<110> Ibentrus, Inc.

<120> Bispecific protein and methods of preparation thereof

<130> OPP20173983KR

<150> KR10-2016-0091157
<151> 2016-07-19

<160> 54

<170> KopatentIn 2.0

<210> 1
<211> 108
<212> PRT
<213> Homo sapiens The CH1 domain of human IgG1

<400> 1
Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys
1 5 10 15

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

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

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

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

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

Lys Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr
100 105

<210> 2
<211> 105
<212> PRT
<213> Homo sapiens The CH1 domain of human IgG2

<400> 2
Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg
1 5 10 15

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

Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser

```
         35                  40                  45

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

Leu Ser Ser Val Val Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr
 65                  70                  75                  80

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

Thr Val Glu Arg Lys Cys Cys Val Glu
            100                 105
```

<210> 3
<211> 110
<212> PRT
<213> Homo sapiens The CH1 domain of human IgG3

<400> 3

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

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

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

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

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

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

Arg Val Glu Leu Lys Thr Pro Leu Gly Asp Thr Thr His Thr
            100                 105                 110
```

<210> 4
<211> 110
<212> PRT
<213> Homo sapiens The CH1 domain of human IgG4

<400> 4

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

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

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

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

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

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

Arg Val Ser Pro Asn Met Val Pro His Ala His His Ala Gln
            100                 105                 110
```

<210> 5
<211> 108
<212> PRT
<213> Homo sapiens The CH1 domain of human IgA1

<400> 5

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

Gln Pro Asp Gly Asn Val Val Ile Ala Cys Leu Val Gln Gly Phe Phe
             20                  25                  30

Pro Gln Glu Pro Leu Ser Val Thr Trp Ser Glu Ser Gly Gln Gly Val
         35                  40                  45

Thr Ala Arg Asn Phe Pro Pro Ser Gln Asp Ala Ser Gly Asp Leu Tyr
     50                  55                  60

Thr Thr Ser Ser Gln Leu Thr Leu Pro Ala Thr Gln Cys Leu Ala Gly
 65                  70                  75                  80

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

Val Thr Val Pro Cys Pro Val Pro Ser Thr Pro Pro
            100                 105
```

<210> 6
<211> 108
<212> PRT
<213> Homo sapiens The CH1 domain of human IgA2

<400> 6

```
Ala Ser Pro Thr Ser Pro Lys Val Phe Pro Leu Ser Leu Asp Ser Thr
  1               5                  10                  15
```

```
Pro Gln Asp Gly Asn Val Val Val Ala Cys Leu Val Gln Gly Phe Phe
             20                  25                  30

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

Thr Ala Arg Asn Phe Pro Pro Ser Gln Asp Ala Ser Gly Asp Leu Tyr
     50                  55                  60

Thr Thr Ser Ser Gln Leu Thr Leu Pro Ala Thr Gln Cys Pro Asp Gly
 65                  70                  75                  80

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

Val Thr Val Pro Cys Pro Val Pro Pro Pro Pro Pro
            100                 105
```

<210> 7
<211> 110
<212> PRT
<213> Homo sapiens The CH1 domain of human IgD

<400> 7

```
Ala Pro Thr Lys Ala Pro Asp Val Phe Pro Ile Ile Ser Gly Cys Arg
  1               5                  10                  15

His Pro Lys Asp Asn Ser Pro Val Val Leu Ala Cys Leu Ile Thr Gly
             20                  25                  30

Tyr His Pro Thr Ser Val Thr Val Thr Trp Tyr Met Gly Thr Gln Ser
         35                  40                  45

Gln Pro Gln Arg Thr Phe Pro Glu Ile Gln Arg Arg Asp Ser Tyr Tyr
     50                  55                  60

Met Thr Ser Ser Gln Leu Ser Thr Pro Leu Gln Gln Trp Arg Gln Gly
 65                  70                  75                  80

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

Ile Phe Arg Trp Pro Glu Ser Pro Lys Ala Gln Ala Ser Ser
            100                 105                 110
```

<210> 8
<211> 110
<212> PRT
<213> Homo sapiens The CH1 domain of human IgE

<400> 8

```
Ala Ser Thr Gln Ser Pro Ser Val Phe Pro Leu Thr Arg Cys Cys Lys
```

```
  1               5                  10                  15

Asn Ile Pro Ser Asn Ala Thr Ser Val Thr Leu Gly Cys Leu Ala Thr
             20                  25                  30

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

Asn Gly Thr Thr Met Thr Leu Pro Ala Thr Thr Leu Thr Leu Ser Gly
     50                  55                  60

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

Gln Met Phe Thr Cys Arg Val Ala His Thr Pro Ser Ser Thr Asp Trp
                 85                  90                  95

Val Asp Asn Lys Thr Phe Ser Val Cys Ser Arg Asp Phe Thr
            100                 105                 110
```

<210> 9
<211> 110
<212> PRT
<213> Homo sapiens The CH1 domain of human IgM

<400> 9

```
Gly Ser Ala Ser Ala Pro Thr Leu Phe Pro Leu Val Ser Cys Glu Asn
  1               5                  10                  15

Ser Pro Ser Asp Thr Ser Ser Val Ala Val Gly Cys Leu Ala Gln Asp
             20                  25                  30

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

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

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

Gly Thr Asp Glu His Val Val Cys Lys Val Gln His Pro Asn Gly Asn
                 85                  90                  95

