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<130> FR2012/065

<150> EP12306444
<151> 2012-11-20

<160> 90

<170> PatentIn version 3.5

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Gly Phe Thr Phe Ser Ser Tyr Ala
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Ile Ser Ser Gly Gly Ser Tyr Ile
1 5

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Ala Arg Pro Ala Tyr Tyr Gly Asn Pro Ala Met Asp Tyr
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Gln Asn Val Gly Thr Asn

1 5

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

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

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

Ala Tyr Ile Ser Ser Gly Gly Gly Ile Thr Tyr Ala Pro Ser Thr Val
50 55 60

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

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

Ala Ala His Tyr Phe Gly Ser Ser Gly Pro Phe Ala Tyr Trp Gly Gln
100 105 110

Gly Thr Leu Val Thr Val Ser Ser
115 120

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Gln Gln Tyr Asn Ser Tyr Pro Leu Tyr Thr
1 5 10

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<220>
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<400> 7

Gly Phe Val Phe Ser Ser Tyr Asp
1 5

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<220>
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Ile Ser Ser Gly Gly Gly Ile Thr
1 5

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

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<400> 10

Glu Asn Ile Phe Ser Tyr
1 5

<210> 11
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<213> Homo sapiens

<400> 11

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

Gly Leu Leu Leu Thr Ala Ser Leu Leu Thr Phe Trp Asn Pro Pro Thr
20 25 30

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

Lys Glu Val Leu Leu Leu Val His Asn Leu Pro Gln Gln Leu Phe Gly
50 55 60

```
Tyr Ser Trp Tyr Lys Gly Glu Arg Val Asp Gly Asn Arg Gln Ile Val
65                  70                  75                  80

Gly Tyr Ala Ile Gly Thr Gln Gln Ala Thr Pro Gly Pro Ala Asn Ser
                85                  90                  95

Gly Arg Glu Thr Ile Tyr Pro Asn Ala Ser Leu Leu Ile Gln Asn Val
            100                 105                 110

Thr Gln Asn Asp Thr Gly Phe Tyr Thr Leu Gln Val Ile Lys Ser Asp
        115                 120                 125

Leu Val Asn Glu Glu Ala Thr Gly Gln Phe His Val Tyr Pro Glu Leu
    130                 135                 140

Pro Lys Pro Ser Ile Ser Ser Asn Asn Ser Asn Pro Val Glu Asp Lys
145                 150                 155                 160

Asp Ala Val Ala Phe Thr Cys Glu Pro Glu Thr Gln Asp Thr Thr Tyr
                165                 170                 175

Leu Trp Trp Ile Asn Asn Gln Ser Leu Pro Val Ser Pro Arg Leu Gln
            180                 185                 190

Leu Ser Asn Gly Asn Arg Thr Leu Thr Leu Leu Ser Val Thr Arg Asn
        195                 200                 205

Asp Thr Gly Pro Tyr Glu Cys Glu Ile Gln Asn Pro Val Ser Ala Asn
    210                 215                 220

Arg Ser Asp Pro Val Thr Leu Asn Val Thr Tyr Gly Pro Asp Thr Pro
225                 230                 235                 240

Thr Ile Ser Pro Ser Asp Thr Tyr Tyr Arg Pro Gly Ala Asn Leu Ser
                245                 250                 255

Leu Ser Cys Tyr Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser Trp Leu
            260                 265                 270

Ile Asn Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn
        275                 280                 285

Ile Thr Val Asn Asn Ser Gly Ser Tyr Thr Cys His Ala Asn Asn Ser
    290                 295                 300

Val Thr Gly Cys Asn Arg Thr Thr Val Lys Thr Ile Ile Val Thr Glu
305                 310                 315                 320

Leu Ser Pro Val Val Ala Lys Pro Gln Ile Lys Ala Ser Lys Thr Thr
                325                 330                 335
```

```
Val Thr Gly Asp Lys Asp Ser Val Asn Leu Thr Cys Ser Thr Asn Asp
            340                 345                 350

Thr Gly Ile Ser Ile Arg Trp Phe Phe Lys Asn Gln Ser Leu Pro Ser
        355                 360                 365

Ser Glu Arg Met Lys Leu Ser Gln Gly Asn Thr Thr Leu Ser Ile Asn
    370                 375                 380

Pro Val Lys Arg Glu Asp Ala Gly Thr Tyr Trp Cys Glu Val Phe Asn
385                 390                 395                 400

Pro Ile Ser Lys Asn Gln Ser Asp Pro Ile Met Leu Asn Val Asn Tyr
                405                 410                 415

Asn Ala Leu Pro Gln Glu Asn Gly Leu Ser Pro Gly Ala Ile Ala Gly
            420                 425                 430

Ile Val Ile Gly Val Val Ala Leu Val Ala Leu Ile Ala Val Ala Leu
        435                 440                 445

Ala Cys Phe Leu His Phe Gly Lys Thr Gly Arg Ala Ser Asp Gln Arg
    450                 455                 460

Asp Leu Thr Glu His Lys Pro Ser Val Ser Asn His Thr Gln Asp His
465                 470                 475                 480

Ser Asn Asp Pro Pro Asn Lys Met Asn Glu Val Thr Tyr Ser Thr Leu
                485                 490                 495

Asn Phe Glu Ala Gln Gln Pro Thr Gln Pro Thr Ser Ala Ser Pro Ser
            500                 505                 510

Leu Thr Ala Thr Glu Ile Ile Tyr Ser Glu Val Lys Lys Gln
        515                 520                 525


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<220>
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<400>  12

Gln His His Tyr Gly Thr Pro Phe Thr
1               5


<210>  13
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<213>  Artificial Sequence
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<220>
<223> CDR

<400> 13

Gly Phe Thr Phe Ser Arg Tyr Ala
1 5

<210> 14
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<220>
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<400> 14

Ile Ser Ser Gly Gly Asp Thr
1 5

<210> 15
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<223> CDR

<400> 15

Ala Arg Val Asn Tyr Tyr Asp Ser Ser Phe Leu Asp Trp
1 5 10

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

<220>
<223> CDR

<400> 16

Gln Asn Val Gly Thr Asn
1 5

<210> 17
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> VL1 of humanized MAb2 antibody

<400> 17

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

Asp Thr Val Thr Ile Thr Cys Arg Ala Ser Glu Asn Ile Phe Ser Tyr
20 25 30

