SEQUENCE LISTING

<110> National Cancer Center

<120> Anti-TMEM-180 antibody

<130> G0461AGP01

<160> 170

<170> PatentIn version 3.5

<210> 1
<211> 10
<212> PRT
<213> Artificial

<220>
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<400> 1

Gly Phe Ser Leu Thr Arg Tyr Asn Val His
1 5 10

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<211> 9
<212> PRT
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<220>
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<400> 2

Val Ile Trp Thr Gly Gly Ser Thr Asp
1 5

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<220>
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<400> 3

Asp Leu Gly Tyr
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<400> 4

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

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<211> 7
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<400> 5

Gln Val Ser Lys Leu Asp Ser
1 5

<210> 6
<211> 9
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<220>
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<400> 6

Cys Gln Gly Ser Tyr Ser Pro His Thr
1 5

<210> 7
<211> 10
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<220>
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<400> 7

Gly Phe Ser Leu Thr Ser Tyr Tyr Met Gln
1 5 10

<210> 8
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<212> PRT
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<220>
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<400> 8

Phe Ile Arg Ser Gly Gly Ser Thr Glu
1 5

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<220>
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<400> 9

Ala Phe Tyr Gly Gly Tyr Tyr Phe Asp Tyr
1 5 10

<210> 10
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<220>
<223> Light chain CDR1 of clone 101.

<400> 10

Lys Ala Ser Gln Asn Val Gly Ser Asn Val Asp
1 5 10

<210> 11
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<220>
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<400> 11

Lys Ala Ser Asn Arg Tyr Thr
1 5

<210> 12
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<220>
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<400> 12

Met Gln Ser Asn Thr Lys Tyr Thr
1 5

<210> 13
<211> 131
<212> PRT
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<220>
<223> Heavy chain of clone 98.

<400> 13

Met Ala Val Leu Val Leu Leu Leu Cys Leu Val Thr Phe Pro Thr Cys
1 5 10 15

Val Leu Ser Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Gln
20 25 30

Pro Ser Gln Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Phe Ser Leu
35 40 45

Thr Arg Tyr Asn Val His Trp Val Arg Gln Pro Thr Gly Lys Gly Leu
50 55 60

```
Glu Trp Met Gly Val Ile Trp Thr Gly Gly Ser Thr Asp Tyr Asn Ser
65                  70                  75                  80

Ala Leu Lys Ser Arg Leu Ser Ile Ser Arg Asp Thr Ser Lys Ser Gln
                85                  90                  95

Val Phe Leu Lys Met Asn Ser Leu Gln Thr Glu Asp Ile Ala Thr Tyr
            100                 105                 110

Tyr Cys Ala Arg Asp Leu Gly Tyr Trp Gly Gln Gly Val Met Val Thr
        115                 120                 125

Val Ser Ser
    130
```

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<213> Artificial

<220>
<223> Light chain of clone 98.

<400> 14

```
Met Met Ser Pro Ala Gln Phe Leu Phe Leu Leu Met Leu Trp Ile Gln
1               5                   10                  15

Glu Thr His Ser Asp Ile Val Met Thr Gln Thr Pro Leu Ser Leu Ser
            20                  25                  30

Val Ala Ile Gly Gln Ser Ala Ser Ile Ser Cys Lys Ser Ser Gln Ser
        35                  40                  45

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

Pro Gly Gln Ser Pro Lys Arg Leu Ile Tyr Gln Val Ser Lys Leu Asp
65                  70                  75                  80

Ser Gly Val Pro Asp Arg Phe Ser Gly Thr Gly Ser Glu Thr Asp Phe
                85                  90                  95

Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr
            100                 105                 110

Cys Cys Gln Gly Ser Tyr Ser Pro His Thr Phe Gly Ala Gly Thr Lys
        115                 120                 125

Leu Glu Leu Lys
    130
```

<210> 15
<211> 137
<212> PRT
<213> Artificial

<220>
<223> Heavy chain of clone 101.

<400> 15

```
Met Ala Ile Leu Val Leu Leu Leu Cys Leu Val Thr Ile Pro His Ser
1               5                  10                  15

Val Leu Ser Gln Val Gln Leu Lys Glu Thr Gly Pro Gly Leu Val Gln
            20                  25                  30

Pro Thr Gln Thr Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu
        35                  40                  45

Thr Ser Tyr Tyr Met Gln Trp Val Arg Gln Thr Pro Gly Lys Gly Leu
    50                  55                  60

Glu Trp Met Gly Phe Ile Arg Ser Gly Gly Ser Thr Glu Tyr Asn Ser
65                  70                  75                  80

Glu Phe Lys Ser Arg Leu Ser Ile Ser Arg Asp Thr Ser Lys Asn Gln
                85                  90                  95

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

Tyr Cys Ala Arg Ala Phe Tyr Gly Gly Tyr Tyr Phe Asp Tyr Trp Gly
        115                 120                 125

Gln Gly Val Met Val Thr Val Ser Ser
    130                 135
```

<210> 16
<211> 130
<212> PRT
<213> Artificial

<220>
<223> Light chain of clone 101.