Lys Glu Lys Asn Val Pro Leu Pro Val Ile Ala Glu Leu Pro
            100                 105                 110
```

<210> 10
<211> 105
<212> PRT
<213> Homo sapiens The CL domain of human kappa chain

<400> 10

```
Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu
 1               5                  10                  15

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

Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly
        35                  40                  45

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

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

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

Thr Lys Ser Phe Asn Arg Gly Glu Cys
            100                 105
```

<210> 11
<211> 103
<212> PRT
<213> Homo sapiens The CL domain of human lambda 1 chain

<400> 11

```
Lys Ala Asn Pro Thr Val Thr Leu Phe Pro Pro Ser Ser Glu Glu Leu
 1               5                  10                  15

Gln Ala Asn Lys Ala Thr Leu Val Cys Leu Ile Ser Asp Phe Tyr Pro
            20                  25                  30

Gly Ala Val Thr Val Ala Trp Lys Ala Asp Gly Ser Pro Val Lys Ala
        35                  40                  45

Gly Val Glu Thr Thr Lys Pro Ser Lys Gln Ser Asn Asn Lys Tyr Ala
    50                  55                  60

Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser His Arg
65                  70                  75                  80

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

Val Ala Pro Thr Glu Cys Ser
            100
```

<210> 12
<211> 103
<212> PRT

<213> Homo sapiens The CL domain of human lambda 2 chain

<400> 12

```
Lys Ala Ala Pro Ser Val Thr Leu Phe Pro Pro Ser Ser Glu Glu Leu
 1               5                  10                  15

Gln Ala Asn Lys Ala Thr Leu Val Cys Leu Ile Ser Asp Phe Tyr Pro
            20                  25                  30

Gly Ala Val Thr Val Ala Trp Lys Ala Asp Ser Ser Pro Val Lys Ala
        35                  40                  45

Gly Val Glu Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn Lys Tyr Ala
    50                  55                  60

Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser His Arg
65                  70                  75                  80

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

Val Ala Pro Thr Glu Cys Ser
            100
```

<210> 13
<211> 103
<212> PRT
<213> Homo sapiens The CL domain of human lambda 3 chain

<400> 13

```
Lys Ala Ala Pro Ser Val Thr Leu Phe Pro Pro Ser Ser Glu Glu Leu
 1               5                  10                  15

Gln Ala Asn Lys Ala Thr Leu Val Cys Leu Ile Ser Asp Phe Tyr Pro
            20                  25                  30

Gly Ala Val Thr Val Ala Trp Lys Ala Asp Ser Ser Pro Val Lys Ala
        35                  40                  45

Gly Val Glu Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn Lys Tyr Ala
    50                  55                  60

Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser His Lys
65                  70                  75                  80

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

Val Ala Pro Thr Glu Cys Ser
            100
```

<210> 14

<211> 103
<212> PRT
<213> Homo sapiens The CL domain of human lambda 7 chain

<400> 14
Lys Ala Ala Pro Ser Val Thr Leu Phe Pro Pro Ser Ser Glu Glu Leu
1 5 10 15

Gln Ala Asn Lys Ala Thr Leu Val Cys Leu Val Ser Asp Phe Tyr Pro
20 25 30

Gly Ala Val Thr Val Ala Trp Lys Ala Asp Gly Ser Pro Val Lys Val
35 40 45

Gly Val Glu Thr Thr Lys Pro Ser Lys Gln Ser Asn Asn Lys Tyr Ala
50 55 60

Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser His Arg
65 70 75 80

Ser Tyr Ser Cys Arg Val Thr His Glu Gly Ser Thr Val Glu Lys Thr
85 90 95

Val Ala Pro Thr Glu Cys Ser
100

<210> 15
<211> 108
<212> PRT
<213> Homo sapiens The CH3 domain of human IgG1

<400> 15
Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg
1 5 10 15

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

Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro
35 40 45

Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser
50 55 60

Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln
65 70 75 80

Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His
85 90 95

Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
100 105

<210> 16
<211> 108
<212> PRT
<213> Homo sapiens The CH3 domain of human IgG2

<400> 16
Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg
1 5 10 15

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

Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro
35 40 45

Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser Asp Gly Ser
50 55 60

Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln
65 70 75 80

Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His
85 90 95

Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
100 105

<210> 17
<211> 108
<212> PRT
<213> Homo sapiens The CH3 domain of human IgG3

<400> 17
Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg
1 5 10 15

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

Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Ser Gly Gln Pro
35 40 45

Glu Asn Asn Tyr Asn Thr Thr Pro Pro Met Leu Asp Ser Asp Gly Ser
50 55 60

Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln
65 70 75 80

Gly Asn Ile Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn Arg
85 90 95

Phe Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys

100 105

<210> 18
<211> 108
<212> PRT
<213> Homo sapiens The CH3 domain of human IgG4

<400> 18
Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln
1 5 10 15

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

Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro
35 40 45

Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser
50 55 60

Phe Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu
65 70 75 80

Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His
85 90 95

Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys
100 105

<210> 19
<211> 120
<212> PRT
<213> Homo sapiens The CH3 domain of human IgA1

<400> 19
Gly Asn Thr Phe Arg Pro Glu Val His Leu Leu Pro Pro Pro Ser Glu
1 5 10 15

Glu Leu Ala Leu Asn Glu Leu Val Thr Leu Thr Cys Leu Ala Arg Gly
20 25 30

Phe Ser Pro Lys Asp Val Leu Val Arg Trp Leu Gln Gly Ser Gln Glu
35 40 45

Leu Pro Arg Glu Lys Tyr Leu Thr Trp Ala Ser Arg Gln Glu Pro Ser
50 55 60

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

Glu Asp Trp Lys Lys Gly Asp Thr Phe Ser Cys Met Val Gly His Glu
85 90 95

