Pro Ser Ser Leu Ala
            20   25   30
Val Ser Val Gly Glu Lys Val Thr Leu Ser Cys Lys Ser Ser Gln Asn
        35   40   45
Leu Leu Tyr Ser Thr Asn Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln
    50   55   60
Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
65   70   75   80
Glu Ser Gly Val Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp
                85   90   95
Phe Thr Leu Thr Ile Ser Ser Val Lys Ala Glu Asp Leu Ala Val Tyr
            100   105   110
Tyr Cys Gln Gln Tyr Tyr Ser Tyr Arg Thr Phe Gly Gly Gly Thr Lys
        115   120   125
Leu Glu Ile Lys
    130

<210> 11
<211> 417
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-67-7A heavy chain variable region

<400> 11
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cagcttcagg agtcgggacc tggcctggtg aaaccttctc agtctctgtc cctcacctgc 120
actgtcactg gctactcaat caccagtgat tatgcctgga actggatccg gcagtttcca 180
ggaaacaaac tggagtggat gggctacata aactacagtg gtcgcactag atataaccca 240
tctctcaata gtcgcatctc tctcactcga gacacatcca cgaaccagtt cttcctgcag 300
ttgaattctg tgactactga ggacacagcc acatattact gtgcaagaga gaactatgat 360
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<210> 12
<211> 139
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-67-7A heavy chain variable region

<400> 12
Met Arg Val Leu Ile Leu Leu Trp Leu Phe Thr Ala Phe Pro Gly Ile
 1   5   10   15
Leu Ser Asp Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro
            20   25   30
Ser Gln Ser Leu Ser Leu Thr Cys Thr Val Thr Gly Tyr Ser Ile Thr
        35   40   45
Ser Asp Tyr Ala Trp Asn Trp Ile Arg Gln Phe Pro Gly Asn Lys Leu
    50   55   60
Glu Trp Met Gly Tyr Ile Asn Tyr Ser Gly Arg Thr Arg Tyr Asn Pro
65   70   75   80
Ser Leu Asn Ser Arg Ile Ser Leu Thr Arg Asp Thr Ser Thr Asn Gln
                85   90   95
Phe Phe Leu Gln Leu Asn Ser Val Thr Thr Glu Asp Thr Ala Thr Tyr
            100   105   110
Tyr Cys Ala Arg Glu Asn Tyr Asp Tyr Glu Phe Tyr Ala Met Asp Tyr
        115   120   125
Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser
    130   135

<210> 13
<211> 396
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-67-7A light chain variable region

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atgagctgca agtccagtca gaacctttta tatagtagca atcaaaagaa ctacttggcc 180
tggtaccagc agaaaccagg gcagtctcct aaactgctga tttactgggc atccactagg 240
gaatctgggg tccctgatcg cttcacaggc agtggatctg ggacagattt cactctcacc 300
atcagcagtg tgaaggctga agacctggca gtttattact gtcagcaata ttatatctat 360
cggacgttcg gtggaggcac caagctggaa atcaaa 396

<210> 14
<211> 132
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-67-7A light chain variable region

<400> 14
Met Glu Ser Gln Ala Gln Val Leu Met Leu Leu Leu Leu Trp Val Ser
 1   5   10   15
Gly Thr Cys Gly Asp Ile Val Met Ser Gln Ser Pro Ser Ser Leu Ala
            20   25   30
Val Ser Val Gly Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Asn
        35   40   45
Leu Leu Tyr Ser Ser Asn Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln
    50   55   60
Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
65   70   75   80
Glu Ser Gly Val Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp
                85   90   95
Phe Thr Leu Thr Ile Ser Ser Val Lys Ala Glu Asp Leu Ala Val Tyr
            100   105   110
Tyr Cys Gln Gln Tyr Tyr Ile Tyr Arg Thr Phe Gly Gly Gly Thr Lys
        115   120   125
Leu Glu Ile Lys
    130

<210> 15
<211> 417
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-136C heavy chain variable region

<400> 15
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cagcttcagg agtcgggacc tggcctggtg aaaccttctc agtctctgtc cctcacctgc 120
actgtcactg gctactcaat caccagtgat tatgcctgga actggatccg gcagtttcca 180
ggaaacaaac tggagtggat gggctacata aactatagtg gtagtagtag gtacaaccca 240
tctctcaaaa gtcgaatctc tatcactcga gacacatcca agaaccactt cttcctgcag 300
ttgaattctg tgactcctga ggacacagcc acatatcatt gtgcaagaga gaggtacgac 360
ggggtttatt atggtatgga ctactggggt caaggaacct cagtcaccgt gtcctca   417

<210> 16
<211> 139
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-136C heavy chain variable region

<400> 16
Met Arg Val Leu Ile Leu Leu Trp Leu Phe Thr Ala Phe Pro Gly Ile
 1   5   10   15
Leu Ser Asp Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro
            20   25   30
Ser Gln Ser Leu Ser Leu Thr Cys Thr Val Thr Gly Tyr Ser Ile Thr
        35   40   45
Ser Asp Tyr Ala Trp Asn Trp Ile Arg Gln Phe Pro Gly Asn Lys Leu
    50   55   60
Glu Trp Met Gly Tyr Ile Asn Tyr Ser Gly Ser Ser Arg Tyr Asn Pro
65   70   75   80
Ser Leu Lys Ser Arg Ile Ser Ile Thr Arg Asp Thr Ser Lys Asn His
                85   90   95
Phe Phe Leu Gln Leu Asn Ser Val Thr Pro Glu Asp Thr Ala Thr Tyr
            100   105   110
His Cys Ala Arg Glu Arg Tyr Asp Gly Val Tyr Tyr Gly Met Asp Tyr
        115   120   125
Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser
    130   135

<210> 17
<211> 396
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-136C light chain variable region

<400> 17
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atgagctgca agtccagtca gagcctttta tatagtagca atcaaaagaa ctacttggcc 180
tggtaccagc agaaaccagg gcagtctcct aaactgctga tttactgggc atccactagg 240
gaatctgggg tccctgatcg cttcacaggc agtggatctg ggacagattt cactctcacc 300
atcagcagtg tgaagactga agacctggca gtttattact gtcagcaata ttatagctat 360
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<210> 18
<211> 132
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-136C light chain variable region

<400> 18
Met Asp Ser Gln Ala Gln Val Leu Met Ser Leu Leu Leu Trp Val Ser
 1   5   10   15
Gly Thr Cys Gly Asp Ile Val Met Ser Gln Ser Pro Ser Ser Leu Ala
            20   25   30
Val Ser Val Gly Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser
        35   40   45
Leu Leu Tyr Ser Ser Asn Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln
    50   55   60
Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
65   70   75   80
Glu Ser Gly Val Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp
                85   90   95
Phe Thr Leu Thr Ile Ser Ser Val Lys Thr Glu Asp Leu Ala Val Tyr
            100   105   110
Tyr Cys Gln Gln Tyr Tyr Ser Tyr Arg Thr Phe Gly Gly Gly Thr Lys
        115   120   125
Leu Glu Ile Lys
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<210> 19
<211> 417
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-57B heavy chain variable region

<400> 19
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cagcttcagg agtcgggacc tggcctggtg aaaccttctc agtctctgtc cctcacctgc 120
actgtcactg gctactcaat caccagtgat tatgcctgga actggatccg gcagtttcca 180
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<210> 20
<211> 139
<212> PRT

<213> Artificial Sequence

<220>
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<400> 20
Met Arg Val Leu Ile Leu Leu Trp Leu Phe Thr Ala Phe Pro Gly Ile
 1   5   10   15
Leu Ser Asp Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro
            20   25   30
Ser Gln Ser Leu Ser Leu Thr Cys Thr Val Thr Gly Tyr Ser Ile Thr
        35   40   45
Ser Asp Tyr Ala Trp Asn Trp Ile Arg Gln Phe Pro Gly Asn Lys Leu
    50   55   60
Glu Trp Met Gly Tyr Ile Asn Tyr Ser Gly Ser Thr Arg Tyr Asn Pro
65   70   75   80
Ser Leu Lys Ser Arg Ile Ser Ile Thr Arg Asp Thr Ser Lys Asn His
                85   90   95
Phe Phe Leu Gln Leu Asn Ser Val Thr Pro Glu Asp Thr Ala Thr Tyr
            100   105   110
His Cys Ala Arg Glu Arg Tyr Asp Gly Val Tyr Tyr Gly Met Asp Tyr
        115   120   125
Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser
    130   135

<210> 21
<211> 396
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-57B light chain variable region

<400> 21
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<210> 22
<211> 132
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-57B light chain variable region

<400> 22
Met Asp Ser Gln Ala Gln Val Leu Met Ser Leu Leu Leu Trp Val Ser
 1   5   10   15
Gly Thr Cys Gly Asp Ile Val Met Ser Gln Ser Pro Ser Ser Leu Ala
            20   25   30
Val Ser Val Gly Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser
        35   40   45
Leu Leu Tyr Ser Ser Asn Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln
    50   55   60
Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
65   70   75   80
Glu Ser Gly Val Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp
                85   90   95
Phe Thr Leu Thr Ile Ser Ser Val Lys Thr Glu Asp Leu Ala Val Tyr
            100   105   110
Tyr Cys Gln Gln Tyr Tyr Ser Tyr Arg Thr Phe Gly Gly Gly Thr Lys
        115   120   125

Leu Glu Ile Lys
130

<210> 23
<211> 408
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-7-54C heavy chain variable region

<400> 23
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gtgcagctga aggagtcagg acctggcctg gtggcgccct cacagagcct gtccatcaca 120
tgcactgtct cagggttctc attaaccgac tatgccataa gctggattcg ccagcctcca 180
ggaaagggtc tggagtggct gggagtaata tggggtggtg gaagaacata ctctaattca 240
gctctcaaat ccagactgag catcagcaag gacaactcca ggagccaaat tttcttaaaa 300
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<210> 24
<211> 136
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-7-54C heavy chain variable region

<400> 24
Met Ala Val Leu Gly Leu Leu Leu Cys Leu Val Thr Phe Pro Ser Cys
 1   5   10   15
Val Leu Ser Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala
            20   25   30
Pro Ser Gln Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu
        35   40   45
Thr Asp Tyr Ala Ile Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu
    50   55   60
Glu Trp Leu Gly Val Ile Trp Gly Gly Gly Arg Thr Tyr Ser Asn Ser
65   70   75   80
Ala Leu Lys Ser Arg Leu Ser Ile Ser Lys Asp Asn Ser Arg Ser Gln
                85   90   95
Ile Phe Leu Lys Met Asn Ser Leu Gln Thr Asp Asp Thr Ala Met Tyr
            100   105   110
Tyr Cys Ala Lys His Glu Glu Val Ser Arg Phe Ala Tyr Trp Gly Gln
        115   120   125
Gly Thr Leu Val Thr Val Ser Val
    130   135

<210> 25
<211> 393
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-7-54C light chain variable region

<400> 25
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gttgtgctga cccaaactcc actctccctg cctgtcagtc ttggagatca agcctccatc 120
tcttgcagat ctagtcagag ccttgtttat agtaatggaa acagctattt acattggtac 180
ctgcagaagc caggccagtc tccaaagctc ctgatctaca aagtttccaa ccgattttct 240
ggggtcccag acaggttcag tggcagtgga tcagggacag atttcacact caagatcact 300
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<210> 26

<211> 131
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-7-54C light chain variable region

<400> 26
Met Lys Leu Pro Val Arg Leu Leu Val Leu Met Phe Trp Ile Pro Ala
 1   5   10   15
Ser Ile Ser Asp Val Val Leu Thr Gln Thr Pro Leu Ser Leu Pro Val
            20   25   30
Ser Leu Gly Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu
        35   40   45
Val Tyr Ser Asn Gly Asn Ser Tyr Leu His Trp Tyr Leu Gln Lys Pro
    50   55   60
Gly Gln Ser Pro Lys Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser
65   70   75   80
Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr
                85   90   95
Leu Lys Ile Thr Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys
            100   105   110
Ser Gln Ser Thr His Ile Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu
        115   120   125
Glu Leu Lys
    130

<210> 27
<211> 408
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-7-53A heavy chain variable region

<400> 27
atggctgtcc tggggctgct tctctgcctg gtgacgttcc caagctgtgt cctgtcccag 60
gtgcagctga aggagtcagg acctggcctg gtggcgccct cacagagcct gtccatcaca 120
tgcactgtct cagggttctc attaaccgac tatgccataa gctggattcg ccagcctcca 180
ggaaagggtc tggagtggct gggagtaata tggggtggtg gaagaacata ctctaattca 240
gctctcaaat ccagactgag catcagcaag gacaactcca ggagccaaat tttcttaaaa 300
atgaacagtc tgcaaactga tgacacagcc atgtactact gtgccaaaca tgaggaggta 360
tcccgttttg cttactgggg ccaagggact ctggtcactg tctctgta   408