<400> 16

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Met Gly Ile Arg Met Glu Ser His Thr Arg Val Phe Ile Phe Leu Leu
1               5                  10                  15

Leu Trp Leu Ser Gly Ala Asp Gly Asp Ile Val Met Thr Gln Ser Pro
            20                  25                  30

Thr Ser Ile Ser Ile Ser Val Gly Glu Arg Val Thr Met Asn Cys Lys
        35                  40                  45
```

```
Ala Ser Gln Asn Val Gly Ser Asn Val Asp Trp Tyr Gln Gln Lys Thr
    50                  55                  60

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

Gly Val Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr
                85                  90                  95

Phe Thr Ile Ser Asn Met Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys
            100                 105                 110

Met Gln Ser Asn Thr Lys Tyr Thr Phe Gly Ala Gly Thr Lys Leu Glu
        115                 120                 125

Leu Lys
    130
```

<210> 17
<211> 517
<212> PRT
<213> Homo sapiens

<220>
<221> MISC_FEATURE
<223> TMEM-180 protein.

<400> 17

```
Met Gly Leu Gly Gln Pro Gln Ala Trp Leu Leu Gly Leu Pro Thr Ala
1               5                   10                  15

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

Phe Leu Leu Tyr Tyr Val Asp Thr Phe Val Ser Val Tyr Lys Ile Asn
        35                  40                  45

Lys Met Ala Phe Trp Val Gly Glu Thr Val Phe Leu Leu Trp Asn Ser
    50                  55                  60

Leu Asn Asp Pro Leu Phe Gly Trp Leu Ser Asp Arg Gln Phe Leu Ser
65                  70                  75                  80

Ser Gln Pro Arg Ser Gly Ala Gly Leu Ser Ser Arg Ala Val Val Leu
                85                  90                  95

Ala Arg Val Gln Ala Leu Gly Trp His Gly Pro Leu Leu Ala Leu Ser
            100                 105                 110

Phe Leu Ala Phe Trp Val Pro Trp Ala Pro Ala Gly Leu Gln Phe Leu
        115                 120                 125
```

```
Leu Cys Leu Cys Leu Tyr Asp Gly Phe Leu Thr Leu Val Asp Leu His
    130                 135                 140

His His Ala Leu Leu Ala Asp Leu Ala Leu Ser Ala His Asp Arg Thr
145                 150                 155                 160

His Leu Asn Phe Tyr Cys Ser Leu Phe Ser Ala Ala Gly Ser Leu Ser
                165                 170                 175

Val Phe Ala Ser Tyr Ala Phe Trp Asn Lys Glu Asp Phe Ser Ser Phe
            180                 185                 190

Arg Ala Phe Cys Val Thr Leu Ala Val Ser Ser Gly Leu Gly Phe Leu
        195                 200                 205

Gly Ala Thr Gln Leu Leu Arg Arg Arg Val Glu Ala Ala Arg Lys Asp
    210                 215                 220

Pro Gly Cys Ser Gly Leu Val Val Asp Ser Gly Leu Cys Gly Glu Glu
225                 230                 235                 240

Leu Leu Val Gly Ser Glu Glu Ala Asp Ser Ile Thr Leu Gly Arg Tyr
                245                 250                 255

Leu Arg Gln Leu Ala Arg His Arg Asn Phe Leu Trp Phe Val Ser Met
            260                 265                 270

Asp Leu Val Gln Val Phe His Cys His Phe Asn Ser Asn Phe Phe Pro
        275                 280                 285

Leu Phe Leu Glu His Leu Leu Ser Asp His Ile Ser Leu Ser Thr Gly
    290                 295                 300

Ser Ile Leu Leu Gly Leu Ser Tyr Val Ala Pro His Leu Asn Asn Leu
305                 310                 315                 320

Tyr Phe Leu Ser Leu Cys Arg Arg Trp Gly Val Tyr Ala Val Val Arg
                325                 330                 335

Gly Leu Phe Leu Leu Lys Leu Gly Leu Ser Leu Leu Met Leu Leu Ala
            340                 345                 350

Gly Pro Asp His Leu Ser Leu Leu Cys Leu Phe Ile Ala Ser Asn Arg
        355                 360                 365

Val Phe Thr Glu Gly Thr Cys Lys Leu Leu Thr Leu Val Val Thr Asp
    370                 375                 380