```
Ala Leu Pro Leu Ala Phe Thr Gln Lys Thr Ile Asp Arg Leu Ala Gly
            100                 105                 110

Lys Pro Thr His Val Asn Val Ser
        115                 120
```

<210> 20
<211> 120
<212> PRT
<213> Homo sapiens The CH3 domain of human IgA2

<400> 20

```
Gly Asn Thr Phe Arg Pro Glu Val His Leu Leu Pro Pro Pro Ser Glu
  1               5                  10                  15

Glu Leu Ala Leu Asn Glu Leu Val Thr Leu Thr Cys Leu Ala Arg Gly
             20                  25                  30

Phe Ser Pro Lys Asp Val Leu Val Arg Trp Leu Gln Gly Ser Gln Glu
         35                  40                  45

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

Ile Leu Arg Val Ala Ala Glu Asp Trp Lys Lys Gly Asp Thr Phe Ser
 65                  70                  75                  80

Cys Met Val Gly His Glu Ala Leu Pro Leu Ala Phe Thr Gln Lys Thr
                 85                  90                  95

Ile Asp Arg Leu Ala Phe Thr Gln Lys Thr Ile Asp Arg Leu Ala Gly
            100                 105                 110

Lys Pro Thr His Val Asn Val Ser
        115                 120
```

<210> 21
<211> 119
<212> PRT
<213> Homo sapiens The CH3 domain of human IgD

<400> 21

```
Ala Ala Gln Ala Pro Val Lys Leu Ser Leu Asn Leu Leu Ala Ser Ser
  1               5                  10                  15

Asp Pro Pro Glu Ala Ala Ser Trp Leu Leu Cys Glu Val Ser Gly Phe
             20                  25                  30

Ser Pro Pro Asn Ile Leu Leu Met Trp Leu Glu Asp Gln Arg Glu Val
         35                  40                  45
```

```
Asn Thr Ser Gly Phe Ala Pro Ala Arg Pro Pro Pro Gln Pro Arg Ser
     50                  55                  60

Thr Thr Phe Trp Ala Trp Ser Val Leu Arg Val Pro Ala Pro Pro Ser
 65                  70                  75                  80

Pro Gln Pro Ala Thr Tyr Thr Cys Val Val Ser His Glu Asp Ser Arg
                 85                  90                  95

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

His Gly Pro Met Lys Val Lys
        115
```

<210> 22
<211> 120
<212> PRT
<213> Homo sapiens The CH4 domain of human IgE

<400> 22

```
Ala Ala Pro Glu Val Tyr Ala Phe Ala Thr Pro Glu Trp Pro Gly Ser
  1               5                  10                  15

Arg Asp Lys Arg Thr Leu Ala Cys Leu Ile Gln Asn Phe Met Pro Glu
             20                  25                  30

Asp Ile Ser Val Gln Trp Leu His Asn Glu Val Gln Leu Pro Asp Ala
         35                  40                  45

Arg His Ser Thr Thr Gln Pro Arg Lys Thr Lys Gly Ser Gly Phe Phe
     50                  55                  60

Val Phe Ser Arg Leu Glu Val Thr Arg Ala Glu Trp Glu Gln Lys Asp
 65                  70                  75                  80

Glu Phe Ile Cys Arg Ala Val His Glu Ala Ala Ser Pro Ser Gln Thr
                 85                  90                  95

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

Val Glu Glu Ala Glu Gly Glu Ala
        115                 120
```

<210> 23
<211> 120
<212> PRT
<213> Homo sapiens The CH3 domain of human IgM

<400> 23

```
Lys Gly Val Ala Leu His Arg Pro Asp Val Tyr Leu Leu Pro Pro Ala
```

```
  1               5                  10                  15

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

Thr Gly Phe Ser Pro Ala Asp Val Phe Val Gln Trp Met Gln Arg Gly
         35                  40                  45

Gln Pro Leu Ser Pro Glu Lys Tyr Val Thr Ser Ala Pro Met Pro Glu
     50                  55                  60

Pro Gln Ala Pro Gly Arg Tyr Phe Ala His Ser Ile Leu Thr Val Ser
 65                  70                  75                  80

Glu Glu Glu Trp Asn Thr Gly Glu Thr Tyr Thr Cys Val Ala His Glu
                 85                  90                  95

Ala Leu Pro Asn Arg Val Thr Glu Arg Thr Val Asp Lys Ser Thr Gly
            100                 105                 110

Lys Pro Thr Leu Tyr Asn Val Ser
        115                 120
```

<210> 24
<211> 1386
<212> DNA
<213> Artificial Sequence

<220>
<223> CDS of TNFRSF1B (Enbrel : NM_001066), wherein 1-771 region encodes ectodomain

<400> 24