<210> 28
<211> 136
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-7-53A heavy chain variable region

<400> 28
Met Ala Val Leu Gly Leu Leu Leu Cys Leu Val Thr Phe Pro Ser Cys
 1   5   10   15
Val Leu Ser Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala
            20   25   30
Pro Ser Gln Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu
        35   40   45
Thr Asp Tyr Ala Ile Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu
    50   55   60
Glu Trp Leu Gly Val Ile Trp Gly Gly Gly Arg Thr Tyr Ser Asn Ser
65   70   75   80
Ala Leu Lys Ser Arg Leu Ser Ile Ser Lys Asp Asn Ser Arg Ser Gln
                85   90   95
Ile Phe Leu Lys Met Asn Ser Leu Gln Thr Asp Asp Thr Ala Met Tyr
            100   105   110

Tyr Cys Ala Lys His Glu Glu Val Ser Arg Phe Ala Tyr Trp Gly Gln
        115   120   125
Gly Thr Leu Val Thr Val Ser Val
    130   135

<210> 29
<211> 393
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-7-53A light chain variable region

<400> 29
atgaagttgc ctgttaggct gttggtgctg atgttctgga ttcctgcttc catcagtgat 60
gttgtgctga cccaaactcc actctccctg cctgtcagtc ttggagatca agcctccatc 120
tcttgcagat ctagtcagag ccttgtttat agtaatggaa acagctattt acattggtac 180
ctgcagaagc caggccagtc tccaaagctc ctgatctaca aagtttccaa ccgattttct 240
ggggtcccag acaggttcag tggcagtgga tcagggacag atttcacact caagatcact 300
agagtggagg ctgaggatct gggagtttat ttctgctctc aaagtacaca tattccgctc 360
acgttcggtg ctgggaccaa gctggagctg aaa   393

<210> 30
<211> 131
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-7-53A light chain variable region

<400> 30
Met Lys Leu Pro Val Arg Leu Leu Val Leu Met Phe Trp Ile Pro Ala
 1   5   10   15
Ser Ile Ser Asp Val Val Leu Thr Gln Thr Pro Leu Ser Leu Pro Val
            20   25   30
Ser Leu Gly Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu
        35   40   45
Val Tyr Ser Asn Gly Asn Ser Tyr Leu His Trp Tyr Leu Gln Lys Pro
    50   55   60
Gly Gln Ser Pro Lys Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser
65   70   75   80
Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr
                85   90   95
Leu Lys Ile Thr Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys
            100   105   110
Ser Gln Ser Thr His Ile Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu
        115   120   125
Glu Leu Lys
    130

<210> 31
<211> 402
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-50C heavy chain variable region

<400> 31
atgaacttcg ggttcagctt gattttcctt gtccttgttt caaaaggtgt ccagtgtgaa 60
gtgaagctgg tggagtctgg gggaggctta gtgaagcctg gagggtccct gaaattctcc 120
tgtgcagcct ctggattcac tttcagtagc tatgccgtgt cttgggttcg ccagactcca 180
gagaagaggc tggagtgggt cgcatccatt actagtggtg gtagaaccta ctatccagac 240
agtgtgaagg gccgattcac catctccaga gataatgcca ggagcatgtt gtacctgcac 300
atgagcagtc tgaggtctga ggacacggcc atgtattact gtacaagagg ctgggacgag 360
aatgacttat ggggccaagg caccactctc accgtctcct ca   402

<210> 32
<211> 134
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-50C heavy chain variable region

<400> 32
Met Asn Phe Gly Phe Ser Leu Ile Phe Leu Val Leu Val Ser Lys Gly
 1   5   10   15
Val Gln Cys Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Lys
            20   25   30
Pro Gly Gly Ser Leu Lys Phe Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35   40   45
Ser Ser Tyr Ala Val Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu
    50   55   60
Glu Trp Val Ala Ser Ile Thr Ser Gly Gly Arg Thr Tyr Tyr Pro Asp
65   70   75   80
Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Arg Ser Met
                85   90   95
Leu Tyr Leu His Met Ser Ser Leu Arg Ser Glu Asp Thr Ala Met Tyr
            100   105   110
Tyr Cys Thr Arg Gly Trp Asp Glu Asn Asp Leu Trp Gly Gln Gly Thr
        115   120   125
Thr Leu Thr Val Ser Ser
    130

<210> 33
<211> 393
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-50C light chain variable region

<400> 33
atgaagttgc ctgttaggct gttggtgctg atgttctgga ttcctgcttc cagcagtgat 60
gttgtgatga cccaaactcc actctccctg cctgtcagtc ttggagatca agcctccatc 120
tcttgcagat ctagtcagag ccttgtatac agtaatggaa acacctattt acattggtac 180
ctgcagaggc caggccagtc tccacagctc ctgatctaca aagtttccaa ccgattttct 240
ggggtcccag acaggttcag tggcagtgga tcagggacag atttcacact caagatcagc 300
agagtggagg ctgaggatct gggagtttat ttctgctctc aaactacaca tgttccgtgg 360
acgttcggtg gaggcaccaa gctggaaatc aaa   393

<210> 34
<211> 131
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-50C light chain variable region

<400> 34
Met Lys Leu Pro Val Arg Leu Leu Val Leu Met Phe Trp Ile Pro Ala
 1   5   10   15
Ser Ser Ser Asp Val Val Met Thr Gln Thr Pro Leu Ser Leu Pro Val
            20   25   30
Ser Leu Gly Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu
        35   40   45
Val Tyr Ser Asn Gly Asn Thr Tyr Leu His Trp Tyr Leu Gln Arg Pro
    50   55   60
Gly Gln Ser Pro Gln Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser
65   70   75   80
Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr
                85   90   95

Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys
100 105 110
Ser Gln Thr Thr His Val Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu
115 120 125
Glu Ile Lys
130

<210> 35
<211> 402
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-19B heavy chain variable region

<400> 35
atgaacttcg ggttcagctt gattttcctt gtccttgttt caaaaggtgt ccagtgtgaa 60
gtgaagctgg tggagtctgg gggaggctta gtgaagcctg gagggtccct gaaattctcc 120
tgtgcagcct ctggattcac tttcagtagc tatgccgtgt cttgggttcg ccagactcca 180
gagaagaggc tggagtgggt cgcatccatt actagtggtg gtagaaccta ttatccagac 240
agtgtgaagg gccgattcac catctccaga gataatgcca ggagcatgtt gtatttgcac 300
atgagcagtc tgaggtctga ggacacggcc atgtattact gtacaagagg ctgggacgag 360
aatgacttat ggggccaagg caccactctc accgtctcct ca 402

<210> 36
<211> 134
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-19B heavy chain variable region

<400> 36
Met Asn Phe Gly Phe Ser Leu Ile Phe Leu Val Leu Val Ser Lys Gly
1 5 10 15
Val Gln Cys Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Lys
20 25 30
Pro Gly Gly Ser Leu Lys Phe Ser Cys Ala Ala Ser Gly Phe Thr Phe
35 40 45
Ser Ser Tyr Ala Val Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu
50 55 60
Glu Trp Val Ala Ser Ile Thr Ser Gly Gly Arg Thr Tyr Tyr Pro Asp
65 70 75 80
Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Arg Ser Met
85 90 95
Leu Tyr Leu His Met Ser Ser Leu Arg Ser Glu Asp Thr Ala Met Tyr
100 105 110
Tyr Cys Thr Arg Gly Trp Asp Glu Asn Asp Leu Trp Gly Gln Gly Thr
115 120 125
Thr Leu Thr Val Ser Ser
130

<210> 37
<211> 393
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-19B light chain variable region

<400> 37
atgaagttgc ctgttaggct gttggtgctg atgttctgga ttcctgcttc cagaagtgat 60
gttgtgatga cccaaactcc actctccctg cctgtcagtc ttggagatca agcctccatc 120
tcttgcagat ctagtcagag ccttgtatac agtaatggaa acacctattt acattggtac 180
ctgcagaagc caggccagtc tccacagctc ctgatctaca aagtttccaa ccgattttct 240
ggggtcccag acaggttcag tggcagtgga tcagggacag atttcacact caagatcagc 300

agagtggagg ctgaggatct gggagtttat ttctgctctc aaactacaca tgttccgtgg 360
acgttcggtg gaggcaccaa gctggaaatc aaa 393

<210> 38
<211> 131
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-19B light chain variable region

<400> 38
Met Lys Leu Pro Val Arg Leu Leu Val Leu Met Phe Trp Ile Pro Ala
 1   5   10   15
Ser Arg Ser Asp Val Val Met Thr Gln Thr Pro Leu Ser Leu Pro Val
            20   25   30
Ser Leu Gly Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu
        35   40   45
Val Tyr Ser Asn Gly Asn Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro
    50   55   60
Gly Gln Ser Pro Gln Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser
65   70   75   80
Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr
                85   90   95
Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys
            100   105   110
Ser Gln Thr Thr His Val Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu
        115   120   125
Glu Ile Lys
    130

<210> 39
<211> 402
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-58C heavy chain variable region

<400> 39
atgaacttcg ggttcagctt gattttcctt gtccttgttt caaaaggtgt ccagtgtgaa 60
gtgaagctgg tggagtctgg gggaggctta gtgaagcctg gagggtccct gaaattctcc 120
tgtgcagcct ctggattcac tttcagtagc tatgccgtgt cttgggttcg ccagactcca 180
gagaagaggc tggagtgggt cgcatccatt actagtggtg gtagaagcta ctatccggac 240
agtgtgaagg gccgattcac catctccaga gataatgcta ggagcatgtt gtacctgcac 300
atgagcagtc tgaggtctga ggacacggcc atgtactact gtacaagagg ctgggacgag 360
aatgacttat ggggccaagg caccactctc accgtctcct ca 402

<210> 40
<211> 134
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-58C heavy chain variable region

<400> 40
Met Asn Phe Gly Phe Ser Leu Ile Phe Leu Val Leu Val Ser Lys Gly
 1   5   10   15
Val Gln Cys Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Lys
            20   25   30
Pro Gly Gly Ser Leu Lys Phe Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35   40   45
Ser Ser Tyr Ala Val Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu
    50   55   60
Glu Trp Val Ala Ser Ile Thr Ser Gly Gly Arg Ser Tyr Tyr Pro Asp
65   70   75   80

Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Arg Ser Met
85 90 95
Leu Tyr Leu His Met Ser Ser Leu Arg Ser Glu Asp Thr Ala Met Tyr
100 105 110
Tyr Cys Thr Arg Gly Trp Asp Glu Asn Asp Leu Trp Gly Gln Gly Thr
115 120 125
Thr Leu Thr Val Ser Ser
130

<210> 41
<211> 393
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-58C light chain variable region

<400> 41
atgaagttgc ctgttaggct gttggtgctg atgttctgga ttcctgcttc cagcagtgat 60
gttgtgatga cccaaactcc actctccctg tttgtcagtc ttggagatca agcctccatc 120
tcttgcagat ctagtcagag ccttctttac agtaatggaa acacctattt acattggtac 180
ctgcagaggc caggccagtc tccacagctc ctgatctaca aagtttccaa ccgattttct 240
ggggtcccag acaggttcag tggcagtgga tcagggacag atttcacact caagatcagc 300
agagtggagg ctgaggatct gggagtttat ttctgctctc aaactacaca tgttccgtgg 360
acgttcggtg gaggcaccaa gctggaaatc aaa 393

<210> 42
<211> 131
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-58C light chain variable region

<400> 42
Met Lys Leu Pro Val Arg Leu Leu Val Leu Met Phe Trp Ile Pro Ala
1 5 10 15
Ser Ser Ser Asp Val Val Met Thr Gln Thr Pro Leu Ser Leu Phe Val
20 25 30
Ser Leu Gly Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu
35 40 45
Leu Tyr Ser Asn Gly Asn Thr Tyr Leu His Trp Tyr Leu Gln Arg Pro
50 55 60
Gly Gln Ser Pro Gln Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser
65 70 75 80
Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr
85 90 95
Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys
100 105 110
Ser Gln Thr Thr His Val Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu
115 120 125
Glu Ile Lys
130

<210> 43
<211> 402
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-9B heavy chain variable region