Leu Val Asp Glu Asp Leu Val Leu Asn His Arg Lys Gln Ala Ala Ser
385                 390                 395                 400
```

Ala Leu Leu Phe Gly Met Val Ala Leu Val Thr Lys Pro Gly Gln Thr
405 410 415

Phe Ala Pro Leu Leu Gly Thr Trp Leu Leu Cys Phe Tyr Thr Gly His
420 425 430

Asp Leu Phe Gln Gln Ser Leu Ile Thr Pro Val Gly Ser Ala His Pro
435 440 445

Trp Pro Glu Pro Pro Ala Pro Ala Pro Ala Gln Ala Pro Thr Leu Arg
450 455 460

Gln Gly Cys Phe Tyr Leu Leu Val Leu Val Pro Ile Thr Cys Ala Leu
465 470 475 480

Leu Gln Leu Phe Thr Trp Ser Gln Phe Thr Leu His Gly Arg Arg Leu
485 490 495

His Met Val Lys Ala Gln Arg Gln Asn Leu Ser Gln Ala Gln Thr Leu
500 505 510

Asp Val Lys Met Val
515

<210> 18
<211> 73
<212> DNA
<213> Artificial

<220>
<223> Synthesized primer.

<400> 18
cagacctgca cctgaacgtg gttgagagct gaggaattga cggtcactga gggactgtaa 60

tgctgcactt cgc 73

<210> 19
<211> 78
<212> DNA
<213> Artificial

<220>
<223> Synthesized primer.

<400> 19
caaccacgtt caggtgcagg tctgtcttca cgtgctgttg tactggctcg tgttcaagag 60

ttcaaactgg aggacctg 78

<210> 20
<211> 33
<212> DNA
<213> Artificial

<220>
<223> Synthesized primer.

<400> 20
gagatataca tatgtcggag gtgactcgta gtc 33

<210> 21
<211> 31
<212> DNA
<213> Artificial

<220>
<223> Synthesized primer.

<400> 21
tggtgctcga gaataggctg aacatcaaat g 31

<210> 22
<211> 54
<212> DNA
<213> Artificial

<220>
<223> Synthesized primer.

<400> 22
gcgaagtgca gcattacagt ccgatcatct gagtctgctg tgcctcttca ttgc 54

<210> 23
<211> 66
<212> DNA
<213> Artificial

<220>
<223> Synthesized primer.

<400> 23
caggtcctcc agtttgaact cagaagctgc ttgcttacga tgattcagca ccaggtcctc 60

gtctac 66

<210> 24
<211> 33
<212> DNA
<213> Artificial

<220>
<223> Synthesized primer.

<400> 24
gagatataca tatgtcggag gtgactcgta gtc 33

<210> 25
<211> 31
<212> DNA
<213> Artificial

<220>
<223> Synthesized primer.

<400> 25
tggtgctcga gaataggctg aacatcaaat g 31

<210> 26
<211> 45

<212> DNA
<213> Artificial

<220>
<223> Synthesized primer.

<400> 26
ctaatacgac tcactatagg gcaagcagtg gtatcaacgc agagt 45

<210> 27
<211> 22
<212> DNA
<213> Artificial

<220>
<223> Synthesized primer.

<400> 27
ctaatacgac tcactatagg gc 22

<210> 28
<211> 29
<212> DNA
<213> Artificial

<220>
<223> Synthesized primer.

<400> 28
cccatggcca ccarattcty atcagacag 29

<210> 29
<211> 45
<212> DNA
<213> Artificial

<220>
<223> Synthesized primer.

<400> 29
ctaatacgac tcactatagg gcaagcagtg gtatcaacgc agagt 45

<210> 30
<211> 22
<212> DNA
<213> Artificial

<220>
<223> Synthesized primer.

<400> 30
ctaatacgac tcactatagg gc 22

<210> 31
<211> 28
<212> DNA
<213> Artificial

<220>
<223> Synthesized primer.

<400> 31
gttgttcawg argcacacga ctgaggca 28

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

<220>
<223> Heavy chain CDR1 of clone 212.

<400> 32

Gly Phe Thr Phe Ser Asp Tyr Ala Met Ala
1 5 10

<210> 33
<211> 9
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR2 of clone 212.

<400> 33

Thr Ile Ile Tyr Asp Gly Ser Ser Thr
1 5

<210> 34
<211> 8
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR3 of clone 212.

<400> 34

His Trp Tyr Trp Tyr Phe Asp Phe
1 5

<210> 35
<211> 11
<212> PRT
<213> Artificial

<220>
<223> Light chain CDR1 of clone 212.

<400> 35

Leu Ala Ser Glu Gly Ile Ser Asn Asp Leu Ala
1 5 10

<210> 36
<211> 7
<212> PRT
<213> Artificial

<220>
<223> Light chain CDR2 of clone 212.

<400> 36

```
Ala Ala Ser Arg Leu Gln Asp
1               5
```

<210> 37
<211> 9
<212> PRT
<213> Artificial

<220>
<223> Light chain CDR3 of clone 212.

<400> 37

```
Gln Gln Ser Tyr Lys Tyr Pro Leu Thr
1               5
```

<210> 38
<211> 136
<212> PRT
<213> Artificial

<220>
<223> Heavy chain of clone 212.

<400> 38

```
Met Asp Ile Arg Leu Ser Leu Ala Phe Leu Val Leu Phe Ile Lys Gly
1               5                   10                  15

Val Gln Cys Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
            20                  25                  30

Pro Gly Asn Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35                  40                  45

Ser Asp Tyr Ala Met Ala Trp Val Arg Gln Ser Pro Lys Lys Gly Leu
    50                  55                  60

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

Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Ser
                85                  90                  95

Thr Leu Tyr Leu Gln Met Asp Ser Leu Arg Ser Glu Asp Thr Ala Thr
            100                 105                 110

Tyr Tyr Cys Ala Thr His Trp Tyr Trp Tyr Phe Asp Phe Trp Gly Pro
        115                 120                 125

Gly Thr Met Val Thr Val Ser Ser
    130                 135
```

<210> 39
<211> 127
<212> PRT
<213> Artificial

<220>
<223> Light chain of clone 212.

<400> 39

```
Met Gly Val Pro Thr Gln Leu Leu Gly Leu Leu Leu Leu Trp Ile Thr
1               5                  10                  15

Asp Ala Ile Cys Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Ser
            20                  25                  30

Ala Ser Leu Gly Glu Thr Val Ser Ile Glu Cys Leu Ala Ser Glu Gly
        35                  40                  45

Ile Ser Asn Asp Leu Ala Trp Tyr Gln Gln Lys Ser Gly Lys Ser Pro
    50                  55                  60

Gln Leu Leu Ile Tyr Ala Ala Ser Arg Leu Gln Asp Gly Val Pro Ser
65                  70                  75                  80

Arg Phe Ser Gly Ser Gly Ser Gly Thr Arg Tyr Ser Leu Lys Ile Ser
                85                  90                  95

Gly Met Gln Pro Glu Asp Glu Ala Asp Tyr Phe Cys Gln Gln Ser Tyr
            100                 105                 110

Lys Tyr Pro Leu Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
        115                 120                 125
```

<210> 40
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR1 of clone 212.

<400> 40

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Gly Phe Thr Phe Ser Asp Tyr Ala Met Ala
1               5                  10
```

<210> 41
<211> 9
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR2 of clone 212.

<400> 41

```
Thr Ile Ile Tyr Asp Gly Ser Ser Thr
1               5
```

<210> 42
<211> 8

<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR3 of clone 212.

<400> 42

His Trp Tyr Trp Tyr Phe Asp Phe
1 5

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

<220>
<223> Light chain CDR1 of clone 212.

<400> 43

Leu Ala Ser Glu Gly Ile Ser Asn Asp Leu Ala
1 5 10

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

<220>
<223> Light chain CDR2 of clone 212.

<400> 44

Ala Ala Ser Arg Leu Gln Asp
1 5

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

<220>
<223> Light chain CDR3 of clone 212.