```
atggcgcccg tcgccgtctg ggccgcgctg gccgtcggac tggagctctg ggctgcggcg        60

cacgccttgc ccgcccaggt ggcatttaca ccctacgccc cggagcccgg gagcacatgc       120

cggctcagag aatactatga ccagacagct cagatgtgct gcagcaaatg ctcgccgggc       180

caacatgcaa aagtcttctg taccaagacc tcggacaccg tgtgtgactc ctgtgaggac       240

agcacataca cccagctctg gaactgggtt cccgagtgct tgagctgtgg ctcccgctgt       300

agctctgacc aggtggaaac tcaagcctgc actcgggaac agaaccgcat ctgcacctgc       360

aggcccggct ggtactgcgc gctgagcaag caggaggggt gccggctgtg cgcgccgctg       420

cgcaagtgcc gcccgggctt cggcgtggcc agaccaggaa ctgaaacatc agacgtggtg       480

tgcaagccct gtgccccggg gacgttctcc aacacgactt catccacgga tatttgcagg       540

ccccaccaga tctgtaacgt ggtggccatc cctgggaatg caagcatgga tgcagtctgc       600
```

acgtccacgt cccccacccg gagtatggcc ccaggggcag tacacttacc ccagccagtg 660

tccacacgat cccaacacac gcagccaact ccagaaccca gcactgctcc aagcacctcc 720

ttcctgctcc caatgggccc cagcccccca gctgaaggga gcactggcga cttcgctctt 780

ccagttggac tgattgtggg tgtgacagcc ttgggtctac taataatagg agtggtgaac 840

tgtgtcatca tgacccaggt gaaaaagaag cccttgtgcc tgcagagaga agccaaggtg 900

cctcacttgc ctgccgataa ggcccggggt acacagggcc ccgagcagca gcacctgctg 960

atcacagcgc cgagctccag cagcagctcc ctggagagct cggccagtgc gttggacaga 1020

agggcgccca ctcggaacca gccacaggca ccaggcgtgg aggccagtgg ggccggggag 1080

gcccgggcca gcaccgggag ctcagattct tcccctggtg gccatgggac ccaggtcaat 1140

gtcacctgca tcgtgaacgt ctgtagcagc tctgaccaca gctcacagtg ctcctcccaa 1200

gccagctcca caatgggaga cacagattcc agcccctcgg agtccccgaa ggacgagcag 1260

gtccccttct ccaaggagga atgtgccttt cggtcacagc tggagacgcc agagaccctg 1320

ctggggagca ccgaagagaa gcccctgccc cttggagtgc ctgatgctgg gatgaagccc 1380

agttaa 1386

<210> 25
<211> 1008
<212> DNA
<213> Artificial Sequence

<220>
<223> CDS of Fas Receptor (NM_000043), wherein 1-519 region encodes ectodomain

<400> 25
atgctgggca tctggaccct cctacctctg gttcttacgt ctgttgctag attatcgtcc 60

aaaagtgtta atgcccaagt gactgacatc aactccaagg gattggaatt gaggaagact 120

gttactacag ttgagactca gaacttggaa ggcctgcatc atgatggcca attctgccat 180

aagccctgtc ctccaggtga aaggaaagct agggactgca cagtcaatgg ggatgaacca 240

gactgcgtgc cctgccaaga agggaaggag tacacagaca aagcccattt ttcttccaaa 300

tgcagaagat gtagattgtg tgatgaagga catggcttag aagtggaaat aaactgcacc 360

cggacccaga ataccaagtg cagatgtaaa ccaaactttt tttgtaactc tactgtatgt 420

gaacactgtg acccttgcac caaatgtgaa catggaatca tcaaggaatg cacactcacc 480

agcaacacca agtgcaaaga ggaaggatcc agatctaact tggggtggct ttgtcttctt 540

cttttgccaa ttccactaat tgtttgggtg aagagaaagg aagtacagaa aacatgcaga 600

aagcacagaa aggaaaacca aggttctcat gaatctccaa ctttaaatcc tgaaacagtg 660

gcaataaatt tatctgatgt tgacttgagt aaatatatca ccactattgc tggagtcatg 720

acactaagtc aagttaaagg ctttgttcga aagaatggtg tcaatgaagc caaaatagat 780

gagatcaaga atgacaatgt ccaagacaca gcagaacaga aagttcaact gcttcgtaat 840

tggcatcaac ttcatggaaa gaaagaagcg tatgacacat tgattaaaga tctcaaaaaa 900

gccaatcttt gtactcttgc agagaaaatt cagactatca tcctcaagga cattactagt 960

gactcagaaa attcaaactt cagaaatgaa atccaaagct tggtctag 1008

<210> 26
<211> 684
<212> DNA
<213> Artificial Sequence

<220>
<223> CDS of Human Fc (from Human Immunoglobulin G)

<400> 26
gacaaaactc acacatgccc accgtgccca gcacctgaac tcctgggggg accgtcagtc 60

ttcctcttcc ccccaaaacc caaggacacc ctcatgatct cccggacccc tgaggtcaca 120

tgcgtggtgg tggacgtgag ccacgaagac cctgaggtca agttcaactg gtacgtggac 180

ggcgtggagg tgcataatgc caagacaaag ccgcgggagg agcagtacaa cagcacgtac 240

cgtgtggtca gcgtcctcac cgtcctgcac caggactggc tgaatggcaa ggagtacaag 300

tgcaaggtct ccaacaaagc cctcccagcc cccatcgaga aaaccatctc caaagccaaa 360

gggcagcccc gagaaccaca ggtgtacacc ctgcccccat cccgggagga gatgaccaag 420

aaccaggtca gcctgacctg cctggtcaaa ggcttctatc ccagcgacat cgccgtggag 480

tgggagagca atgggcagcc ggagaacaac tacaagacca cgcctcccgt gctggactcc 540

gacggctcct tcttcctcta cagcaagctc accgtggaca agagcaggtg gcagcagggg 600

aacgtcttct catgctccgt gatgcatgag gctctgcaca accactacac gcagaagagc 660

ctctccctgt ctccgggtaa atga 684

<210> 27
<211> 127
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy Chain Variable Region of anti-Influenza B antibody, 2B9

<400> 27
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Lys
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Thr Gly Phe Thr Phe Asp Asp Tyr
20 25 30

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

Ser Ser Leu Asn Trp Lys Gly Asn Ser Val Asp Tyr Ala Asp Ser Val
50 55 60

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

Leu Gln Met Asn Gly Leu Arg Gly Asp Asp Thr Ala Val Tyr Phe Cys
85 90 95

Ala Lys Asp Asn Lys Ala Asp Ala Ser Met Asp Tyr Tyr Tyr His His
100 105 110

Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120 125

<210> 28
<211> 381
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleic Acid Sequence Encoding Heavy Chain Variable Region of 2B9

<400> 28
gaagtgcagc tggtggagtc tgggggaggc ttggtacagc ctggcaagtc cctgagactc 60

tcctgtgcag ccactggatt cacatttgac gattacgcca tgcactgggt ccgccaagct 120