<400> 43
atgaactacg ggttcagctt gattttcctt gtccttgttt taaaaggtgt ccagtgtgaa 60
gtgaagctgg tggagtctgg gggaggcgta gtgaagcctg gagggtccct gaaactctcc 120
tgtgcagcct ctggattcac tttcagtagc tatgccatgt cctggtttcg ccagacttca 180

gagatgagtc tggagtgggt cgcatccatt actggtggtg gtggcaccta ctatccagac 240
agtgtgaagg gccgattcac catctccaga gatactgtca ggaacatcct gtacctgcaa 300
atgagaagtc tgaggtctgg ggacacggcc atatattact gtgcaagggg ctgggacgag 360
aatgactact ggggccaagg caccactctc acagtctcct ca 402

<210> 44
<211> 134
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-9B heavy chain variable region

<400> 44
Met Asn Tyr Gly Phe Ser Leu Ile Phe Leu Val Leu Val Leu Lys Gly
 1   5   10   15
Val Gln Cys Glu Val Lys Leu Val Glu Ser Gly Gly Gly Val Val Lys
            20   25   30
Pro Gly Gly Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35   40   45
Ser Ser Tyr Ala Met Ser Trp Phe Arg Gln Thr Ser Glu Met Ser Leu
    50   55   60
Glu Trp Val Ala Ser Ile Thr Gly Gly Gly Gly Thr Tyr Tyr Pro Asp
65   70   75   80
Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Thr Val Arg Asn Ile
                85   90   95
Leu Tyr Leu Gln Met Arg Ser Leu Arg Ser Gly Asp Thr Ala Ile Tyr
            100   105   110
Tyr Cys Ala Arg Gly Trp Asp Glu Asn Asp Tyr Trp Gly Gln Gly Thr
        115   120   125
Thr Leu Thr Val Ser Ser
    130

<210> 45
<211> 393
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-9B light chain variable region

<400> 45
atgaagttgc ctgttaggct gttggtgctg atgttctgga ttcctgcttc cagaagtgat 60
gttgtgatga cccaaattcc attgtccctg cctgtcagtc ttggagatca agcctccatc 120
tcttgcagat ctagtcagag ccttgtattt agtaatggaa acacctattt acattggtac 180
tttcagaagc caggccagtc tccaaagctc ctgatctaca aagtttccaa ccgattttct 240
ggggtcccag acaggttcag tggcagtgga tcagggacag atttcatact cagaatcagc 300
agagtggagg ctgaggatct gggagtttat ttctgctctc aaagtacaca tgttccgtgg 360
acgttcggtg gaggcaccaa gctggaaatc aaa 393

<210> 46
<211> 131
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-9B light chain variable region

<400> 46
Met Lys Leu Pro Val Arg Leu Leu Val Leu Met Phe Trp Ile Pro Ala
 1   5   10   15
Ser Arg Ser Asp Val Val Met Thr Gln Ile Pro Leu Ser Leu Pro Val
            20   25   30
Ser Leu Gly Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu
        35   40   45
Val Phe Ser Asn Gly Asn Thr Tyr Leu His Trp Tyr Phe Gln Lys Pro
    50   55   60

Gly Gln Ser Pro Lys Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser
65 70 75 80
Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Ile
85 90 95
Leu Arg Ile Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys
100 105 110
Ser Gln Ser Thr His Val Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu
115 120 125
Glu Ile Lys
130

<210> 47
<211> 402
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-28C heavy chain variable region

<400> 47
atgaacttcg ggttcagctt gattttcctt gtccttgttt taaaaggtgt ccagtctgaa 60
gtgaagctgg tggagtctgg gggaggcgta gtgaagcctg gagggtccct gacactctcc 120
tgtgcagcct ctggattcac tttcagtaac tatgccgtgt cttggtttcg ccagactccg 180
gagaagaggc tggagtgggt cgcatccatt actagtggtg gtagaaccta ctatccagac 240
agtatgaagg gccgattcac catctccaga gataatgcca ggaacatctt gtatctgcaa 300
atgagcagtc tgaggtctga ggacacggcc atatattact gtggaagagg ctgggacgag 360
aatgactact ggggccaagg caccactctc accgtctcct ca 402

<210> 48
<211> 134
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-28C heavy chain variable region

<400> 48
Met Asn Phe Gly Phe Ser Leu Ile Phe Leu Val Leu Val Leu Lys Gly
1 5 10 15
Val Gln Ser Glu Val Lys Leu Val Glu Ser Gly Gly Gly Val Val Lys
20 25 30
Pro Gly Gly Ser Leu Thr Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
35 40 45
Ser Asn Tyr Ala Val Ser Trp Phe Arg Gln Thr Pro Glu Lys Arg Leu
50 55 60
Glu Trp Val Ala Ser Ile Thr Ser Gly Gly Arg Thr Tyr Tyr Pro Asp
65 70 75 80
Ser Met Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Arg Asn Ile
85 90 95
Leu Tyr Leu Gln Met Ser Ser Leu Arg Ser Glu Asp Thr Ala Ile Tyr
100 105 110
Tyr Cys Gly Arg Gly Trp Asp Glu Asn Asp Tyr Trp Gly Gln Gly Thr
115 120 125
Thr Leu Thr Val Ser Ser
130

<210> 49
<211> 393
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-28C light chain variable region

<400> 49
atgaagttgc ctgttaggct gttggtgctg atgttctgga ttcctgcttc ctgcagtgat 60

gttgtgatga cccaaactcc actctccctg cctgtcagtc ttggagatca agcctccatc 120
tcttgcagat ctagtcaaag ccttgtatac agtaatggaa acacctattt acattggtac 180
ctgcagaagc caggccagtc tccaaaactc ctgatctaca aagtttccaa ccgattttct 240
ggggtcccag acaggttcag tggcagtgga tcagggacag atttcacact caagatcaac 300
agagtggagg ctgaggatct gggagtttat ttctgctctc aaactacaca tgttccgtgg 360
acgttcggtg gaggcaccaa gctggaaatc aaa 393

<210> 50
<211> 131
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-28C light chain variable region

<400> 50
Met Lys Leu Pro Val Arg Leu Leu Val Leu Met Phe Trp Ile Pro Ala
 1   5   10   15
Ser Cys Ser Asp Val Val Met Thr Gln Thr Pro Leu Ser Leu Pro Val
            20   25   30
Ser Leu Gly Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu
        35   40   45
Val Tyr Ser Asn Gly Asn Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro
    50   55   60
Gly Gln Ser Pro Lys Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser
65   70   75   80
Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr
                85   90   95
Leu Lys Ile Asn Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys
            100   105   110
Ser Gln Thr Thr His Val Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu
        115   120   125
Glu Ile Lys
    130

<210> 51
<211> 402
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-120B heavy chain variable region

<400> 51
atgaacttcg ggttcagctt gattttcctt gtccttgttt taaaaggtgt ccagtgtaaa 60
gtgaacctgg tggagtctgg gggaggctta gtgaaggctg gagggtccct gaaactctcc 120
tgtgcagcct ctggattcac tttcagtatc tatgccatgt cttggtttcg ccagactcca 180
gagaagaggc tggagtgggt cgcatccatt actggtggtg gtaccaattt ctatccagac 240
agtgtgaggg gccgattcac catctccaga gataatgtca ggaacattct gtacctgcaa 300
atgagcagtc tgaggtctga ggacacggcc atgtattact gtgcaagagg ctgggacgag 360
aatgactatt ggggccaagg caccactctc acagtctcct ca 402

<210> 52
<211> 134
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-120B heavy chain variable region

<400> 52
Met Asn Phe Gly Phe Ser Leu Ile Phe Leu Val Leu Val Leu Lys Gly
 1   5   10   15
Val Gln Cys Lys Val Asn Leu Val Glu Ser Gly Gly Gly Leu Val Lys
            20   25   30
Ala Gly Gly Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35   40   45

Ser Ile Tyr Ala Met Ser Trp Phe Arg Gln Thr Pro Glu Lys Arg Leu
50 55 60
Glu Trp Val Ala Ser Ile Thr Gly Gly Gly Thr Asn Phe Tyr Pro Asp
65 70 75 80
Ser Val Arg Gly Arg Phe Thr Ile Ser Arg Asp Asn Val Arg Asn Ile
85 90 95
Leu Tyr Leu Gln Met Ser Ser Leu Arg Ser Glu Asp Thr Ala Met Tyr
100 105 110
Tyr Cys Ala Arg Gly Trp Asp Glu Asn Asp Tyr Trp Gly Gln Gly Thr
115 120 125
Thr Leu Thr Val Ser Ser
130

<210> 53
<211> 393
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-120B light chain variable region

<400> 53
atgaagttgc ctgttaggct gttggtgctg atgttctgga ttccagcttc cagcagtgat 60
gttgtgatga cccaaactcc actctccctg cctgtcagtc ttggagatca agcctccatc 120
tcttgcagat ctagtcagag ccttgtatat agtaatggaa acacctattt acattggtac 180
ctgcagaagc caggccagtc tccaaagctc ctgatctaca aagtttccaa ccgattttct 240
ggggtcccag acaggttcag tggcagtgga tcagggacag atttcacact caagatcagc 300
agagtggagg ctgaggatct gggagtttat ttctgctctc aaagtacaca tgttccgtgg 360
acgttcggtg gaggcaccaa gctggaaatc aaa 393

<210> 54
<211> 131
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-120B light chain variable region

<400> 54
Met Lys Leu Pro Val Arg Leu Leu Val Leu Met Phe Trp Ile Pro Ala
1 5 10 15
Ser Ser Ser Asp Val Val Met Thr Gln Thr Pro Leu Ser Leu Pro Val
20 25 30
Ser Leu Gly Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu
35 40 45
Val Tyr Ser Asn Gly Asn Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro
50 55 60
Gly Gln Ser Pro Lys Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser
65 70 75 80
Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr
85 90 95
Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys
100 105 110
Ser Gln Ser Thr His Val Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu
115 120 125
Glu Ile Lys
130

<210> 55
<211> 411
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-75B heavy chain variable region

<400> 55
atggactcca ggctcaattt agttttcctt gtccttattt taaaaggtgt ccagtgtgat 60
gtgcagctgg tggagtctgg gggaggctta gtgcagcctg gagggtcccg gaaactctcc 120
tgtgcagcct ctggattcac tttcagtagg tttggaatgc actgggttcg tcaggctcca 180
gagaaggggc tggagtgggt cgcatacatt agtagtggca gtagtaccat ctactatgca 240
gacacagtga agggccgatt caccatctcc agagacaatc ccaagaacac cctgttcctg 300
caaatgacca gtctaaggtc tgaggacacg gccatgtatt actgtgcaag agttgattac 360
gacgtggcgc ttgcttactg gggccaaggg actctggtca ctgtctctgc a 411

<210> 56
<211> 137
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-75B heavy chain variable region

<400> 56
Met Asp Ser Arg Leu Asn Leu Val Phe Leu Val Leu Ile Leu Lys Gly
 1   5   10   15
Val Gln Cys Asp Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
            20   25   30
Pro Gly Gly Ser Arg Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35   40   45
Ser Arg Phe Gly Met His Trp Val Arg Gln Ala Pro Glu Lys Gly Leu
    50   55   60
Glu Trp Val Ala Tyr Ile Ser Ser Gly Ser Ser Thr Ile Tyr Tyr Ala
65   70   75   80
Asp Thr Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Pro Lys Asn
                85   90   95
Thr Leu Phe Leu Gln Met Thr Ser Leu Arg Ser Glu Asp Thr Ala Met
            100   105   110
Tyr Tyr Cys Ala Arg Val Asp Tyr Asp Val Ala Leu Ala Tyr Trp Gly
        115   120   125
Gln Gly Thr Leu Val Thr Val Ser Ala
    130   135

<210> 57
<211> 387
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-75B light chain variable region

<400> 57
atgaagttgc ctgttaggct gttggtgctg atgttctgga ttcctgcttc agcagtggt 60
gttttgatga cccaaactcc actctccctg cctgtcagtc ttggagatca agcctccatc 120
tcttgcagat ctagtcagag cattgtacat aggaatggaa atacctattt agaatggtac 180
ctgcagaaac caggccagtc tccaaaactc ctgatctaca aagtttccaa ccgattttct 240
ggggtcccag acaggttcag tggcagtgga tcagggacag atttcacact caagatcagc 300
agagtggagg ctgaggatct gggagtttat tactgctttc aaggttcaca gtggacgttc 360
ggtggaggca ccaagctgga aatcaaa 387

<210> 58
<211> 129
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-75B light chain variable region