<400> 45

Gln Gln Ser Tyr Lys Tyr Pro Leu Thr
1 5

<210> 46
<211> 136
<212> PRT
<213> Artificial

<220>
<223> Heavy chain variable region of clone 212.

<400> 46

Met Asp Ile Arg Leu Ser Leu Ala Phe Leu Val Leu Phe Ile Lys Gly
1 5 10 15

```
Val Gln Cys Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
            20                  25                  30

Pro Gly Asn Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35                  40                  45

Ser Asp Tyr Ala Met Ala Trp Val Arg Gln Ser Pro Lys Lys Gly Leu
    50                  55                  60

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

Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Ser
                85                  90                  95

Thr Leu Tyr Leu Gln Met Asp Ser Leu Arg Ser Glu Asp Thr Ala Thr
            100                 105                 110

Tyr Tyr Cys Ala Thr His Trp Tyr Trp Tyr Phe Asp Phe Trp Gly Pro
        115                 120                 125

Gly Thr Met Val Thr Val Ser Ser
    130                 135


<210>  47
<211>  127
<212>  PRT
<213>  Artificial

<220>
<223>  Light chain variable region of clone 212.

<400>  47

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

Asp Ala Ile Cys Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Ser
            20                  25                  30

Ala Ser Leu Gly Glu Thr Val Ser Ile Glu Cys Leu Ala Ser Glu Gly
        35                  40                  45

Ile Ser Asn Asp Leu Ala Trp Tyr Gln Gln Lys Ser Gly Lys Ser Pro
    50                  55                  60

Gln Leu Leu Ile Tyr Ala Ala Ser Arg Leu Gln Asp Gly Val Pro Ser
65                  70                  75                  80

Arg Phe Ser Gly Ser Gly Ser Gly Thr Arg Tyr Ser Leu Lys Ile Ser
                85                  90                  95

Gly Met Gln Pro Glu Asp Glu Ala Asp Tyr Phe Cys Gln Gln Ser Tyr
            100                 105                 110
```

Lys Tyr Pro Leu Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
115 120 125

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

<220>
<223> Heavy chain CDR1 of clone 129.

<400> 48

Asp Cys Ala Leu Asn
1 5

<210> 49
<211> 15
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR2 of clone 129.

<400> 49

Trp Ile Asn Thr Gln Thr Gly Lys Pro Thr Tyr Ala Asp Asp Phe
1 5 10 15

<210> 50
<211> 8
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR3 of clone 129.

<400> 50

Glu Asp Tyr Gly Tyr Phe Asp Tyr
1 5

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

<220>
<223> Light chain CDR1 of clone 129.

<400> 51

Gln Ala Ser Gln Asn Ile Asn Lys Phe Ile Ala
1 5 10

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

<220>

<223> Light chain CDR2 of clone 129.

<400> 52

Tyr Thr Ser Thr Leu Val Ser
1 5

<210> 53
<211> 7
<212> PRT
<213> Artificial

<220>
<223> Light chain CDR3 of clone 129.

<400> 53

Leu Gln Tyr Asp Asn Leu Arg
1 5

<210> 54
<211> 136
<212> PRT
<213> Artificial

<220>
<223> Heavy chain variable region of clone 129.

<400> 54

Met Asp Trp Leu Trp Asn Leu Leu Phe Leu Met Val Val Ala Gln Ser
1 5 10 15

Ala Gln Ala Gln Ile Gln Leu Val Gln Ser Gly Pro Glu Leu Lys Lys
20 25 30

Pro Gly Glu Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Asp Cys Ala Leu Asn Trp Val Lys Gln Ala Pro Gly Asn Gly Leu
50 55 60

Lys Trp Met Gly Trp Ile Asn Thr Gln Thr Gly Lys Pro Thr Tyr Ala
65 70 75 80

Asp Asp Phe Lys Gln Arg Phe Val Phe Ser Leu Glu Thr Ser Ala Ser
85 90 95

Thr Ala Tyr Leu Gln Ile Asn Asn Leu Asn Ile Glu Asp Thr Ala Thr
100 105 110

Tyr Phe Cys Thr Arg Glu Asp Tyr Gly Tyr Phe Asp Tyr Trp Gly Gln
115 120 125

Gly Val Met Val Thr Val Ser Ser
130 135

<210> 55
<211> 126
<212> PRT
<213> Artificial

<220>
<223> Light chain variable region of clone 129.

<400> 55

```
Met Arg Thr Ser Ile Gln Leu Leu Gly Leu Leu Leu Leu Trp Leu His
1               5                  10                  15

Asp Ala Gln Cys Asp Ile Gln Met Thr Gln Ser Pro Pro Ser Leu Ser
            20                  25                  30

Ala Ser Leu Gly Asp Lys Val Thr Ile Thr Cys Gln Ala Ser Gln Asn
        35                  40                  45

Ile Asn Lys Phe Ile Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro
    50                  55                  60

Arg His Leu Val His Tyr Thr Ser Thr Leu Val Ser Gly Thr Pro Ser
65                  70                  75                  80

Arg Phe Ser Gly Ser Gly Ser Gly Arg Asp Tyr Ser Phe Ser Ile Ser
                85                  90                  95

Asn Val Glu Ser Glu Asp Ile Ala Ser Tyr Tyr Cys Leu Gln Tyr Asp
            100                 105                 110

Asn Leu Arg Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys
        115                 120                 125
```

<210> 56
<211> 5
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR1 of clone 382.

<400> 56

```
Asn Tyr Gly Met His
1               5
```

<210> 57
<211> 15
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR2 of clone 382.

<400> 57

```
Ser Ile Ser Pro Ser Gly Gly Ser Thr Tyr Tyr Arg Asp Ser Val
1               5                  10                  15
```

<210> 58
<211> 13
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR3 of clone 382.