ccagggaagg gcctggagtg ggtctcaagt cttaattgga agggaaatag tgtagactac 180

gcggactctg tgaggggccg attcaccatg tccagagaca acgccaagaa actagtgtat 240

ctgcaaatga acggtctgag aggtgacgac acggccgtct atttttgtgc aaaagataat 300

aaagcggatg catctatgga ctactactac caccacggta tggacgtctg gggccaaggg 360

accacggtca ccgtctcctc g 381

<210> 29
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
<223> Heavy Chain Variable Region of anti-Influenza A antibody, 4D9

<400> 29
Gln Val Thr Leu Arg Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu
1 5 10 15

Thr Leu Ser Leu Thr Cys Thr Ile Ser Gly Ala Ser Ile Asn Thr Asp
20 25 30

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

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

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

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

Arg Asp Val Thr Gly Ile Ser Arg Glu Asn Ala Phe Asp Ile Trp Gly
100 105 110

Gln Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 30
<211> 363
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleic Acid Sequence Encoding Heavy Chain Variable Region of anti-Influenza A antibody, 4D9

<400> 30
caggtcacct tgagggagtc gggcccagga ctggtgaagc cttcggagac cctgtccctc 60

acctgcacta tctccggtgc ctccatcaat actgactact ggagctggat ccggcagccc 120

ccagggaagg gactggagtg gattggctat atctattaca gagggcgcac caactacaac 180

ccctccctca ggagccgagt caccatatca gtagacacgt ccaagaatca attctccctg 240

cagatgacgt ctatgaccgc tgctgacacg gccgtatatt actgtgcgag agatgtgact 300

ggcatcagtc gagaaaatgc ttttgatatc tggggccaag gcaccctggt caccgtctcc 360

tcg 363

<210> 31
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> Common Light Chain for 4D9 and 2B9

<400> 31
Ala Ile Arg Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

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

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

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

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

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

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

<210> 32
<211> 321
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleic Acid Sequence Encoding Common Light Chain for 4D9 and 2B9

<400> 32
gccatccgga tgacccagtc tccatcctcc ctgtctgcat ctgtaggaga cagagtcacc 60

atcacttgcc gggcaagtca gagcattagc ggctatttaa attggtatca gcagaaacca 120

gggaaagccc ctaagctctt gatctatgct gcatccagtt tgcagagtgg ggtcccatca 180

aggttcagtg gcagtggatc tgggacagat ttcactctca ccatcagcag tctgcaacct 240

gaagattttg caacttacta ctgtcaacag agctacagta tccccaccac cttcggccaa 300

gggacacgac tggagattaa a 321

<210> 33
<211> 330
<212> PRT
<213> Artificial Sequence

<220>
<223> Human IgG1 Heavy Constant Region

<400> 33
Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys
1 5 10 15

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

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

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

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

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

Lys Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys
100 105 110

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

Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys

130 135 140

Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp
145 150 155 160

Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu
165 170 175

Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu
180 185 190

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

Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
210 215 220

Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu
225 230 235 240

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

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

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

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

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

Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
325 330

<210> 34
<211> 335
<212> PRT
<213> Artificial Sequence

<220>
<223> Human IgA1 Heavy Constant Region

<400> 34
Ala Ser Pro Thr Ser Pro Lys Val Phe Pro Leu Ser Leu Cys Ser Thr
1 5 10 15

Gln Pro Asp Gly Asn Val Val Ile Ala Cys Leu Val Gln Gly Phe Phe
20 25 30

Pro Gln Glu Pro Leu Ser Val Thr Trp Ser Glu Ser Gly Gln Gly Val
35 40 45

Thr Ala Arg Asn Phe Pro Pro Ser Gln Asp Ala Ser Gly Asp Leu Tyr
50 55 60

Thr Thr Ser Ser Gln Leu Thr Leu Pro Ala Thr Gln Cys Leu Ala Gly
65 70 75 80

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

Val Thr Val Pro Cys Pro Val Pro Ser Thr Pro Pro Thr Pro Ser Pro
100 105 110

Ser Thr Pro Pro Thr Pro Ser Pro Ser Cys Cys His Pro Arg Leu Ser
115 120 125

Leu His Arg Pro Ala Leu Glu Asp Leu Leu Leu Gly Ser Glu Ala Asn
130 135 140

Leu Thr Cys Thr Leu Thr Gly Leu Arg Asp Ala Ser Gly Val Thr Phe
145 150 155 160

Thr Trp Thr Pro Ser Ser Gly Lys Ser Ala Val Gln Gly Pro Pro Glu
165 170 175

Arg Asp Leu Cys Gly Cys Tyr Ser Val Ser Ser Val Leu Pro Gly Cys
180 185 190