<400> 58
Met Lys Leu Pro Val Arg Leu Leu Val Leu Met Phe Trp Ile Pro Ala
 1   5   10   15
Ser Ser Ser Gly Val Leu Met Thr Gln Thr Pro Leu Ser Leu Pro Val
            20   25   30

```
Ser Leu Gly Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Ile
        35                  40                  45
Val His Arg Asn Gly Asn Thr Tyr Leu Glu Trp Tyr Leu Gln Lys Pro
    50                  55                  60
Gly Gln Ser Pro Lys Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser
65                  70                  75                  80
Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr
                85                  90                  95
Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys
            100                 105                 110
Phe Gln Gly Ser Gln Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile
        115                 120                 125
Lys
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<210> 59
<211> 402
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-36C heavy chain variable region

<400> 59
atgaacttcg ggttcagctt gattttcctt gtccttgttt caaaaggtgt ccagtgtgaa 60
gtgaagctgg tggagtctgg gggaggctta gtgaagcctg gagggtccct gaaattctcc 120
tgtgcagcct ctggattcac tttcagtagc tatgccgtgt cttgggttcg ccagactcca 180
gagaagaggc tggagtgggt cgcatccatt actagtggtg gtagaagcta ctatccggac 240
agtgtgaagg gccgattcac catctccaga gataatgcta ggagcatgtt gtacctgcac 300
atgagcagtc tgaggtctga ggacacggcc atgtactact gtacaagagg ctgggacgag 360
aatgacttat ggggccaagg caccactctc accgtctcct ca 402

<210> 60
<211> 134
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-36C heavy chain variable region

<400> 60
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Met Asn Phe Gly Phe Ser Leu Ile Phe Leu Val Leu Val Ser Lys Gly
 1               5                  10                  15
Val Gln Cys Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Lys
            20                  25                  30
Pro Gly Gly Ser Leu Lys Phe Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35                  40                  45
Ser Ser Tyr Ala Val Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu
    50                  55                  60
Glu Trp Val Ala Ser Ile Thr Ser Gly Gly Arg Ser Tyr Tyr Pro Asp
65                  70                  75                  80
Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Arg Ser Met
                85                  90                  95
Leu Tyr Leu His Met Ser Ser Leu Arg Ser Glu Asp Thr Ala Met Tyr
            100                 105                 110
Tyr Cys Thr Arg Gly Trp Asp Glu Asn Asp Leu Trp Gly Gln Gly Thr
        115                 120                 125
Thr Leu Thr Val Ser Ser
    130
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<210> 61
<211> 393
<212> DNA
<213> Artificial Sequence

<220>

<223> R29-8-36C light chain variable region

<400> 61
atgaagttgc ctgttaggct gttggtgctg atgttctgga ttcctgcttc cagcagtgat 60
gttgtgatga cccaaactcc actctccctg tttgtcagtc ttggagatca agcctccatc 120
tcttgcagat ctagtcagag ccttctttac agtaatggaa acacctattt acattggtac 180
ctgcagaggc caggccagtc tccacagctc ctgatctaca aagtttccaa ccgattttct 240
ggggtcccag acaggttcag tggcagtgga tcagggacag atttcacact caagatcagc 300
agagtggagg ctgaggatct gggagtttat ttctgctctc aaactacaca tgttccgtgg 360
acgttcggtg gaggcaccaa gctggaaatc aaa 393

<210> 62
<211> 131
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-36C light chain variable region

<400> 62
Met Lys Leu Pro Val Arg Leu Leu Val Leu Met Phe Trp Ile Pro Ala
 1   5   10   15
Ser Ser Ser Asp Val Val Met Thr Gln Thr Pro Leu Ser Leu Phe Val
            20   25   30
Ser Leu Gly Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu
        35   40   45
Leu Tyr Ser Asn Gly Asn Thr Tyr Leu His Trp Tyr Leu Gln Arg Pro
    50   55   60
Gly Gln Ser Pro Gln Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser
65   70   75   80
Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr
                85   90   95
Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys
            100   105   110
Ser Gln Thr Thr His Val Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu
        115   120   125
Glu Ile Lys
    130

<210> 63
<211> 402
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-12A heavy chain variable region

<400> 63
atgaacttcg ggttcagctt gattttcctt gtccttgttt caaaaggtgt ccagtgtgaa 60
gtgaagctgg tggagtctgg gggaggctta gtgaagcctg gagggtccct gaaattctcc 120
tgtgcagcct ctggattcac tttcagtagc tatgccgtgt cttgggttcg ccagactcca 180
gagaagaggc tggagtgggt cgcatccatt actagtggtg gtagaaccta ttatccagac 240
agtgtgaagg gccgattcac catctccaga gataatgcca ggagcatgtt gtatttgcac 300
atgagcagtc tgaggtctga ggacacggcc atgtattact gtacaagagg ctgggacgag 360
aatgacttat ggggccaagg caccactctc accgtctcct ca 402

<210> 64
<211> 134
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-12A heavy chain variable region

<400> 64
Met Asn Phe Gly Phe Ser Leu Ile Phe Leu Val Leu Val Ser Lys Gly
 1   5   10   15

Val Gln Cys Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Lys
            20   25   30
Pro Gly Gly Ser Leu Lys Phe Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35   40   45
Ser Ser Tyr Ala Val Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu
    50   55   60
Glu Trp Val Ala Ser Ile Thr Ser Gly Gly Arg Thr Tyr Tyr Pro Asp
65   70   75   80
Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Arg Ser Met
                85   90   95
Leu Tyr Leu His Met Ser Ser Leu Arg Ser Glu Asp Thr Ala Met Tyr
            100   105   110
Tyr Cys Thr Arg Gly Trp Asp Glu Asn Asp Leu Trp Gly Gln Gly Thr
        115   120   125
Thr Leu Thr Val Ser Ser
    130

<210> 65
<211> 393
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-12A light chain variable region

<400> 65
atgaagttgc ctgttaggct gttggtgctg atgttctgga ttcctgcttc cagaagtgat 60
gttgtgatga cccaaactcc actctccctg cctgtcagtc ttggagatca agcctccatc 120
tcttgcagat ctagtcagag ccttgtatac agtaatggaa acacctattt acattggtac 180
ctgcagaagc caggccagtc tccacagctc ctgatctaca aagtttccaa ccgattttct 240
ggggtcccag acaggttcag tggcagtgga tcagggacag atttcacact caagatcagc 300
agagtggagg ctgaggatct gggagtttat ttctgctctc aaactacaca tgttccgtgg 360
acgttcggtg gaggcaccaa gctggaaatc aaa   393

<210> 66
<211> 131
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-12A light chain variable region

<400> 66
Met Lys Leu Pro Val Arg Leu Leu Val Leu Met Phe Trp Ile Pro Ala
 1   5   10   15
Ser Arg Ser Asp Val Val Met Thr Gln Thr Pro Leu Ser Leu Pro Val
            20   25   30
Ser Leu Gly Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu
        35   40   45
Val Tyr Ser Asn Gly Asn Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro
    50   55   60
Gly Gln Ser Pro Gln Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser
65   70   75   80
Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr
                85   90   95
Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys
            100   105   110
Ser Gln Thr Thr His Val Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu
        115   120   125
Glu Ile Lys
    130

<210> 67
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 consensus sequence for Group I antibodies

<220>
<221> VARIANT
<222> 6
<223> Xaa = Any Amino Acid

<400> 67
Gly Phe Thr Gly Ser Xaa Tyr Ala
 1   5

<210> 68
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 consensus sequence for Group I antibodies

<220>
<221> VARIANT
<222> 4, 7, 8
<223> Xaa = Any Amino Acid

<400> 68
Ile Thr Gly Xaa Gly Gly Xaa Xaa
 1   5

<210> 69
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 consensus sequence for Group I antibodies

<220>
<221> VARIANT
<222> 1, 9
<223> Xaa = Any Amino Acid

<400> 69
Xaa Arg Gly Trp Asp Glu Asn Asp Xaa
 1   5

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

<220>
<223> VL CDR1 consensus sequence for Group I antibodies

<220>
<221> VARIANT
<222> 4, 5
<223> Xaa = Any Amino Acid

<400> 70
Gln Ser Leu Xaa Xaa Ser Asn Gly Asn Thr Tyr
 1   5   10

<210> 71
<211> 3
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR2 consensus sequence for Group I antibodies

<400> 71
Lys Val Ser
 1

<210> 72
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 consensus sequence for Group I antibodies

<220>
<221> VARIANT
<222> 3
<223> Xaa = Any Amino Acid

<400> 72
Ser Gln Xaa Thr His Val Pro Trp Thr
 1   5

<210> 73
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 consensus sequence for Group II antibodies

<400> 73
Gly Phe Thr Phe Ser Arg Phe Gly
 1   5

<210> 74
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 consensus sequence for Group II antibodies

<400> 74
Ile Ser Ser Gly Ser Ser Thr Ile
 1   5

<210> 75
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 consensus sequence for Group II antibodies

<400> 75
Ala Arg Val Asp Tyr Asp Val Ala Leu Ala Tyr
 1   5   10

<210> 76
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 consensus sequence for Group II antibodies

<400> 76
Gln Ser Ile Val His Arg Asn Gly Asn Thr Tyr
 1   5   10

<210> 77
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 sequence for antibody R29-7A-38C

<400> 77
Ala Lys His Glu Glu Val Ser Arg Phe Ala His
 1   5   10

<210> 78
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 consensus sequence for Group II antibodies

<400> 78
Phe Gln Gly Ser Gln Trp Thr
 1   5

<210> 79
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 consensus sequence for Group III antibodies

<220>
<221> VARIANT
<222> 7
<223> Xaa = Any Amino Acid

<400> 79
Gly Tyr Ser Ile Thr Ser Xaa Tyr Ala
 1   5

<210> 80
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 consensus sequence for Group III antibodies

<220>

<221> VARIANT
<222> 2, 6, 7
<223> Xaa = Any Amino Acid

<400> 80
Ile Xaa Tyr Ser Gly Xaa Xaa
 1   5

<210> 81
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 consensus sequence for Group III antibodies

<220>
<221> VARIANT
<222> 4, 7, 8, 9, 11
<223> Xaa = Any Amino Acid

<400> 81
Ala Arg Glu Xaa Tyr Asp Xaa Xaa Xaa Tyr Xaa Met Asp Tyr
 1   5   10

<210> 82
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 consensus sequence for Group III antibodies

<220>
<221> VARIANT
<222> 2, 7
<223> Xaa = Any Amino Acid

<400> 82
Gln Xaa Leu Leu Tyr Ser Xaa Asn Gln Lys Asn Tyr
 1   5   10

<210> 83
<211> 3
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR2 consensus sequence for Group III antibodies

<400> 83
Trp Ala Ser
 1

<210> 84
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 consensus sequence for Group III antibodies

<220>
<221> VARIANT

<222> 5
<223> Xaa = Any Amino Acid

<400> 84
Gln Gln Tyr Tyr Xaa Tyr Arg Thr
 1   5

<210> 85
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 consensus sequence for Group IV antibodies

<220>
<221> VARIANT
<222> 8
<223> Xaa = Any Amino Acid

<400> 85
Gly Phe Ser Leu Thr Asp Tyr Xaa
 1   5

<210> 86
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 consensus sequence for Group IV antibodies

<220>
<221> VARIANT
<222> 6
<223> Xaa = Any Amino Acid

<400> 86
Ile Trp Gly Gly Gly Xaa Thr
 1   5

<210> 87
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 consensus sequence for Group IV antibodies

<220>
<221> VARIANT
<222> 11
<223> Xaa = Any Amino Acid

<400> 87
Ala Lys His Glu Glu Val Ser Arg Phe Ala Xaa
 1   5   10

<210> 88
<211> 11
<212> PRT
<213> Artificial Sequence

<220>

<223> VL CDR1 consensus sequence for Group IV antibodies

<400> 88
Gln Ser Leu Val Tyr Ser Asn Gly Asn Ser Tyr
 1   5   10

<210> 89
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 sequence of antibody R29-8-28C

<400> 89
Gly Phe Thr Phe Ser Asn Tyr Ala
 1   5

<210> 90
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 consensus sequence for Group IV antibodies

<400> 90
Ser Gln Ser Thr His Ile Pro Leu Thr
 1   5

<210> 91
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 sequence for Group IV antibody R29-7-2A

<400> 91
Gly Phe Ser Phe Asn Thr His Ala
 1   5

<210> 92
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 sequence for Group IV antibody R29-7-2A

<400> 92
Ile Arg Ser Lys Ser Asn Asn Tyr Ala Arg
 1   5   10

<210> 93
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 sequence for Group IV antibody R29-7-2A

<400> 93

Val Lys Gln Gly Asp Gly Gly Phe Ala Tyr
 1   5   10

<210> 94
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 sequence for Group IV antibody R29-7-2A

<400> 94
Gln Ser Leu Leu Tyr Ser Ser Asn Gln Lys Asn Tyr
 1   5   10

<210> 95
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 sequence for Group I antibody R29-8-12OB

<400> 95
Gly Phe Thr Phe Ser Ile Tyr Ala
 1   5

<210> 96
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 sequence for Group I antibody R29-8-18B

<400> 96
Gln Gln Tyr Tyr Ser Tyr Pro Pro Thr
 1   5

<210> 97
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 sequence for Group I antibody R29-8-9B

<400> 97
Ile Thr Gly Gly Gly Gly Thr
 1   5

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

<220>
<223> VH CDR2 sequence for Group I antibody R29-8-30A

<400> 98
Ile Thr Gly Gly Gly Ser Thr
 1   5

<210> 99
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 sequence for Group I antibody R29-8-120B

<400> 99
Ile Thr Gly Gly Gly Thr Asn
 1   5

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

<220>
<223> VH CDR2 sequence for Group I antibody R29-8-18B

<400> 100
Ile Thr Ser Gly Gly Ser Thr
 1   5

<210> 101
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 sequence for Group I antibody R29-8-28C

<400> 101
Ile Thr Ser Gly Gly Arg Thr
 1   5

<210> 102
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 sequence for Group I antibody R29-8-36C

<400> 102
Ile Thr Ser Gly Gly Arg Ser
 1   5

<210> 103
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 sequence for Group I antibody R29-8-9B

<400> 103
Ala Arg Gly Trp Asp Glu Asn Asp Tyr
 1   5

<210> 104
<211> 9

<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 sequence for Group I antibody R29-8-28C

<400> 104
Gly Arg Gly Trp Asp Glu Asn Asp Tyr
 1   5

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

<220>