<400> 58

Ser Ala Ser Ile Thr Ala Tyr Tyr Tyr Val Met Asp Ala
1 5 10

<210> 59
<211> 11
<212> PRT
<213> Artificial

<220>
<223> Light chain CDR1 of clone 382.

<400> 59

Lys Ala Ser Gln Asn Val Gly Ser Asn Val Asp
1 5 10

<210> 60
<211> 7
<212> PRT
<213> Artificial

<220>
<223> Light chain CDR2 of clone 382.

<400> 60

Lys Ala Ser Asn Arg Tyr Thr
1 5

<210> 61
<211> 9
<212> PRT
<213> Artificial

<220>
<223> Light chain CDR3 of clone 382.

<400> 61

Met Gln Ser Asn Ser Tyr Pro Pro Thr
1 5

<210> 62
<211> 141
<212> PRT
<213> Artificial

<220>
<223> Heavy chain variable region of clone 382.

<400> 62

```
Met Asp Ile Arg Leu Ser Leu Gly Phe Leu Val Leu Phe Ile Lys Gly
1               5                  10                  15

Val Gln Cys Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
            20                  25                  30

Pro Gly Arg Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
        35                  40                  45

Ser Asn Tyr Gly Met His Trp Ile Arg Gln Ala Pro Thr Lys Gly Leu
    50                  55                  60

Glu Trp Val Ala Ser Ile Ser Pro Ser Gly Gly Ser Thr Tyr Tyr Arg
65                  70                  75                  80

Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Ser
                85                  90                  95

Thr Leu Tyr Leu Gln Met Asp Ser Leu Arg Ser Glu Asp Thr Ala Thr
            100                 105                 110

Tyr Tyr Cys Ala Thr Ser Ala Ser Ile Thr Ala Tyr Tyr Tyr Val Met
        115                 120                 125

Asp Ala Trp Gly Gln Gly Ala Ser Val Thr Val Ser Ser
    130                 135                 140
```

<210> 63
<211> 127
<212> PRT
<213> Artificial

<220>
<223> Light chain variable region of clone 382.

<400> 63

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Met Glu Ser His Thr Arg Val Phe Ile Phe Leu Leu Leu Trp Leu Ser
1               5                  10                  15

Gly Ala Asp Gly Asp Ile Val Met Thr Gln Ser Pro Thr Ser Met Ser
            20                  25                  30

Ile Ser Val Gly Asp Arg Val Thr Met Asn Cys Lys Ala Ser Gln Asn
        35                  40                  45

Val Gly Ser Asn Val Asp Trp Tyr Gln Gln Lys Thr Gly Gln Ser Pro
    50                  55                  60

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

Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser
                85                  90                  95
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Asn Met Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Met Gln Ser Asn
100 105 110

Ser Tyr Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu Arg
115 120 125

<210> 64
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<400> 64

Asn Tyr Trp Met Thr
1 5

<210> 65
<211> 15
<212> PRT
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<220>
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<400> 65

Ser Ile Thr Asn Thr Gly Gly Ser Thr Tyr Tyr Pro Asp Ser Val
1 5 10 15

<210> 66
<211> 12
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR3 of clone 1361.

<400> 66

Ala Gly Tyr Ser Ser Tyr Pro Asp Tyr Phe Asp Tyr
1 5 10

<210> 67
<211> 11
<212> PRT
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<220>
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<400> 67

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

<210> 68
<211> 7

<212> PRT
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<220>
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<400> 68

Asn Ala Asn Ser Leu Gln Thr
1 5

<210> 69
<211> 7
<212> PRT
<213> Artificial

<220>
<223> Light chain CDR3 of clone 1361.

<400> 69

Gln Gln Tyr Ser Ser Gly Trp
1 5

<210> 70
<211> 140
<212> PRT
<213> Artificial

<220>
<223> Heavy chain variable region of clone 1361.

<400> 70

Met Asp Ile Arg Leu Ser Leu Val Phe Leu Val Leu Phe Ile Lys Gly
1 5 10 15

Val Gln Cys Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
20 25 30

Pro Gly Arg Ser Leu Lys Leu Ser Cys Val Ala Ser Gly Phe Thr Phe
35 40 45

Asn Asn Tyr Trp Met Thr Trp Ile Arg Gln Ala Pro Gly Lys Gly Leu
50 55 60

Glu Trp Val Ala Ser Ile Thr Asn Thr Gly Gly Ser Thr Tyr Tyr Pro
65 70 75 80

Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Tyr Ala Lys Ser
85 90 95

Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ser Glu Asp Thr Ala Thr
100 105 110

Tyr Tyr Cys Thr Arg Ala Gly Tyr Ser Ser Tyr Pro Asp Tyr Phe Asp
115 120 125

Tyr Trp Gly Gln Gly Val Met Leu Thr Val Ser Ser
130 135 140

<210> 71
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<220>
<223> Light chain variable region of clone 1361.

<400> 71

Met Met Ala Pro Val Gln Leu Leu Gly Leu Leu Leu Leu Trp Leu Pro
1 5 10 15

Ala Met Arg Cys Asn Ile Gln Met Thr Gln Ser Pro Ser Leu Leu Ser
20 25 30

Ala Ser Val Gly Asp Arg Val Thr Leu Ser Cys Lys Ala Gly Gln Asn
35 40 45

Ile Tyr Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Leu Gly Glu Ala Pro
50 55 60

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

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser
85 90 95

Ser Leu Gln Pro Glu Asp Val Ala Thr Tyr Phe Cys Gln Gln Tyr Ser
100 105 110

Ser Gly Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys
115 120 125

<210> 72
<211> 5
<212> PRT
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<220>
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<400> 72

Asp Tyr Trp Val Ser
1 5

<210> 73
<211> 16
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR2 of clone 669.

<400> 73

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

<210> 74
<211> 12
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR3 of clone 669.