Ala Glu Pro Trp Asn His Gly Lys Thr Phe Thr Cys Thr Ala Ala Tyr
195 200 205

Pro Glu Ser Lys Thr Pro Leu Thr Ala Thr Leu Ser Lys Ser Gly Asn
210 215 220

Thr Phe Arg Pro Glu Val His Leu Leu Pro Pro Pro Ser Glu Glu Leu
225 230 235 240

Ala Leu Asn Glu Leu Val Thr Leu Thr Cys Leu Ala Arg Gly Phe Ser
245 250 255

Pro Lys Asp Val Leu Val Arg Trp Leu Gln Gly Ser Gln Glu Leu Pro
260 265 270

Arg Glu Lys Tyr Leu Thr Trp Ala Ser Arg Gln Glu Pro Ser Gln Gly
275 280 285

Thr Thr Thr Phe Ala Val Thr Ser Ile Leu Arg Val Ala Ala Glu Asp
290 295 300

Trp Lys Lys Gly Asp Thr Phe Ser Cys Met Val Gly His Glu Ala Leu
305 310 315 320

Pro Leu Ala Phe Thr Gln Lys Thr Ile Asp Arg Leu Ala Gly Lys
325 330 335

<210> 35
<211> 228
<212> PRT
<213> Artificial Sequence

<220>
<223> Human Immunoglobulin Light chain (Kappa)

<400> 35
Val Leu Met Leu Leu Leu Leu Trp Val Ser Gly Thr Cys Gly Asp Ile
1 5 10 15

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

Val Ser Phe Ser Cys Arg Ala Ser Gln Phe Val Gly Ser Ser Ile His
35 40 45

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

Ala Ser Glu Ser Met Ser Gly Ile Pro Ser Arg Phe Ser Gly Ser Gly
65 70 75 80

Ser Gly Thr Asp Phe Thr Leu Ser Ile Asn Thr Val Glu Ser Glu Asp
85 90 95

Ile Ala Asp Tyr Tyr Cys Gln Gln Ser His Ser Trp Pro Phe Thr Phe
100 105 110

Gly Ser Gly Thr Asn Leu Glu Val Lys Arg Thr Val Ala Ala Pro Ser
115 120 125

Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly Thr Ala
130 135 140

Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val
145 150 155 160

Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu Ser
165 170 175

Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser Ser Thr
180 185 190

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

Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser Phe Asn
210 215 220

Arg Gly Glu Cys
225

<210> 36
<211> 226
<212> PRT
<213> Artificial Sequence

<220>
<223> Human Immunoglobulin Light chain (Lambda)

<400> 36
Leu Phe Leu Gly Val Leu Ala Tyr Cys Thr Gly Ser Val Ala Ser Tyr
1 5 10 15

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

Ser Ile Thr Cys Ser Gly Asp Lys Leu Gly Asp Asn Tyr Ala Cys Trp
35 40 45

Tyr Gln Leu Lys Pro Gly Gln Ser Pro Val Leu Val Ile Tyr Gln Asp
50 55 60

Asn Arg Arg Pro Ser Gly Ile Pro Glu Arg Ile Ser Gly Ser Asn Ser
65 70 75 80

Gly Asn Thr Ala Thr Leu Thr Ile Ser Gly Thr Gln Ala Met Asp Glu
85 90 95

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

Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln Pro Lys Ala Ala Pro
115 120 125

Ser Val Thr Leu Phe Pro Pro Ser Ser Glu Glu Leu Gln Ala Asn Lys
130 135 140

Ala Thr Leu Val Cys Leu Ile Ser Asp Phe Tyr Pro Gly Ala Val Thr
145 150 155 160

Val Ala Trp Lys Ala Asp Ser Ser Pro Val Lys Ala Gly Val Glu Thr
165 170 175

Thr Thr Pro Ser Lys Gln Ser Asn Asn Lys Tyr Ala Ala Ser Ser Tyr
180 185 190

Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser His Arg Ser Tyr Ser Cys

195 200 205

Gln Val Thr His Glu Gly Ser Thr Val Glu Lys Thr Val Ala Pro Thr
210 215 220

Glu Cys
225

<210> 37
<211> 97
<212> PRT
<213> Artificial Sequence

<220>
<223> CH1 domain of mouse IgG1

<400> 37
Ala Lys Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala
1 5 10 15

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

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

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

Ser Ser Ser Val Thr Val Pro Ser Ser Pro Arg Pro Ser Glu Thr Val
65 70 75 80

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

Ile

<210> 38
<211> 97
<212> PRT
<213> Artificial Sequence

<220>
<223> CH1 domain of mouse IgG2ab

<400> 38
Ala Lys Thr Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Val Cys Gly
1 5 10 15

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

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

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

Ser Ser Ser Val Thr Val Thr Ser Asn Thr Trp Pro Ser Gln Thr Ile
65 70 75 80

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

Ile

<210> 39
<211> 97
<212> PRT
<213> Artificial Sequence

<220>
<223> CH1 domain of mouse IgG2aa

<400> 39
Ala Lys Thr Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Val Cys Gly
1 5 10 15

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

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

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

Ser Ser Ser Val Thr Val Thr Ser Ser Thr Trp Pro Ser Gln Ser Ile
65 70 75 80

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

Ile

<210> 40
<211> 97
<212> PRT

<213> Artificial Sequence

<220>
<223> CH1 domain of mouse IgG2b

<400> 40
Ala Lys Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Cys Gly
1 5 10 15

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

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

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

Ser Ser Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Gln Thr Val
65 70 75 80

Thr Cys Ser Val Ala His Pro Ala Ser Ser Thr Thr Val Asp Lys Lys
85 90 95

Leu

<210> 41
<211> 96