<223> VH CDR3 sequence for Group I antibody R29-8-19B

<400> 105
Thr Arg Gly Trp Asp Glu Asn Asp Leu
 1   5

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

<220>
<223> VL CDR1 sequence for Group I antibody R29-8-9B

<400> 106
Gln Ser Leu Val Phe Ser Asn Gly Asn Thr Tyr
 1   5   10

<210> 107
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 sequence for Group I antibody R29-8-120B

<400> 107
Gln Ser Leu Val Tyr Ser Asn Gly Asn Thr Tyr
 1   5   10

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

<220>
<223> VL CDR1 sequence for Group I antibody R29-8-36C

<400> 108
Gln Ser Leu Leu Tyr Ser Asn Gly Asn Thr Tyr
 1   5   10

<210> 109
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 sequence for Group I antibody R29-8-9B

<400> 109
Ser Gln Ser Thr His Val Pro Trp Thr
 1   5

<210> 110
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 sequence for Group I antibody R29-8-28C

<400> 110
Ser Gln Thr Thr His Val Pro Trp Thr
 1   5

<210> 111
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 sequence for Group III antibody R29-8-57B

<400> 111
Gly Tyr Ser Ile Thr Ser Asp Tyr Ala
 1   5

<210> 112
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 sequence for Group III antibody R29-67-4A

<400> 112
Gly Tyr Ser Ile Thr Ser Val Tyr Ala
 1   5

<210> 113
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 sequence for Group III antibody R29-8-57B

<400> 113
Ile Asn Tyr Ser Gly Ser Thr
 1   5

<210> 114
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 sequence for Group III antibody R29-8-136C

<400> 114
Ile Asn Tyr Ser Gly Ser Ser
 1   5

<210> 115
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 sequence for Group III antibody R29-7-1C

<400> 115
Ile Ser Tyr Ser Gly Ser Ile
 1   5

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

<220>
<223> VH CDR2 sequence for Group III antibody R29-67-7A

<400> 116
Ile Asn Tyr Ser Gly Arg Thr
 1   5

<210> 117
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 sequence for Group III antibody R29-67-4A

<400> 117
Ile Ser Tyr Ser Gly Ile Thr
 1   5

<210> 118
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 sequence for Group III antibody R29-8-57B

<400> 118
Ala Arg Glu Arg Tyr Asp Gly Val Tyr Tyr Gly Met Asp Tyr
 1   5   10

<210> 119
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 sequence for Group III antibody R29-7-1C

<400> 119
Ala Arg Glu Lys Tyr Asp Asn Tyr Tyr Tyr Ala Met Asp Tyr
 1   5   10

<210> 120
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 sequence for Group III antibody R29-67-7A

<400> 120
Ala Arg Glu Asn Tyr Asp Tyr Glu Phe Tyr Ala Met Asp Tyr
 1   5   10

<210> 121
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 sequence for Group III antibody R29-67-4A

<400> 121
Ala Thr Thr Gly Thr Arg
 1   5

<210> 122
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 sequence for Group III antibody R29-7-1C

<400> 122
Gln Asn Leu Leu Tyr Ser Thr Asn Gln Lys Asn Tyr
 1   5   10

<210> 123
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 sequence for Group III antibody R29-67-7A

<400> 123
Gln Asn Leu Leu Tyr Ser Ser Asn Gln Lys Asn Tyr
 1   5   10

<210> 124
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 sequence for Group III antibody R29-8-57B

<400> 124
Gln Gln Tyr Tyr Ser Tyr Arg Thr
 1   5

<210> 125

<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 sequence for Group III antibody R29-67-7A

<400> 125
Gln Gln Tyr Tyr Ile Tyr Arg Thr
 1   5

<210> 126
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 sequence for Group IV antibody R29-7A-53A

<400> 126
Gly Phe Ser Leu Thr Asp Tyr Ala
 1   5

<210> 127
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 sequence for Group IV antibody R29-7A-49A

<400> 127
Gly Phe Ser Leu Thr Asp Tyr Gly
 1   5

<210> 128
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 sequence for Group IV antibody R29-7A-53A

<400> 128
Ile Trp Gly Gly Gly Arg Thr
 1   5

<210> 129
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 sequence for Group IV antibody R29-7A-49A

<400> 129
Ile Trp Gly Gly Gly Gly Thr
 1   5

<210> 130
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 sequence for Group IV antibody R29-7A-53A

<400> 130
Ala Lys His Glu Glu Val Ser Arg Phe Ala Tyr
 1   5   10

<210> 131
<211> 345
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-93B heavy chain variable region

<400> 131
gaagtgaagc tggtggagtc tgggggaggc gtagtgaagc ctggagggtc cctgaaactc 60
tcctgtacag cctctggatt cactttcagt agttatgcca tgtcttggtt tcgccagact 120
tcagagatga ggctggagtg ggtcgcatcc attactggtg gtggtggcac ctactatcca 180
gacagtgtga agggccgatt caccatctcc agagatactg tcaggaacat cctatacctg 240
caaatgagaa gtctgaggtc tggggacacg gccatatatt actgtgcaag aggctgggac 300
gagaatgact actggggcca aggcacccct ctcacagtct cctca   345

<210> 132
<211> 115
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-93B heavy chain variable region

<400> 132
Glu Val Lys Leu Val Glu Ser Gly Gly Gly Val Val Lys Pro Gly Gly
 1   5   10   15
Ser Leu Lys Leu Ser Cys Thr Ala Ser Gly Phe Thr Phe Ser Ser Tyr
            20   25   30
Ala Met Ser Trp Phe Arg Gln Thr Ser Glu Met Arg Leu Glu Trp Val
        35   40   45
Ala Ser Ile Thr Gly Gly Gly Gly Thr Tyr Tyr Pro Asp Ser Val Lys
    50   55   60
Gly Arg Phe Thr Ile Ser Arg Asp Thr Val Arg Asn Ile Leu Tyr Leu
65   70   75   80
Gln Met Arg Ser Leu Arg Ser Gly Asp Thr Ala Ile Tyr Tyr Cys Ala
                85   90   95
Arg Gly Trp Asp Glu Asn Asp Tyr Trp Gly Gln Gly Thr Pro Leu Thr
            100   105   110
Val Ser Ser
        115

<210> 133
<211> 345
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-51B heavy chain variable region

<400> 133
gaagtgaagc tggtggagtc tgggggagac atggtgaagc ctggagggtc cctgaaactc 60
tcctgtgcag cctctggatt cactttcagt agctatgcca tgtcttggtt tcgccagact 120
tcagagatga ggctggagtg ggtcgcgtcc attactggtg gtggtggcac ctactatcca 180
gacagtgtga agggccgatt caccatctcc agagatactg tcaggaacat cctgtacctg 240
caaatgagaa gtctgaggtc tggggacacg gccatatatt actgtgcaag aggctgggac 300
gagaatgact actggggcca aggcaccact ctcaccgtct cctca   345

<210> 134
<211> 115
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-51B heavy chain variable region

<400> 134
Glu Val Lys Leu Val Glu Ser Gly Gly Asp Met Val Lys Pro Gly Gly
 1   5   10   15
Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
            20   25   30
Ala Met Ser Trp Phe Arg Gln Thr Ser Glu Met Arg Leu Glu Trp Val
        35   40   45
Ala Ser Ile Thr Gly Gly Gly Gly Thr Tyr Tyr Pro Asp Ser Val Lys
    50   55   60
Gly Arg Phe Thr Ile Ser Arg Asp Thr Val Arg Asn Ile Leu Tyr Leu
65   70   75   80
Gln Met Arg Ser Leu Arg Ser Gly Asp Thr Ala Ile Tyr Tyr Cys Ala
                85   90   95
Arg Gly Trp Asp Glu Asn Asp Tyr Trp Gly Gln Gly Thr Thr Leu Thr
            100   105   110
Val Ser Ser
        115

<210> 135
<211> 345
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-30A heavy chain variable region

<400> 135
gaagtgaagc tggtggagtc tgggggaggc ttagtgaagc ctggagggtc cctgaaactc 60
tcctgtgcag cctctggatt cactttcagt aactatgcca tgtcttggtt tcgccagact 120
ccagagaaga ggctggagtg ggtcgcatcc attactggtg gtggtagcac ctactatcca 180
gacagtgtga agggccgatt catcatctcc agagataatg ccaggaacat cctgtacctg 240
caaatgagga gtctgaggtc tgaggacacg gccatgtatt actgtgcaag aggctgggac 300
gagaatgact actggggcca aggcaccact ctcacagtct cctca   345

<210> 136
<211> 115
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-30A heavy chain variable region

<400> 136
Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Lys Pro Gly Gly
 1   5   10   15
Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Asn Tyr
            20   25   30
Ala Met Ser Trp Phe Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
        35   40   45
Ala Ser Ile Thr Gly Gly Gly Ser Thr Tyr Tyr Pro Asp Ser Val Lys
    50   55   60
Gly Arg Phe Ile Ile Ser Arg Asp Asn Ala Arg Asn Ile Leu Tyr Leu
65   70   75   80
Gln Met Arg Ser Leu Arg Ser Glu Asp Thr Ala Met Tyr Tyr Cys Ala
                85   90   95
Arg Gly Trp Asp Glu Asn Asp Tyr Trp Gly Gln Gly Thr Thr Leu Thr
            100   105   110
Val Ser Ser
        115

<210> 137
<211> 345
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-8-18B heavy chain variable region

<400> 137
gaagtgaagc tggtggagtc tgggggaggc ttagtgaagc ctggagggtc cctgaaactc 60
tcctgtgcag cctctggatt cactttcagt acctatgccg tgtcttggtt tcgccagact 120
ccagagagga ggctggagtg ggtcgcatcc attactagtg gtggtagcac ctactatcca 180
gacagtgtga agggccgatt caccatctcc agagataatg ccaggaacat cctgtacctg 240
caaatgatca gtctgaggtc tggggacacg gccatgtatt actgtgcaag aggctgggac 300
gagaatgact actggggcca aggcaccact ctcacagtct cctca 345

<210> 138
<211> 115
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-8-18B heavy chain variable region

<400> 138
Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Lys Pro Gly Gly
 1   5   10   15
Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Thr Tyr
            20   25   30
Ala Val Ser Trp Phe Arg Gln Thr Pro Glu Arg Arg Leu Glu Trp Val
        35   40   45
Ala Ser Ile Thr Ser Gly Gly Ser Thr Tyr Tyr Pro Asp Ser Val Lys
    50   55   60
Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Arg Asn Ile Leu Tyr Leu
65   70   75   80
Gln Met Ile Ser Leu Arg Ser Gly Asp Thr Ala Met Tyr Tyr Cys Ala
                85   90   95
Arg Gly Trp Asp Glu Asn Asp Tyr Trp Gly Gln Gly Thr Thr Leu Thr
            100   105   110
Val Ser Ser
        115

<210> 139
<211> 351
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-7-38C heavy chain variable region

<400> 139
caggtgcagc tgaaggagtc aggacctggc ctggtggcgc cctcacagag cctgtccatc 60
acatgcactg tctcagggtt ttcattaacc gactatgcca taagctggat tcgccagcct 120
ccaggaaagg gtctggagtg gctgggagta atatggggtg gtggaagaac atattctaat 180
tcagctctca aatccagact gagcatcagc aaggacaact ccaggagcca aattttctta 240
aaaatgaaca gtctgcaaac tgatgacaca gccatgtact actgtgccaa acatgaggag 300
gtatcccgtt ttgctcactg gggccaaggg actctggtca ctgtctctgc a 351

<210> 140
<211> 117
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-7-38C heavy chain variable region

<400> 140
Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln
 1   5   10   15
Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Asp Tyr
            20   25   30
Ala Ile Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu
        35   40   45
Gly Val Ile Trp Gly Gly Gly Arg Thr Tyr Ser Asn Ser Ala Leu Lys
    50   55   60
Ser Arg Leu Ser Ile Ser Lys Asp Asn Ser Arg Ser Gln Ile Phe Leu
65   70   75   80
Lys Met Asn Ser Leu Gln Thr Asp Asp Thr Ala Met Tyr Tyr Cys Ala
                85   90   95
Lys His Glu Glu Val Ser Arg Phe Ala His Trp Gly Gln Gly Thr Leu
            100   105   110
Val Thr Val Ser Ala
        115

<210> 141
<211> 351
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-7-49A heavy chain variable region

<400> 141
caggtgcagc tgaaggagtc aggacctggc ctggtggcgc cctcacagag cctgtccatc 60
acatgcactg tctcagggtt ctcattaacc gactatggtg taagctggat tcgccagcct 120
ccaggaaagg gtctggagtg gctgggagta atatggggtg gtggaggcac atactataat 180
tcagctctca aatccagact gagcatcaac aaggacaact ccaagagcca aattttctta 240
aaaatgaaca gtctgcaaac tgatgacaca gccatttact actgtgccaa acatgaggag 300
gtatcccggt ttgcttactg gggccaaggg actctggtca ctgtctctgc a   351

<210> 142
<211> 117
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-7-49A heavy chain variable region

<400> 142
Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln
 1   5   10   15
Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Asp Tyr
            20   25   30
Gly Val Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu
        35   40   45
Gly Val Ile Trp Gly Gly Gly Gly Thr Tyr Tyr Asn Ser Ala Leu Lys
    50   55   60
Ser Arg Leu Ser Ile Asn Lys Asp Asn Ser Lys Ser Gln Ile Phe Leu
65   70   75   80
Lys Met Asn Ser Leu Gln Thr Asp Asp Thr Ala Ile Tyr Tyr Cys Ala
                85   90   95
Lys His Glu Glu Val Ser Arg Phe Ala Tyr Trp Gly Gln Gly Thr Leu
            100   105   110
Val Thr Val Ser Ala
        115

<210> 143
<211> 351
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-7-13A heavy chain variable region

<400> 143
caggtgcagc tgaaggagtc aggacctggc ctggtggcgc cctcacagag cctgtccatc 60
acatgcactg tctcagggtt ctcattaacc gactatgcca taagctggat tcgccagcct 120
ccaggaaagg gtctggagtg gctgggagta atatggggtg gtggaagaac atactctaat 180
tcagctctca aatccagact gagcatcagc aaggacaatt ccaggagcca aattttctta 240
aaaatgaaca gtctgcacac tgaagacaca gccgtgtact actgtgccaa acatgaggag 300
gtctcccgtt ttgcttactg gggccaaggg actctggtca ctgtctctgc a 351

<210> 144
<211> 117
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-7-13A heavy chain variable region

<400> 144
Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln
 1   5   10   15
Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Asp Tyr
            20   25   30
Ala Ile Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu
        35   40   45
Gly Val Ile Trp Gly Gly Gly Arg Thr Tyr Ser Asn Ser Ala Leu Lys
    50   55   60
Ser Arg Leu Ser Ile Ser Lys Asp Asn Ser Arg Ser Gln Ile Phe Leu
65   70   75   80
Lys Met Asn Ser Leu His Thr Glu Asp Thr Ala Val Tyr Tyr Cys Ala
                85   90   95
Lys His Glu Glu Val Ser Arg Phe Ala Tyr Trp Gly Gln Gly Thr Leu
            100   105   110
Val Thr Val Ser Ala
        115

<210> 145
<211> 342
<212> DNA
<213> Artificial Sequence

<220>
<223> R29-67-4A heavy chain variable region

<400> 145
tctgatgtgc aacttcagga gtcgggacct ggcctggtga aaccttctca gtctctgtcc 60
ctcacctgca ctgtcactgg ctactcaatc accagtgttt atgcctggaa ctggatccgg 120
cagtttccag gaaacaaact ggagtggatg ggctacataa gctacagtgg tatcactacc 180
tacaacccat ctctcaaaag tcgaatctct atcactcgag acacatccaa gaaccagttc 240
ttcctgcagt tgaattctgt gactactgag gacacagcca catattactg tgcaacaact 300
gggacccgct ggggccaagg caccactctc acagtctcct ca 342

<210> 146
<211> 114
<212> PRT
<213> Artificial Sequence

<220>
<223> R29-67-4A heavy chain variable region

<400> 146
Ser Asp Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser
 1   5   10   15
Gln Ser Leu Ser Leu Thr Cys Thr Val Thr Gly Tyr Ser Ile Thr Ser
            20   25   30
Val Tyr Ala Trp Asn Trp Ile Arg Gln Phe Pro Gly Asn Lys Leu Glu