```
Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ser Pro Lys Leu Leu Val
        35                  40                  45


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


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


Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His His Tyr Gly Thr Pro Phe
                85                  90                  95


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


<210>  18
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<212>  PRT
<213>  Artificial Sequence

<220>
<223>  CDR

<400>  18

Gln Gln Tyr Asn Asn Tyr Pro Leu Tyr Thr
1               5                   10


<210>  19
<211>  8
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  CDR

<400>  19

Gly Phe Thr Phe Ser Ser Tyr Asp
1               5


<210>  20
<211>  8
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  antibody fragment

<400>  20

Ile Ser Ser Tyr Gly Gly Arg Thr
1               5


<210>  21
<211>  13
<212>  PRT
<213>  Artificial Sequence
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<220>
<223> CDR

<400> 21

Ala Ala His Tyr Phe Gly Thr Ser Gly Pro Phe Ala Tyr
1 5 10

<210> 22
<211> 6
<212> PRT
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<220>
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<400> 22

Glu Asn Ile Tyr Ser Tyr
1 5

<210> 23
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<212> PRT
<213> Artificial Sequence

<220>
<223> VL1a of humanized MAb2 antibody

<400> 23

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

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Glu Asn Ile Phe Ser Tyr
20 25 30

Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ser Pro Lys Leu Leu Val
35 40 45

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

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

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln His His Tyr Gly Thr Pro Phe
85 90 95

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

<210> 24
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<213> Artificial Sequence

<220>

<223> CDR

<400> 24

Gln His His Tyr Gly Ile Pro Phe Thr
1 5

<210> 25
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR

<400> 25

Gly Phe Ala Phe Ser Ser Tyr Asp
1 5

<210> 26
<211> 8
<212> PRT
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<220>
<223> CDR

<400> 26

Ile Asn Ser Gly Gly Gly Ile Thr
1 5

<210> 27
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR

<400> 27

Thr Ala His Tyr Phe Gly Ser Ser Gly Pro Phe Ala Tyr
1 5 10

<210> 28
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR

<400> 28

Glu Asn Ile Tyr Ser Tyr
1 5

<210> 29
<211> 107
<212> PRT
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<223> VL1c of humanized MAb2 antibody

<400> 29

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

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Glu Asn Ile Phe Ser Tyr
            20   25   30

Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ser Pro Lys Leu Leu Val
        35   40   45

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

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

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln His His Tyr Gly Thr Pro Phe
                85   90   95

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

<210> 30
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<212> PRT
<213> Artificial

<220>
<223> CDR

<400> 30

Gln His His Tyr Gly Thr Pro Phe Thr
1   5

<210> 31
<211> 120
<212> PRT
<213> Artificial

<220>
<223> antibody fragment

<400> 31

Glu Val Met Leu Val Glu Ser Gly Gly Gly Leu Val Lys Pro Gly Gly
1   5   10   15

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

Ala Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
        35   40   45

```
Ala Thr Ile Ser Ser Gly Gly Ser Tyr Ile Tyr Tyr Leu Asp Ser Val
    50                  55                  60

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

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

Ala Arg Pro Ala Tyr Tyr Gly Asn Pro Ala Met Asp Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Ser Val Thr Val Ser Ser
        115                 120
```