<212> PRT
<213> Artificial Sequence

<220>
<223> CH1 domain of mouse IgG3

<400> 41
Thr Thr Thr Ala Pro Ser Val Tyr Pro Leu Val Pro Gly Cys Ser Asp
1 5 10 15

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

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

Val Arg Thr Val Ser Ser Val Leu Gln Ser Gly Phe Tyr Ser Leu Ser
50 55 60

Ser Leu Val Thr Val Pro Ser Ser Thr Trp Pro Ser Gln Thr Val Ile
65 70 75 80

Cys Asn Val Ala His Pro Ala Ser Lys Thr Glu Leu Ile Lys Arg Ile
85 90 95

<210> 42
<211> 97
<212> PRT
<213> Artificial Sequence

<220>
<223> CH1 domain of rat IgG1

<400> 42
Ala Glu Thr Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Gly Thr Ala
1 5 10 15

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

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

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

Thr Ser Ser Val Thr Val Pro Ser Ser Thr Trp Ser Ser Gln Ala Val
65 70 75 80

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

Ile

<210> 43
<211> 97
<212> PRT
<213> Artificial Sequence

<220>
<223> CH1 domain of rat IgG2a

<400> 43
Ala Glu Thr Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Gly Thr Ala
1 5 10 15

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

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

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

Thr Ser Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Gln Thr Val
65 70 75 80

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

Ile

<210> 44
<211> 95
<212> PRT
<213> Artificial Sequence

<220>
<223> CH1 domain of rat IgG2b

<400> 44
Ala Gln Thr Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Gly Cys Gly
1 5 10 15

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

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

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

Thr Ser Ser Val Thr Ser Ser Thr Trp Pro Ser Gln Thr Val Thr Cys
65 70 75 80

Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Val
85 90 95

<210> 45
<211> 97
<212> PRT
<213> Artificial Sequence

<220>
<223> CH1 domain of rat IgG2c

<400> 45
Ala Thr Thr Thr Ala Pro Ser Val Tyr Pro Leu Val Pro Gly Cys Ser
1 5 10 15

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

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

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

Ser Ser Ser Val Thr Val Pro Ser Ser Thr Trp Ser Ser Gln Thr Val
65 70 75 80

Thr Cys Ser Val Ala His Pro Ala Thr Lys Ser Asn Leu Ile Lys Arg
85 90 95

Ile

<210> 46
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> CH3 domain of mouse IgG1

<400> 46
Gly Arg Pro Lys Ala Pro Gln Val Tyr Thr Ile Pro Pro Pro Lys Glu
1 5 10 15

Gln Met Ala Lys Asp Lys Val Ser Leu Thr Cys Met Ile Thr Asp Phe
20 25 30

Phe Pro Glu Asp Ile Thr Val Glu Trp Gln Trp Asn Gly Gln Pro Ala
35 40 45

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

Phe Val Tyr Ser Lys Leu Asn Val Gln Lys Ser Asn Trp Glu Ala Gly
65 70 75 80

Asn Thr Phe Thr Cys Ser Val Leu His Glu Gly Leu His Asn His His
85 90 95

Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
100 105

<210> 47
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> CH3 domain of mouse IgG2ab

<400> 47
Gly Pro Val Arg Ala Pro Gln Val Tyr Val Leu Pro Pro Pro Ala Glu
1 5 10 15

Glu Met Thr Lys Lys Glu Phe Ser Leu Thr Cys Met Ile Thr Gly Phe
20 25 30

Leu Pro Ala Glu Ile Ala Val Asp Trp Thr Ser Asn Gly Arg Thr Glu
35 40 45

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

Phe Met Tyr Ser Lys Leu Arg Val Gln Lys Ser Thr Trp Glu Arg Gly
65 70 75 80

Ser Leu Phe Ala Cys Ser Val Val His Glu Val Leu His Asn His Leu
85 90 95

Thr Thr Lys Thr Ile Ser Arg Ser Leu Gly Lys
100 105

<210> 48
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> CH3 domain of mouse IgG2aa

<400> 48
Gly Ser Val Arg Ala Pro Gln Val Tyr Val Leu Pro Pro Pro Glu Glu
1 5 10 15

Glu Met Thr Lys Lys Gln Val Thr Leu Thr Cys Met Val Thr Asp Phe
20 25 30

Met Pro Glu Asp Ile Tyr Val Glu Trp Thr Asn Asn Gly Lys Thr Glu
35 40 45

Leu Asn Tyr Lys Asn Thr Glu Pro Val Leu Asp Ser Asp Gly Ser Tyr
50 55 60

Phe Met Tyr Ser Lys Leu Arg Val Glu Lys Lys Asn Trp Val Glu Arg
65 70 75 80

Asn Ser Tyr Ser Cys Ser Val Val His Glu Gly Leu His Asn His His
85 90 95

Thr Thr Lys Ser Phe Ser Arg Thr Pro Gly Lys
100 105

<210> 49
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> CH3 domain of mouse IgG2b

<400> 49
Gly Leu Val Arg Ala Pro Gln Val Tyr Thr Leu Pro Pro Pro Ala Glu
1 5 10 15

Gln Leu Ser Arg Lys Asp Val Ser Leu Thr Cys Leu Val Val Gly Phe
20 25 30

Asn Pro Gly Asp Ile Ser Val Glu Trp Thr Ser Asn Gly His Thr Glu
35 40 45

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

Phe Ile Tyr Ser Lys Leu Asn Met Lys Thr Ser Lys Trp Glu Lys Thr
65 70 75 80

Asp Ser Phe Ser Cys Asn Val Arg His Glu Gly Leu Lys Asn Tyr Tyr
85 90 95

Leu Lys Lys Thr Ile Ser Arg Ser Pro Gly Lys
100 105

<210> 50
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> CH3 domain of mouse IgG3

<400> 50
Gly Arg Ala Gln Thr Pro Gln Val Tyr Thr Ile Pro Pro Pro Arg Glu