```
        35                  40                  45
Trp Met Gly Tyr Ile Ser Tyr Ser Gly Ile Thr Tyr Asn Pro Ser
    50                  55                  60
Leu Lys Ser Arg Ile Ser Ile Thr Arg Asp Thr Ser Lys Asn Gln Phe
65                  70                  75                  80
Phe Leu Gln Leu Asn Ser Val Thr Thr Glu Asp Thr Ala Thr Tyr Tyr
                85                  90                  95
Cys Ala Thr Thr Gly Thr Arg Trp Gly Gln Gly Thr Thr Leu Thr Val
            100                 105                 110
Ser Ser
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<210> 147
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-9B - Kabat

<400> 147
Ser Tyr Ala Met Ser
 1   5

<210> 148
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-9B - Kabat

<400> 148
Ser Ile Thr Gly Gly Gly Gly Thr Tyr Tyr Pro Asp Ser Val Lys Gly
 1   5   10   15

<210> 149
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-8-9B - Kabat

<400> 149
Gly Trp Asp Glu Asn Asp Tyr
 1   5

<210> 150
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-8-9B - Kabat

<400> 150
Arg Ser Ser Gln Ser Leu Val Phe Ser Asn Gly Asn Thr Tyr Leu His
 1   5   10   15

<210> 151
<211> 17
<212> PRT

<213> Artificial Sequence

<220>
<223> SIT1 peptide as negative control

<400> 151
Asp Asn Cys Thr Asp Leu Leu Ala Leu Gly Ile Pro Ser Ile Thr Gln
 1   5   10   15
Lys

<210> 152
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> C16 peptide as posotive control

<400> 152
Met Pro Leu Thr Pro Glu Pro Pro Ser Gly Arg Val Glu Gly Pro Pro
 1   5   10   15
Ala Trp Glu Ala Ala Pro Trp Pro Ser Leu Pro Cys Gly Pro Cys
            20   25   30

<210> 153
<211> 31
<212> PRT
<213> Homo sapiens

<220>
<223> Human C16-ECD

<400> 153
Met Pro Leu Thr Pro Glu Pro Pro Ser Gly Arg Val Glu Gly Pro Pro
 1   5   10   15
Ala Trp Glu Ala Ala Pro Trp Pro Ser Leu Pro Cys Gly Pro Cys
            20   25   30

<210> 154
<211> 31
<212> PRT
<213> Macaca fascicularis

<220>
<223> Cyno C16-ECD

<400> 154
Met Pro Ser Thr Pro Glu Pro Pro Ser Gly Arg Met Glu Gly Pro Pro
 1   5   10   15
Thr Trp Glu Ala Ala Pro Trp Pro Ser Leu Pro Cys Gly Pro Cys
            20   25   30

<210> 155
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> 6 His Tag

<400> 155
His His His His His His
 1   5

<210> 156
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Thrombin site

<400> 156
Leu Val Pro Arg Gly Ser
 1   5

<210> 157
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> IgG1 Hinge region

<400> 157
Asp Lys Thr His Thr Cys Pro Pro Cys
 1   5

<210> 158
<211> 218
<212> PRT
<213> Artificial Sequence

<220>
<223> CH3 CH4 domains

<400> 158
Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro
 1   5   10   15
Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys
            20   25   30
Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp
        35   40   45
Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu
    50   55   60
Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu
65   70   75   80
His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn
                85   90   95
Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
            100   105   110
Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu
        115   120   125
Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr
    130   135   140
Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
145   150   155   160
Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe
                165   170   175
Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
            180   185   190
Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr
        195   200   205
Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
    210   215

<210> 159

<211> 22
<212> PRT
<213> Mus musculus

<220>
<223> Mouse kappa signal peptide

<400> 159
Met Asp Phe Gln Val Gln Ile Phe Ser Phe Leu Leu Ile Ser Ala Ser
 1   5   10   15
Val Ile Met Ser Arg Gly
            20

<210> 160
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 of Antibody R29-8-9B - Kabat

<400> 160
Lys Val Ser Asn Arg Phe Ser
 1   5

<210> 161
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-9B - Chothia

<400> 161
Gly Phe Thr Phe Ser Ser Tyr
 1   5

<210> 162
<211> 3
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-9B - Chothia

<400> 162
Gly Gly Gly
 1

<210> 163
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-8-9B - Chothia

<400> 163
Trp Asp Glu Asn Asp
 1   5

<210> 164
<211> 12
<212> PRT

<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-8-9B - Chothia

<400> 164
Ser Gln Ser Leu Val Phe Ser Asn Gly Asn Thr Tyr
 1   5   10

<210> 165
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 of Antibody R29-8-9B - Chothia

<400> 165
Ser Thr His Val Pro Trp
 1   5

<210> 166
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-9B - Contact

<400> 166
Ser Ser Tyr Ala Met Ser
 1   5

<210> 167
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-9B - Contact

<400> 167
Trp Val Ala Ser Ile Thr Gly Gly Gly Gly Thr Tyr
 1   5   10

<210> 168
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-8-9B - Contact

<400> 168
Ala Arg Gly Trp Asp Glu Asn Asp
 1   5

<210> 169
<211> 12
<212> PRT
<213> Artificial Sequence

<220>

<223> VL CDR1 of Antibody R29-8-9B - Contact

<400> 169
Val Phe Ser Asn Gly Asn Thr Tyr Leu His Trp Tyr
 1   5   10

<210> 170
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR2 of Antibody R29-8-9B - Contact

<400> 170
Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe
 1   5   10

<210> 171
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 of Antibody R29-8-9B - Contact

<400> 171
Ser Gln Ser Thr His Val Pro Trp
 1   5

<210> 172
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-9B - AbM

<400> 172
Gly Phe Thr Phe Ser Ser Tyr Ala Met Ser
 1   5   10

<210> 173
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-9B - AbM

<400> 173
Ser Ile Thr Gly Gly Gly Gly Thr Tyr
 1   5

<210> 174
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-30A - Kabat

<400> 174

Asn Tyr Ala Met Ser
 1   5

<210> 175
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-30A - Kabat

<400> 175
Ser Ile Thr Gly Gly Gly Ser Thr Tyr Tyr Pro Asp Ser Val Lys Gly
 1   5   10   15

<210> 176
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-30A - Chothia

<400> 176
Gly Phe Thr Phe Ser Asn Tyr
 1   5

<210> 177
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-30A - Contact

<400> 177
Ser Asn Tyr Ala Met Ser
 1   5

<210> 178
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-30A - Contact

<400> 178
Trp Val Ala Ser Ile Thr Gly Gly Gly Ser Thr Tyr
 1   5   10

<210> 179
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-30A - AbM

<400> 179
Gly Phe Thr Phe Ser Asn Tyr Ala Met Ser
 1   5   10

<210> 180
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-30A - AbM

<400> 180
Ser Ile Thr Gly Gly Gly Ser Thr Tyr
 1   5

<210> 181
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-120B - Kabat

<400> 181
Ile Tyr Ala Met Ser
 1   5

<210> 182
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-120B - Kabat

<400> 182
Ser Ile Thr Gly Gly Gly Thr Asn Phe Tyr Pro Asp Ser Val Arg Gly
 1   5   10   15