<210> 32
<211> 108
<212> PRT
<213> Artificial

<220>
<223> antibody fragment

<400> 32

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

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

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

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

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

Glu Asp Leu Ala Glu Tyr Phe Cys Gln Gln Tyr Asn Ser Tyr Pro Leu
                85                  90                  95

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

<210> 33
<211> 120
<212> PRT
<213> Artificial Sequence

<220>
<223> antibody fragment

<400> 33

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

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

Asp Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
35 40 45

Ala Tyr Ile Ser Ser Gly Gly Gly Ile Thr Tyr Phe Pro Asp Thr Val
50 55 60

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

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

Ala Ala His Tyr Phe Gly Ser Ser Gly Pro Phe Ala Tyr Trp Gly Gln
100 105 110

Gly Thr Leu Val Thr Val Ser Ala
115 120

<210> 34
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> antibody fragment

<400> 34

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

Glu Thr Val Thr Ile Thr Cys Arg Ala Ser Glu Asn Ile Phe Ser Tyr
20 25 30

Leu Ala Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Leu Leu Val
35 40 45

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

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

Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His His Tyr Gly Thr Pro Phe
85 90 95

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

<210> 35
<211> 119
<212> PRT
<213> Artificial Sequence

<220>
<223> antibody fragment

<400> 35

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

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

Ala Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
35 40 45

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

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

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

Arg Val Asn Tyr Tyr Asp Ser Ser Phe Leu Asp Trp Trp Gly Gln Gly
100 105 110

Thr Thr Leu Thr Val Ser Ser
115

<210> 36
<211> 108
<212> PRT
<213> Artificial Sequence

<220>
<223> antibody fragment

<400> 36

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

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

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

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

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

Glu Asp Leu Ala Glu Tyr Phe Cys Gln Gln Tyr Asn Asn Tyr Pro Leu
                85   90   95

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

<210> 37
<211> 120
<212> PRT
<213> Artificial Sequence

<220>
<223> antibody fragment

<400> 37

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

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

Asp Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
        35   40   45

Ala Phe Ile Ser Ser Tyr Gly Gly Arg Thr Tyr Tyr Ala Asp Thr Val
    50   55   60

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

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

Ala Ala His Tyr Phe Gly Thr Ser Gly Pro Phe Ala Tyr Trp Gly Gln
            100   105   110

Gly Thr Leu Val Thr Val Ser Ala
        115   120

<210> 38
<211> 107
<212> PRT
<213> Artificial

<220>
<223> antibody fragment

<400> 38

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

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

Phe Ala Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Leu Leu Val
        35                  40                  45

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

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

Glu Asp Phe Gly Thr Tyr Tyr Cys Gln His His Tyr Gly Ile Pro Phe
                85                  90                  95

Thr Phe Gly Ser Gly Thr Lys Leu Glu Leu Lys
            100                 105
```

<210> 39
<211> 120
<212> PRT
<213> Artificial

<220>
<223> antibody fragment

<400> 39

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

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

Asp Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
        35                  40                  45

Thr Tyr Ile Asn Ser Gly Gly Gly Ile Thr Tyr Tyr Pro Asp Thr Val
    50                  55                  60

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

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

Thr Ala His Tyr Phe Gly Ser Ser Gly Pro Phe Ala Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Leu Val Thr Val Ser Ala
        115                 120
```

<210> 40
<211> 107
<212> PRT
<213> Artificial

<220>
<223> antibody fragment

<400> 40

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


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


Leu Ala Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Leu Leu Val
        35                  40                  45


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


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


Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His His Tyr Gly Thr Pro Phe
                85                  90                  95


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

<210> 41
<211> 449
<212> PRT
<213> Artificial

<220>
<223> antibody fragment

<400> 41

```
Glu Val Met Leu Val Glu Ser Gly Gly Gly Leu Val Lys Pro Gly Gly
1               5                   10                  15


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


Ala Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
        35                  40                  45


Ala Thr Ile Ser Ser Gly Gly Ser Tyr Ile Tyr Tyr Leu Asp Ser Val
    50                  55                  60


Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
65                  70                  75                  80
```

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

Ala Arg Pro Ala Tyr Tyr Gly Asn Pro Ala Met Asp Tyr Trp Gly Gln
            100                 105                 110

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

Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala
    130                 135                 140

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

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

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

Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys
        195                 200                 205

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

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly
225                 230                 235                 240

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

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
            260                 265                 270