```
  1               5                  10                  15

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

Phe Ser Glu Ala Ile Ser Val Glu Trp Glu Arg Asn Gly Glu Leu Glu
        35                  40                  45

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

Phe Leu Tyr Ser Lys Leu Thr Val Asp Thr Asp Ser Trp Leu Gln Gly
65                  70                  75                  80

Glu Ile Phe Thr Cys Ser Val Val His Glu Ala Leu His Asn His His
                85                  90                  95

Thr Gln Lys Asn Leu Ser Arg Ser Pro Gly Lys
            100                 105
```

<210> 51
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> CH3 domain of rat IgG1

<400> 51

```
Gly Arg Thr Gln Val Pro His Val Tyr Thr Met Ser Pro Thr Lys Glu
  1               5                  10                  15

Glu Met Thr Gln Asn Glu Val Ser Ile Thr Cys Met Val Lys Gly Phe
            20                  25                  30

Tyr Pro Pro Asp Ile Tyr Val Glu Trp Gln Met Asn Gly Gln Pro Gln
        35                  40                  45

Glu Asn Tyr Lys Asn Thr Pro Pro Thr Met Asp Thr Asp Gly Ser Tyr
    50                  55                  60

Phe Leu Tyr Ser Lys Leu Asn Val Lys Lys Glu Lys Trp Gln Gln Gly
65                  70                  75                  80

Asn Thr Phe Thr Cys Ser Val Leu His Glu Gly Leu His Asn His His
                85                  90                  95

Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
            100                 105
```

<210> 52

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

<220>
<223> CH3 domain of rat IgG2a

<400> 52
Gly Thr Pro Arg Gly Pro Gln Val Tyr Thr Met Ala Pro Pro Lys Glu
1 5 10 15

Glu Met Thr Gln Ser Gln Val Ser Ile Thr Cys Met Val Lys Gly Phe
20 25 30

Tyr Pro Pro Asp Ile Tyr Thr Glu Trp Lys Met Asn Gly Gln Pro Gln
35 40 45

Glu Asn Tyr Lys Asn Thr Pro Pro Thr Met Asp Thr Asp Gly Ser Tyr
50 55 60

Phe Leu Tyr Ser Lys Leu Asn Val Lys Lys Glu Thr Trp Gln Gln Gly
65 70 75 80

Asn Thr Phe Thr Cys Ser Val Leu His Glu Gly Leu His Asn His His
85 90 95

Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys
100 105

<210> 53
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> CH3 domain of rat IgG2b

<400> 53
Gly Leu Val Arg Lys Pro Gln Val Tyr Val Met Gly Pro Pro Thr Glu
1 5 10 15

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

Leu Pro Asn Asp Ile Gly Val Glu Trp Thr Ser Asn Gly His Ile Glu
35 40 45

Lys Asn Tyr Lys Asn Thr Glu Pro Val Met Asp Ser Asp Gly Ser Phe
50 55 60

Phe Met Tyr Ser Lys Leu Asn Val Glu Arg Ser Arg Trp Asp Ser Arg

65 70 75 80

Ala Pro Phe Val Cys Ser Val Val His Glu Gly Leu His Asn His His
85 90 95

Val Glu Lys Ser Ile Ser Arg Pro Pro Gly Lys
100 105

<210> 54
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> CH3 domain of rat IgG2c

<400> 54
Gly Lys Ala Arg Thr Pro Gln Val Tyr Thr Ile Pro Pro Pro Arg Glu
1 5 10 15

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

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

Gln Asp Tyr Lys Asn Thr Leu Pro Val Leu Asp Ser Asp Glu Ser Tyr
50 55 60

Phe Leu Tyr Ser Lys Leu Ser Val Asp Thr Asp Ser Trp Met Arg Gly
65 70 75 80

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

Thr Gln Lys Asn Leu Ser Arg Ser Pro Gly Lys
100 105