<210> 183
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-8-120B - Kabat

<400> 183
Arg Ser Ser Gln Ser Leu Val Tyr Ser Asn Gly Asn Thr Tyr Leu His
 1   5   10   15

<210> 184
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-120B - Chothia

<400> 184
Gly Phe Thr Phe Ser Ile Tyr
 1   5

<210> 185
<211> 12

<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-8-120B - Chothia

<400> 185
Ser Gln Ser Leu Val Tyr Ser Asn Gly Asn Thr Tyr
 1   5   10

<210> 186
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-120B - Contact

<400> 186
Ser Ile Tyr Ala Met Ser
 1   5

<210> 187
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-120B - Contact

<400> 187
Trp Val Ala Ser Ile Thr Gly Gly Gly Thr Asn Phe
 1   5   10

<210> 188
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-8-120B - Contact

<400> 188
Val Tyr Ser Asn Gly Asn Thr Tyr Leu His Trp Tyr
 1   5   10

<210> 189
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-120B - AbM

<400> 189
Gly Phe Thr Phe Ser Ile Tyr Ala Met Ser
 1   5   10

<210> 190
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-120B - AbM

<400> 190
Ser Ile Thr Gly Gly Gly Thr Asn Phe
 1   5

<210> 191
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-18B - Kabat

<400> 191
Thr Tyr Ala Val Ser
 1   5

<210> 192
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-18B - Kabat

<400> 192
Ser Ile Thr Ser Gly Gly Ser Thr Tyr Tyr Pro Asp Ser Val Lys Gly
 1   5   10   15

<210> 193
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-18B - Chothia

<400> 193
Gly Phe Thr Phe Ser Thr Tyr
 1   5

<210> 194
<211> 3
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-18B - Chothia

<400> 194
Ser Gly Gly
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<210> 195
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-18B - Contact

<400> 195
Ser Thr Tyr Ala Val Ser
 1   5

<210> 196
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-18B - Contact

<400> 196
Trp Val Ala Ser Ile Thr Ser Gly Gly Ser Thr Tyr
 1   5   10

<210> 197
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-18B - AbM

<400> 197
Gly Phe Thr Phe Ser Thr Tyr Ala Val Ser
 1   5   10

<210> 198
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-18B - AbM

<400> 198
Ser Ile Thr Ser Gly Gly Ser Thr Tyr
 1   5

<210> 199
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-28C - Kabat

<400> 199
Asn Tyr Ala Val Ser
 1   5

<210> 200
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-28C - Kabat

<400> 200
Ser Ile Thr Ser Gly Gly Arg Thr Tyr Tyr Pro Asp Ser Met Lys Gly
 1   5   10   15

<210> 201
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 of Antibody R29-8-28C - Chothia

<400> 201
Thr Thr His Val Pro Trp
 1   5

<210> 202
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-28C - Contact

<400> 202
Ser Asn Tyr Ala Val Ser
 1   5

<210> 203
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-28C - Contact

<400> 203
Trp Val Ala Ser Ile Thr Ser Gly Gly Arg Thr Tyr
 1   5   10

<210> 204
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-8-28C - Contact

<400> 204
Gly Arg Gly Trp Asp Glu Asn Asp
 1   5

<210> 205
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 of Antibody R29-8-28C - Contact

<400> 205
Ser Gln Thr Thr His Val Pro Trp
 1   5

<210> 206

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

<220>
<223> VH CDR1 of Antibody R29-8-28C - AbM

<400> 206
Gly Phe Thr Phe Ser Asn Tyr Ala Val Ser
 1   5   10

<210> 207
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-28C - AbM

<400> 207
Ser Ile Thr Ser Gly Gly Arg Thr Tyr
 1   5

<210> 208
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-19B - Kabat

<400> 208
Ser Tyr Ala Val Ser
 1   5

<210> 209
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-19B - Kabat

<400> 209
Ser Ile Thr Ser Gly Gly Arg Thr Tyr Tyr Pro Asp Ser Val Lys Gly
 1   5   10   15

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

<220>
<223> VH CDR3 of Antibody R29-8-19B - Kabat

<400> 210
Gly Trp Asp Glu Asn Asp Leu
 1   5

<210> 211
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-19B - Contact

<400> 211
Ser Ser Tyr Ala Val Ser
 1   5

<210> 212
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-8-19B - Contact

<400> 212
Thr Arg Gly Trp Asp Glu Asn Asp
 1   5

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

<220>
<223> VH CDR1 of Antibody R29-8-19B - AbM

<400> 213
Gly Phe Thr Phe Ser Ser Tyr Ala Val Ser
 1   5   10

<210> 214
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-36C - Kabat

<400> 214
Ser Ile Thr Ser Gly Gly Arg Ser Tyr Tyr Pro Asp Ser Val Lys Gly
 1   5   10   15

<210> 215
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-8-36C - Kabat

<400> 215
Arg Ser Ser Gln Ser Leu Leu Tyr Ser Asn Gly Asn Thr Tyr Leu His
 1   5   10   15

<210> 216
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-8-36C - Chothia

<400> 216
Ser Gln Ser Leu Leu Tyr Ser Asn Gly Asn Thr Tyr
 1   5   10

<210> 217
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-8-36C - Contact

<400> 217
Leu Tyr Ser Asn Gly Asn Thr Tyr Leu His Trp Tyr
 1   5   10

<210> 218
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-36C - AbM

<400> 218
Ser Ile Thr Ser Gly Gly Arg Ser Tyr
 1   5

<210> 219
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-75B - Kabat

<400> 219
Arg Phe Gly Met His
 1   5

<210> 220
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-75B - Kabat

<400> 220
Tyr Ile Ser Ser Gly Ser Ser Thr Ile Tyr Tyr Ala Asp Thr Val Lys
 1   5   10   15
Gly

<210> 221
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-8-75B - Kabat

<400> 221
Val Asp Tyr Asp Val Ala Leu Ala Tyr
 1   5

<210> 222
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-8-75B - Kabat

<400> 222
Arg Ser Ser Gln Ser Ile Val His Arg Asn Gly Asn Thr Tyr Leu Glu
 1   5   10   15

<210> 223
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-136C - Kabat

<400> 223
Tyr Ile Asn Tyr Ser Gly Ser Ser Arg Tyr Asn Pro Ser Leu Lys Ser
 1   5   10   15

<210> 224
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-75B - Chothia

<400> 224
Gly Phe Thr Phe Ser Arg Phe
 1   5

<210> 225
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-75B - Chothia

<400> 225
Ser Gly Ser Ser
 1

<210> 226
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-8-75B - Chothia

<400> 226
Asp Tyr Asp Val Ala Leu Ala
 1   5

<210> 227
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-8-75B - Chothia

<400> 227
Ser Gln Ser Ile Val His Arg Asn Gly Asn Thr Tyr
 1   5   10

<210> 228
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 of Antibody R29-8-75B - Chothia

<400> 228
Gly Ser Gln Trp
 1

<210> 229
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-75B - Contact

<400> 229
Ser Arg Phe Gly Met His
 1   5

<210> 230
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-75B - Contact

<400> 230
Trp Val Ala Tyr Ile Ser Ser Gly Ser Ser Thr Ile Tyr
 1   5   10

<210> 231
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-8-75B - Contact

<400> 231
Ala Arg Val Asp Tyr Asp Val Ala Leu Ala
 1   5   10

<210> 232

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

<220>
<223> VL CDR1 of Antibody R29-8-75B - Contact

<400> 232
Val His Arg Asn Gly Asn Thr Tyr Leu Glu Trp Tyr
 1   5   10

<210> 233
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 of Antibody R29-8-75B - Contact

<400> 233
Phe Gln Gly Ser Gln Trp
 1   5

<210> 234
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-57B - Kabat

<400> 234
Ser Asp Tyr Ala Trp Asn
 1   5

<210> 235
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-57B - Kabat

<400> 235
Tyr Ile Asn Tyr Ser Gly Ser Thr Arg Tyr Asn Pro Ser Leu Lys Ser
 1   5   10   15

<210> 236
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-8-57B - Kabat

<400> 236
Glu Arg Tyr Asp Gly Val Tyr Tyr Gly Met Asp Tyr
 1   5   10

<210> 237
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-8-57B - Kabat

<400> 237
Lys Ser Ser Gln Ser Leu Leu Tyr Ser Ser Asn Gln Lys Asn Tyr Leu
 1   5   10   15
Ala

<210> 238
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR2 of Antibody R29-8-57B - Kabat

<400> 238
Trp Ala Ser Thr Arg Glu Ser
 1   5

<210> 239
<211> 3
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-57B - Chothia

<400> 239
Tyr Ser Gly
 1

<210> 240
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-57B - Chothia

<400> 240
Gly Tyr Ser Ile Thr Ser Asp Tyr
 1   5

<210> 241
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-8-57B - Chothia

<400> 241
Arg Tyr Asp Gly Val Tyr Tyr Gly Met Asp
 1   5   10

<210> 242
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-8-57B - Chothia

<400> 242
Ser Gln Ser Leu Leu Tyr Ser Ser Asn Gln Lys Asn Tyr
 1   5   10

<210> 243
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 of Antibody R29-8-57B - Chothia

<400> 243
Tyr Tyr Ser Tyr Arg
 1   5

<210> 244
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-57B - Contact

<400> 244
Thr Ser Asp Tyr Ala Trp Asn
 1   5

<210> 245
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-57B - Contact

<400> 245
Trp Met Gly Tyr Ile Asn Tyr Ser Gly Ser Thr Arg
 1   5   10

<210> 246
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-8-57B - Contact

<400> 246
Ala Arg Glu Arg Tyr Asp Gly Val Tyr Tyr Gly Met Asp
 1   5   10

<210> 247
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-8-57B - Contact

<400> 247
Leu Tyr Ser Ser Asn Gln Lys Asn Tyr Leu Ala Trp Tyr
 1   5   10

<210> 248
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR2 of Antibody R29-8-57B - Contact

<400> 248
Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu
 1   5   10

<210> 249
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 of Antibody R29-8-57B - Contact

<400> 249
Gln Gln Tyr Tyr Ser Tyr Arg
 1   5

<210> 250
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-8-57B - AbM

<400> 250
Gly Tyr Ser Ile Thr Ser Asp Tyr Ala Trp Asn
 1   5   10

<210> 251
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-57B - AbM

<400> 251
Tyr Ile Asn Tyr Ser Gly Ser Thr Arg
 1   5

<210> 252
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-136C - Contact

<400> 252
Trp Met Gly Tyr Ile Asn Tyr Ser Gly Ser Ser Arg
 1   5   10

<210> 253
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-8-136C - AbM

<400> 253
Tyr Ile Asn Tyr Ser Gly Ser Ser Arg
 1   5

<210> 254
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-7-1C - Kabat

<400> 254
Tyr Ile Ser Tyr Ser Gly Ser Ile Arg Tyr Asn Pro Ser Leu Lys Ser
 1   5   10   15

<210> 255
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-7-1C - Kabat

<400> 255
Glu Lys Tyr Asp Asn Tyr Tyr Tyr Ala Met Asp Tyr
 1   5   10

<210> 256
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-7-1C - Kabat

<400> 256
Lys Ser Ser Gln Asn Leu Leu Tyr Ser Thr Asn Gln Lys Asn Tyr Leu
 1   5   10   15
Ala

<210> 257
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-7-1C - Chothia

<400> 257
Lys Tyr Asp Asn Tyr Tyr Tyr Ala Met Asp
 1   5   10

<210> 258
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-7-1C - Chothia

<400> 258
Ser Gln Asn Leu Leu Tyr Ser Thr Asn Gln Lys Asn Tyr
 1   5   10

<210> 259
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-7-1C - Contact

<400> 259
Trp Met Gly Tyr Ile Ser Tyr Ser Gly Ser Ile Arg
 1   5   10

<210> 260
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-7-1C - Contact

<400> 260
Ala Arg Glu Lys Tyr Asp Asn Tyr Tyr Tyr Ala Met Asp
 1   5   10

<210> 261
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-7-1C - Contact

<400> 261
Leu Tyr Ser Thr Asn Gln Lys Asn Tyr Leu Ala Trp Tyr
 1   5   10

<210> 262
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-7-1C - AbM

<400> 262
Tyr Ile Ser Tyr Ser Gly Ser Ile Arg
 1   5

<210> 263
<211> 16

<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-67-7A - Kabat

<400> 263
Tyr Ile Asn Tyr Ser Gly Arg Thr Arg Tyr Asn Pro Ser Leu Asn Ser
 1   5   10   15