<400> 74

Asp Gly Thr Met Gly Ile Ala Tyr Tyr Phe Asp Tyr
1 5 10

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

<220>
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<400> 75

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

<210> 76
<211> 7
<212> PRT
<213> Artificial

<220>
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<400> 76

Asn Ala Asn Ser Leu Gln Thr
1 5

<210> 77
<211> 9
<212> PRT
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<220>
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<400> 77

Leu Gln His Asn Ser Trp Pro Tyr Thr
1 5

<210> 78
<211> 139
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<223> Heavy chain variable region of clone 669.

<400> 78

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1               5                  10                  15

His Ser Gln Val Lys Leu Leu Gln Ser Gly Ala Ala Leu Val Lys Pro
            20                  25                  30

Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr
        35                  40                  45

Asp Tyr Trp Val Ser Trp Val Lys Gln Ser His Gly Lys Ser Leu Glu
    50                  55                  60

Trp Ile Gly Glu Ile Tyr Pro Asn Ser Gly Ala Thr Asn Phe Asn Glu
65                  70                  75                  80

Asn Phe Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Thr Ser Thr
                85                  90                  95

Ala Tyr Met Glu Leu Ser Arg Leu Thr Ser Glu Asp Ser Ala Ile Tyr
            100                 105                 110

Tyr Cys Thr Arg Asp Gly Thr Met Gly Ile Ala Tyr Tyr Phe Asp Tyr
        115                 120                 125

Trp Gly Gln Gly Val Met Val Thr Val Ser Ser
    130                 135
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<210> 79
<211> 127
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<223> Light chain variable region of clone 669.

<400> 79

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1               5                  10                  15

Ala Met Arg Cys Asp Ile Gln Met Thr Gln Ser Pro Ser Phe Leu Ser
            20                  25                  30

Ala Ser Val Gly Asp Arg Val Thr Ile Asn Cys Lys Ala Ser Gln Asn
        35                  40                  45

Ile Asn Arg Tyr Leu Asn Trp Tyr Gln Gln Lys Leu Gly Glu Ala Pro
    50                  55                  60

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

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser
85 90 95

Ser Leu Gln Pro Glu Asp Val Ala Thr Tyr Phe Cys Leu Gln His Asn
100 105 110

Ser Trp Pro Tyr Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys
115 120 125

<210> 80
<211> 5
<212> PRT
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<220>
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<400> 80

Ser Tyr Asp Ile Ser
1 5

<210> 81
<211> 18
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR2 of clone 699.

<400> 81

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

Gly Lys

<210> 82
<211> 11
<212> PRT
<213> Artificial

<220>
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<400> 82

Ile His Gly Gly Tyr Arg Tyr Trp Phe Ala Tyr
1 5 10

<210> 83
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Light chain CDR1 of clone 699.

<400> 83

Arg Ala Ser Ser Ser Val Ser Tyr Met His
1 5 10

<210> 84
<211> 7
<212> PRT
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<220>
<223> Light chain CDR2 of clone 699.

<400> 84

Asp Thr Ser Lys Leu Ala Ser
1 5

<210> 85
<211> 9
<212> PRT
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<220>
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<400> 85

Leu Gln Arg Ser Ser Tyr Pro Pro Thr
1 5

<210> 86
<211> 139
<212> PRT
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<220>
<223> Heavy chain variable region of clone 699.

<400> 86

Met Glu Trp Asn Trp Val Phe Leu Phe Leu Leu Ser Val Thr Ala Gly
1 5 10 15

Val His Ser Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Thr Lys
20 25 30

Pro Gly Ser Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Ser Tyr Asp Ile Ser Trp Ile Lys Gln Arg Pro Gly Gln Ala Leu
50 55 60

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

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

Thr Ala Phe Met Gln Leu Ser Ser Leu Thr Pro Glu Asp Thr Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Ile His Gly Gly Tyr Arg Tyr Trp Phe Ala Tyr
115 120 125

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
130 135

<210> 87
<211> 128
<212> PRT
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<220>
<223> Light chain variable region of clone 699.

<400> 87

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

Val Ile Val Ser Ser Gly Glu Ile Val Leu Thr Gln Ser Pro Thr Thr
20 25 30

Met Ala Ala Ser Pro Gly Glu Lys Val Thr Ile Thr Cys Arg Ala Ser
35 40 45

Ser Ser Val Ser Tyr Met His Trp Phe Gln Gln Lys Ser Gly Thr Ser
50 55 60

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

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile
85 90 95

Ser Ser Met Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Leu Gln Arg
100 105 110

Ser Ser Tyr Pro Pro Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys
115 120 125

<210> 88
<211> 5
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR1 of clone 1052.

<400> 88

Ser Asn Gly Val Gly
1 5

<210> 89
<211> 16
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR2 of clone 1052.

<400> 89

Thr Ile Trp Thr Gly Gly Gly Thr Asn Tyr Asn Ser Gly Val Gln Ser
1 5 10 15

<210> 90
<211> 7
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR3 of clone 1052.

<400> 90

Glu Tyr Met Gly Phe Asp Tyr
1 5

<210> 91
<211> 11
<212> PRT
<213> Artificial

<220>
<223> Light chain CDR1 of clone 1052.

<400> 91

Lys Ala Ser Gln Asn Val Gly Ile Asn Val Gly
1 5 10

<210> 92
<211> 7
<212> PRT
<213> Artificial

<220>
<223> Light chain CDR2 of clone 1052.

<400> 92

Trp Ala Ser Asn Arg Asp Thr
1 5

<210> 93
<211> 9
<212> PRT
<213> Artificial

<220>
<223> Light chain CDR3 of clone 1052.

<400> 93

Leu Gln His Asn Ser Tyr Pro Arg Thr
1 5

<210> 94
<211> 134
<212> PRT
<213> Artificial

<220>
<223> Heavy chain variable region of clone 1052.

<400> 94

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Met Ala Val Leu Val 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 Met Gln
            20                  25                  30

Pro Ser Glu Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Phe Ser Leu
        35                  40                  45

Thr Ser Asn Gly Val Gly Trp Val Arg Gln Pro Leu Gly Lys Gly Leu
    50                  55                  60

Val Trp Met Gly Thr Ile Trp Thr Gly Gly Gly Thr Asn Tyr Asn Ser
65                  70                  75                  80

Gly Val Gln Ser Arg Leu Ser Ile Ser Arg Asp Thr Ser Lys Ser Gln
                85                  90                  95

Val Phe Leu Lys Met Asn Ser Leu Gln Pro Glu Asp Thr Gly Thr Tyr
            100                 105                 110

Tyr Cys Ala Arg Glu Tyr Met Gly Phe Asp Tyr Trp Gly Gln Gly Val
        115                 120                 125

Met Val Thr Val Ser Ser
    130
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<210> 95
<211> 127
<212> PRT
<213> Artificial

<220>
<223> Light chain variable region of clone 1052.

<400> 95

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Met Glu Leu Ile Ser Gln Val Phe Val Phe Leu Leu Leu Trp Leu Ser
1               5                  10                  15

Gly Val Tyr Gly Asn Thr Val Met Thr Gln Ser Pro Thr Ser Met Phe
            20                  25                  30

Thr Ser Val Gly Asp Arg Val Thr Met Ser Cys Lys Ala Ser Gln Asn
        35                  40                  45
```

```
Val Gly Ile Asn Val Gly Trp Tyr Gln Gln Lys Thr Gly Gln Ser Pro
    50                  55                  60

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

Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser
                85                  90                  95

Asn Met Gln Ala Glu Asp Pro Ala Ile Tyr Tyr Cys Leu Gln His Asn
            100                 105                 110

Ser Tyr Pro Arg Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys
        115                 120                 125
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<210> 96
<211> 5
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR1 of clone 1105.

<400> 96

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Ser Asn Gly Val Gly
1               5
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<210> 97
<211> 16
<212> PRT
<213> Artificial

<220>
<223> Heavy chain CDR2 of clone 1105.

<400> 97

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Thr Ile Trp Ser Gly Gly Gly Thr Asn Tyr Asn Ser Ala Val Gln Ser
1               5                   10                  15
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<210> 98
<211> 7
<212> PRT
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<220>
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<400> 98

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Glu Glu Lys Gly Phe Ala Tyr
1               5
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<210> 99
<211> 11
<212> PRT
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<220>
<223> Light chain CDR1 of clone 1105.

<400> 99

Lys Ala Ser Gln Asn Val Gly Ile Asn Val Gly
1 5 10

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

<220>
<223> Light chain CDR2 of clone 1105.

<400> 100

Trp Ala Ser Asn Arg Asp Thr
1 5

<210> 101
<211> 9
<212> PRT
<213> Artificial

<220>
<223> Light chain CDR3 of clone 1105.

<400> 101

Leu Gln His Asn Ser Tyr Pro Arg Ala
1 5

<210> 102
<211> 134
<212> PRT
<213> Artificial

<220>
<223> Heavy chain variable region of clone 1105.

<400> 102

Met Ala Val Leu Val 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 Met Gln
20 25 30

Pro Ser Glu Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Phe Ser Leu
35 40 45

Thr Ser Asn Gly Val Gly Trp Val Arg Gln Pro Leu Gly Lys Gly Leu
50 55 60

Val Trp Met Gly Thr Ile Trp Ser Gly Gly Gly Thr Asn Tyr Asn Ser
65 70 75 80

Ala Val Gln Ser Arg Leu Ser Ile Thr Arg Asp Thr Ser Lys Ser Gln
85 90 95

Val Phe Leu Lys Met Asn Ser Leu Gln Pro Glu Asp Thr Gly Thr Tyr
100 105 110

Tyr Cys Ala Arg Glu Glu Lys Gly Phe Ala Tyr Trp Gly Gln Gly Thr
115 120 125

Leu Val Thr Val Ser Ser
130

<210> 103
<211> 127
<212> PRT
<213> Artificial

<220>
<223> Light chain variable region of clone 1105.

<400> 103

Met Glu Leu Ile Ser Gln Val Phe Val Phe Leu Leu Trp Leu Ser
1 5 10 15

Gly Val Tyr Gly Asn Ile Val Met Thr Gln Ser Pro Thr Ser Met Ser
20 25 30

Thr Ser Val Gly Asp Arg Val Thr Met Ser Cys Lys Ala Ser Gln Asn
35 40 45

Val Gly Ile Asn Val Gly Trp Tyr Gln Gln Lys Thr Gly Gln Ser Pro
50 55 60

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

Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser
85 90 95

Asn Met Gln Ala Glu Asp Pro Ala Ile Tyr Tyr Cys Leu Gln His Asn
100 105 110

Ser Tyr Pro Arg Ala Phe Gly Gly Gly Thr Lys Leu Glu Leu Arg
115 120 125

<210> 104
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 104

Cys Leu Tyr Asp Gly Phe Leu Thr Leu Val
1 5 10

<210> 105
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 105

Phe Leu Leu Tyr Tyr Val Asp Thr Phe Val
1 5 10

<210> 106
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 106

Phe Leu Trp Phe Val Ser Met Asp Leu Val
1 5 10

<210> 107
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 107

Phe Leu Ser Leu Cys Arg Arg Trp Gly Val
1 5 10

<210> 108
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 108

Phe Leu Leu Lys Leu Gly Leu Ser Leu Leu
1 5 10

<210> 109
<211> 10
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<213> Artificial

<220>
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<400> 109

Lys Leu Leu Thr Leu Val Val Thr Asp Leu
1 5 10

<210> 110
<211> 10
<212> PRT
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<220>
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<400> 110