<210> 264
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-67-7A - Kabat

<400> 264
Glu Asn Tyr Asp Tyr Glu Phe Tyr Ala Met Asp Tyr
 1   5   10

<210> 265
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-67-7A - Kabat

<400> 265
Lys Ser Ser Gln Asn Leu Leu Tyr Ser Ser Asn Gln Lys Asn Tyr Leu
 1   5   10   15
Ala

<210> 266
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-67-4A - Chothia

<400> 266
Gly Tyr Ser Ile Thr Ser Val Tyr
 1   5

<210> 267
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-67-4A - Chothia

<400> 267
Asn Tyr Asp Tyr Glu Phe Tyr Ala Met Asp
 1   5   10

<210> 268
<211> 13
<212> PRT

<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-67-7A - Chothia

<400> 268
Ser Gln Asn Leu Leu Tyr Ser Ser Asn Gln Lys Asn Tyr
 1   5   10

<210> 269
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 of Antibody R29-67-7A - Chothia

<400> 269
Tyr Tyr Ile Tyr Arg
 1   5

<210> 270
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-67-7A - Contact

<400> 270
Trp Met Gly Tyr Ile Asn Tyr Ser Gly Arg Thr Arg
 1   5   10

<210> 271
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-67-7A - Contact

<400> 271
Ala Arg Glu Asn Tyr Asp Tyr Glu Phe Tyr Ala Met Asp
 1   5   10

<210> 272
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 of Antibody R29-67-7A - Contact

<400> 272
Gln Gln Tyr Tyr Ile Tyr Arg
 1   5

<210> 273
<211> 9
<212> PRT
<213> Artificial Sequence

<220>

<223> VH CDR2 of Antibody R29-67-7A - AbM

<400> 273
Tyr Ile Asn Tyr Ser Gly Arg Thr Arg
 1   5

<210> 274
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-67-4A - Kabat

<400> 274
Ser Val Tyr Ala Trp Asn
 1   5

<210> 275
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-67-4A - Kabat

<400> 275
Tyr Ile Ser Tyr Ser Gly Ile Thr Thr Tyr Asn Pro Ser Leu Lys Ser
 1   5   10   15

<210> 276
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-67-4A - Kabat

<400> 276
Thr Gly Thr Arg
 1

<210> 277
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-67-4A - Contact

<400> 277
Thr Ser Val Tyr Ala Trp Asn
 1   5

<210> 278
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-67-4A - Contact

<400> 278

Trp Met Gly Tyr Ile Ser Tyr Ser Gly Ile Thr Thr
 1   5   10

<210> 279
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-67-4A - AbM

<400> 279
Gly Tyr Ser Ile Thr Ser Val Tyr Ala Trp Asn
 1   5   10

<210> 280
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-67-4A - AbM

<400> 280
Tyr Ile Ser Tyr Ser Gly Ile Thr Thr
 1   5

<210> 281
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-7A-53A - Kabat

<400> 281
Asp Tyr Ala Ile Ser
 1   5

<210> 282
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-7A-53A - Kabat

<400> 282
Val Ile Trp Gly Gly Gly Arg Thr Tyr Ser Asn Ser Ala Leu Lys Ser
 1   5   10   15

<210> 283
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-7A-53A - Kabat

<400> 283
His Glu Glu Val Ser Arg Phe Ala Tyr
 1   5

<210> 284
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-7A-53A - Kabat

<400> 284
Arg Ser Ser Gln Ser Leu Val Tyr Ser Asn Gly Asn Ser Tyr Leu His
 1   5   10   15

<210> 285
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-7A-53A - Chothia

<400> 285
Gly Phe Ser Leu Thr Asp Tyr
 1   5

<210> 286
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-7A-53A - Chothia

<400> 286
Glu Glu Val Ser Arg Phe Ala
 1   5

<210> 287
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-7A-53A - Chothia

<400> 287
Ser Gln Ser Leu Val Tyr Ser Asn Gly Asn Ser Tyr
 1   5   10

<210> 288
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 of Antibody R29-7A-53A - Chothia

<400> 288
Ser Thr His Ile Pro Leu
 1   5

<210> 289
<211> 6

<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-7A-53A - Contact

<400> 289
Thr Asp Tyr Ala Ile Ser
 1   5

<210> 290
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-7A-53A - Contact

<400> 290
Trp Leu Gly Val Ile Trp Gly Gly Gly Arg Thr Tyr
 1   5   10

<210> 291
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-7A-53A - Contact

<400> 291
Ala Lys His Glu Glu Val Ser Arg Phe Ala
 1   5   10

<210> 292
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-7A-53A - Contact

<400> 292
Val Tyr Ser Asn Gly Asn Ser Tyr Leu His Trp Tyr
 1   5   10

<210> 293
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 of Antibody R29-7A-53A - Contact

<400> 293
Ser Gln Ser Thr His Ile Pro Leu
 1   5

<210> 294
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-7A-53A - AbM

<400> 294
Gly Phe Ser Leu Thr Asp Tyr Ala Ile Ser
 1   5   10

<210> 295
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-7A-53A - AbM

<400> 295
Val Ile Trp Gly Gly Gly Arg Thr Tyr
 1   5

<210> 296
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-7A-38C - Kabat

<400> 296
His Glu Glu Val Ser Arg Phe Ala His
 1   5

<210> 297
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-7A-38C - Kabat

<400> 297
Asp Tyr Gly Val Ser
 1   5

<210> 298
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR2 of Antibody R29-7A-38C - Kabat

<400> 298
Val Ile Trp Gly Gly Gly Gly Thr Tyr Tyr Asn Ser Ala Leu Lys Ser
 1   5   10   15

<210> 299
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-7A-38C - Contact

<400> 299
Thr Asp Tyr Gly Val Ser
 1   5

<210> 300
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR2 of Antibody R29-7A-38C - Contact

<400> 300
Trp Leu Gly Val Ile Trp Gly Gly Gly Gly Thr Tyr
 1   5   10

<210> 301
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR1 of Antibody R29-7A-38C - AbM

<400> 301
Gly Phe Ser Leu Thr Asp Tyr Gly Val Ser
 1   5   10

<210> 302
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR2 of Antibody R29-7A-38C - AbM

<400> 302
Val Ile Trp Gly Gly Gly Gly Thr Tyr
 1   5

<210> 303
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-7-2A - Kabat

<400> 303
Thr His Ala Met Asn
 1   5

<210> 304
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-7-2A - Kabat

<400> 304
Arg Ile Arg Ser Lys Ser Asn Asn Tyr Ala Arg Tyr Tyr Ala Asp Ser
 1   5   10   15

Val Lys Asp

<210> 305
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-7-2A - Kabat

<400> 305
Gln Gly Asp Gly Gly Phe Ala Tyr
 1   5

<210> 306
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR2 of Antibody R29-7-2A - Kabat

<400> 306
Trp Ala Ser Ala Arg Glu Ser
 1   5

<210> 307
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-7-2A - Chothia

<400> 307
Gly Phe Ser Phe Asn Thr His
 1   5

<210> 308
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-7-2A - Chothia

<400> 308
Ser Lys Ser Asn Asn Tyr
 1   5

<210> 309
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-7-2A - Chothia

<400> 309
Gly Asp Gly Gly Phe Ala
 1   5

<210> 310
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 of Antibody R29-7-2A - Chothia

<400> 310
Tyr Tyr Ser Tyr Pro Pro
 1   5

<210> 311
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-7-2A - Contact

<400> 311
Asn Thr His Ala Met Asn
 1   5

<210> 312
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-7-2A - Contact

<400> 312
Trp Val Ala Arg Ile Arg Ser Lys Ser Asn Asn Tyr Ala Arg Tyr
 1   5   10   15

<210> 313
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR3 of Antibody R29-7-2A - Contact

<400> 313
Val Lys Gln Gly Asp Gly Gly Phe Ala
 1   5

<210> 314
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR2 of Antibody R29-7-2A - Contact

<400> 314
Leu Leu Ile Tyr Trp Ala Ser Ala Arg Glu
 1   5   10

<210> 315
<211> 8

<212> PRT
<213> Artificial Sequence

<220>
<223> VL CDR3 of Antibody R29-7-2A - Contact

<400> 315
Gln Gln Tyr Tyr Ser Tyr Pro Pro
 1   5

<210> 316
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR2 of Antibody R29-7-2A - AbM

<400> 316
Arg Ile Arg Ser Lys Ser Asn Asn Tyr Ala Arg Tyr
 1   5   10

<210> 317
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VH CDR1 of Antibody R29-7-2A - AbM

<400> 317
Gly Phe Ser Phe Asn Thr His Ala Met Asn
 1   5   10

<210> 318
<211> 224
<212> PRT
<213> Macaca fascicularis

<400> 318
Met Pro Ser Thr Pro Glu Pro Pro Ser Gly Arg Met Glu Gly Pro Pro
 1   5   10   15
Thr Trp Glu Ala Ala Pro Trp Pro Ser Leu Pro Cys Gly Pro Cys Ile
            20   25   30
Pro Ile Met Leu Ala Leu Ala Thr Leu Ala Ala Leu Phe Ile Leu Thr
        35   40   45
Thr Ala Val Leu Ala Glu Arg Leu Phe Arg Arg Ala Leu Arg Pro Asp
    50   55   60
Pro Ser His His Ala Pro Thr Leu Val Trp Arg Pro Gly Gly Glu Leu
65   70   75   80
Trp Ile Glu Pro Met Gly Thr Pro Arg Glu Arg Ser Glu Asp Trp Tyr
                85   90   95
Gly Ser Ala Val Pro Leu Leu Thr Asp Arg Ala Pro Glu Pro Pro Thr
            100   105   110
Pro Val Gly Val Leu Glu Ala Gln Ala Thr Ala Pro Tyr Ala Pro Ser
        115   120   125
Ala Pro Asn Ser Ala Pro Ser Ser Leu Gly Pro Gln Thr Pro Pro Glu
    130   135   140
Val Pro Ala Arg Ser Thr Phe Trp Gly Pro Gln Pro Trp Glu Gly Arg
145   150   155   160
Pro Pro Gly Thr Gly Leu Val Ser Trp Ala Glu Pro Glu Gln Arg Pro
                165   170   175
Glu Ala Arg Ala Gln Phe Gly Ser Pro Gln Ala Arg Arg Gln Arg Pro
            180   185   190
Arg Ser Pro Asp Pro Glu Trp Gly Leu Gln Pro Arg Val Thr Leu Glu
        195   200   205

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Gln Ile Ser Ala Phe Trp Arg Arg Glu Gly Arg Thr Ser Val Gly Phe
    210                 215                 220


<210> 319
<211> 225
<212> PRT
<213> Mus musculus

<400> 319
Met Pro Val Thr Pro Gln Gln Pro Ser Gly His Thr Glu Gly Leu Pro
 1               5                  10                  15
Glu Pro Thr Ala Glu Ala Ala Val Trp Val Val Ile Pro Cys Gly Pro
            20                  25                  30
Cys Ile Pro Ile Met Leu Gly Leu Ala Ser Leu Thr Ala Phe Phe Ile
        35                  40                  45
Ile Thr Thr Ala Val Leu Ala Glu Arg Leu Phe Arg Arg Pro Gln Pro
    50                  55                  60
Asp Pro Ser Gln Arg Ala Pro Thr Leu Val Trp Arg Pro Gly Gly Glu
65                  70                  75                  80
Leu Trp Ile Glu Pro Thr Ser Ser Ala Arg Glu Arg Ser Glu Asp Trp
                85                  90                  95
Tyr Gly Ser Ser Met Pro Leu Leu Met Asp Arg Ala Pro Gly Pro Pro
            100                 105                 110
Thr Pro Gly Gly Thr Leu Glu Gly Arg Ala Thr Ala Pro Pro Ala Thr
        115                 120                 125
Ser Ala Pro Tyr Ser Ser Leu Ser Ser Leu Val Pro Gln Thr Pro Pro
    130                 135                 140
Glu Val Pro Ala Gln Ser Thr Phe Trp Arg Pro Gln Thr Gln Glu Glu
145                 150                 155                 160
Arg Pro His Asp Thr Ser Leu Val Ser Trp Val Gly Ser Glu Pro Met
                165                 170                 175
Pro Glu Ala Gly Leu Gln Val Gly Ser Pro Arg Pro Trp Arg Pro Arg
            180                 185                 190
Gln Gly Ser Leu Glu Pro Asp Trp Gly Leu Gln Pro Arg Val Thr Leu
        195                 200                 205
Glu Gln Ile Ser Ala Phe Trp Lys Arg Glu Gly Arg Thr Ser Val Gly
    210                 215                 220
Phe
225
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