Ala Leu Leu Phe Gly Met Val Ala Leu Val
1 5 10

<210> 111
<211> 10
<212> PRT
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<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 111

Ala Leu Phe Thr Thr Ile Leu His Asn Val
1 5 10

<210> 112
<211> 10
<212> PRT
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<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 112

Trp Leu Leu Gly Leu Pro Thr Ala Val Val
1 5 10

<210> 113
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 113

Gln Leu Phe Thr Trp Ser Gln Phe Thr Leu
1 5 10

<210> 114
<211> 10
<212> PRT
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<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 114

Leu Ala Leu Ser Phe Leu Ala Phe Trp Val
1 5 10

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

<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 115

Lys Leu Gly Leu Ser Leu Leu Met Leu Leu
1 5 10

<210> 116
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 116

Gly Leu Gly Gln Pro Gln Ala Trp Leu Leu
1 5 10

<210> 117
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 117

Thr Leu His Gly Arg Arg Leu His Met Val
1 5 10

<210> 118
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 118

Leu Leu Trp Asn Ser Leu Asn Asp Pro Leu
1 5 10

<210> 119
<211> 10
<212> PRT
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<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 119

Ser Leu Asn Asp Pro Leu Phe Gly Trp Leu
1 5 10

<210> 120
<211> 10
<212> PRT
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<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 120

Thr Leu Val Asp Leu His His His Ala Leu
1 5 10

<210> 121
<211> 10
<212> PRT
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<220>
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<400> 121

Lys Met Ala Phe Trp Val Gly Glu Thr Val
1 5 10

<210> 122
<211> 10
<212> PRT
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<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 122

Tyr Leu Leu Val Leu Val Pro Ile Thr Cys

1 5 10

<210> 123
<211> 10
<212> PRT
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<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 123

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

<210> 124
<211> 10
<212> PRT
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<220>
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<400> 124

Leu Leu Thr Leu Val Val Thr Asp Leu Val
1 5 10

<210> 125
<211> 10
<212> PRT
<213> Artificial

<220>
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<400> 125

Leu Leu Ser Asp His Ile Ser Leu Ser Thr
1 5 10

<210> 126
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<212> PRT
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<220>
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<400> 126

Leu Met Leu Leu Ala Gly Pro Asp His Leu
1 5 10

<210> 127
<211> 10
<212> PRT
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<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 127

Arg Gln Leu Ala Arg His Arg Asn Phe Leu
1 5 10

<210> 128
<211> 10
<212> PRT
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<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 128

Cys Leu Cys Leu Tyr Asp Gly Phe Leu Thr
1 5 10

<210> 129
<211> 10
<212> PRT
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<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 129

Leu Leu Cys Phe Tyr Thr Gly His Asp Leu
1 5 10

<210> 130
<211> 10
<212> PRT
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<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 130

Val Leu Val Pro Ile Thr Cys Ala Leu Leu
1 5 10

<210> 131
<211> 10
<212> PRT
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<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 131

Leu Leu Ala Gly Pro Asp His Leu Ser Leu
1 5 10

<210> 132
<211> 10
<212> PRT
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<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 132

Phe Gly Trp Leu Ser Asp Arg Gln Phe Leu
1 5 10

<210> 133
<211> 10
<212> PRT
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<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 133

Ser Leu Cys Arg Arg Trp Gly Val Tyr Ala
1 5 10

<210> 134
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<212> PRT
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<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 134

Leu Gln Leu Phe Thr Trp Ser Gln Phe Thr
1 5 10

<210> 135
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 135

Phe Leu Ser Ser Gln Pro Arg Ser Gly Ala
1 5 10

<210> 136
<211> 10
<212> PRT
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<220>

<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 136

Gly Leu Gly Phe Leu Gly Ala Thr Gln Leu
1 5 10

<210> 137
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 137

Gly Leu Gln Phe Leu Leu Cys Leu Cys Leu
1 5 10

<210> 138
<211> 10
<212> PRT
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<220>
<223> Predicted HLA type A2-binding peptide derived from TMEM-180 protein.

<400> 138

Ala Leu Ser Ala His Asp Arg Thr His Leu
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Gln Leu Leu Arg Arg Arg Val Glu Ala Ala
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<400> 140

Val Val Tyr Gly Ser Leu Ala Leu Phe Thr
1 5 10

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<400> 141

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<400> 142

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protein.

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1 5 10

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<400> 146

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1 5 10

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<211> 10
<212> PRT
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<220>
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<400> 147

Phe Asn Ser Asn Phe Phe Pro Leu Phe Leu
1 5 10

<210> 148
<211> 10
<212> PRT
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<400> 148

Leu Val Leu Val Pro Ile Thr Cys Ala Leu
1 5 10

<210> 149
<211> 10
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<220>
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<400> 149

Gly Leu Ser Ser Arg Ala Val Val Leu Ala
1 5 10

<210> 150
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<400> 150

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1 5 10

<210> 151
<211> 10
<212> PRT
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<400> 151

Ser Tyr Val Ala Pro His Leu Asn Asn Leu
1 5 10

<210> 152
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<400> 152

Val Tyr Ala Val Val Arg Gly Leu Phe Leu
1 5 10

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<400> 153

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1 5 10

<210> 154
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<400> 154

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<400> 157

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1 5 10

<210> 159

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<210> 160
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<400> 160

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1 5 10

<210> 161
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<400> 161

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1 5 10

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<400> 162

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1 5 10

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<400> 163

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<400> 164

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<210> 165
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<400> 166

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1 5 10

<210> 167
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<400> 167

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Ser Leu Asn Asp Pro Leu Phe Gly Trp Leu
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<400> 169

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<210> 170
<211> 10
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<400> 170

Leu Phe Gly Trp Leu Ser Asp Arg Gln Phe
1 5 10