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

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
    290                 295                 300

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
305                 310                 315                 320

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
                325                 330                 335

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

```
Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu
        355                 360                 365

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
    370                 375                 380

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

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
                405                 410                 415

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
            420                 425                 430

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
        435                 440                 445

Gly
```

<210> 42
<211> 215
<212> PRT
<213> Artificial Sequence

<220>
<223> antibody fragment

<400> 42

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

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

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

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

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

Glu Asp Leu Ala Glu Tyr Phe Cys Gln Gln Tyr Asn Ser Tyr Pro Leu
                85                  90                  95

Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg Thr Val Ala
            100                 105                 110
```

```
Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser
        115                 120                 125

Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu
    130                 135                 140

Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser
145                 150                 155                 160

Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu
                165                 170                 175

Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val
            180                 185                 190

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

Ser Phe Asn Arg Gly Glu Cys
    210                 215


<210>  43
<211>  449
<212>  PRT
<213>  Artificial

<220>
<223>  antibody fragment

<400>  43

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

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

Asp Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
        35                  40                  45

Ala Tyr Ile Ser Ser Gly Gly Gly Ile Thr Tyr Phe Pro Asp Thr Val
    50                  55                  60

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

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

Ala Ala His Tyr Phe Gly Ser Ser Gly Pro Phe Ala Tyr Trp Gly Gln
            100                 105                 110

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

```
Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala
    130                 135                 140

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

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

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

Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys
        195                 200                 205

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

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly
225                 230                 235                 240

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

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
            260                 265                 270

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

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
    290                 295                 300

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
305                 310                 315                 320

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
                325                 330                 335

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

Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu
        355                 360                 365

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
    370                 375                 380

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val
385                 390                 395                 400
```

```
Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
                405                 410                 415

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
            420                 425                 430

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
        435                 440                 445

Gly
```

<210> 44
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> antibody fragment

<400> 44

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

Glu Thr Val Thr Ile Thr Cys Arg Ala Ser Glu Asn Ile Phe Ser Tyr
            20                  25                  30

Leu Ala Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Leu Leu Val
        35                  40                  45

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

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

Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His His Tyr Gly Thr Pro Phe
                85                  90                  95

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

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
        115                 120                 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
    130                 135                 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145                 150                 155                 160
```

```
Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
                165                 170                 175

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
            180                 185                 190

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

Phe Asn Arg Gly Glu Cys
    210


<210>  45
<211>  448
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  antibody fragment

<400>  45

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

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

Ala Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
        35                  40                  45

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

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

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

Arg Val Asn Tyr Tyr Asp Ser Ser Phe Leu Asp Trp Trp Gly Gln Gly
            100                 105                 110

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

Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu
    130                 135                 140

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

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

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

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

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

Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro
225                 230                 235                 240

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

Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp
            260                 265                 270

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

Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val
    290                 295                 300

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

Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys
                325                 330                 335

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

Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr
        355                 360                 365

Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
    370                 375                 380

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

Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys
                405                 410                 415

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu
            420                 425                 430

Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
        435                 440                 445
```

<210> 46
<211> 215
<212> PRT
<213> Artificial

<220>
<223> antibody fragment

<400> 46

```
Asp Ile Val Met Thr Gln Ser Gln Arg Phe Met Ser Thr Leu Glu Gly
1               5                   10                  15

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

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

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

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

Glu Asp Leu Ala Glu Tyr Phe Cys Gln Gln Tyr Asn Asn Tyr Pro Leu
                85                  90                  95

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

Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser
        115                 120                 125

Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu
    130                 135                 140

Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser
145                 150                 155                 160

Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu
                165                 170                 175

Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val
            180                 185                 190

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

Ser Phe Asn Arg Gly Glu Cys
    210                 215
```

<210> 47
<211> 449
<212> PRT
<213> Artificial

<220>
<223> antibody fragment

<400> 47

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

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

Asp Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
        35                  40                  45

Ala Phe Ile Ser Ser Tyr Gly Gly Arg Thr Tyr Tyr Ala Asp Thr Val
    50                  55                  60

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

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

Ala Ala His Tyr Phe Gly Thr Ser Gly Pro Phe Ala Tyr Trp Gly Gln
            100                 105                 110

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

Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala
    130                 135                 140

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

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

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

Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys
        195                 200                 205

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

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly
225                 230                 235                 240
```

```
Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile
                245                 250                 255

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
            260                 265                 270

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

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
    290                 295                 300

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
305                 310                 315                 320

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
                325                 330                 335

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

Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu
        355                 360                 365

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
    370                 375                 380

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

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
                405                 410                 415

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
            420                 425                 430

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
        435                 440                 445

Gly
```

<210> 48
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> antibody fragment

<400> 48

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

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

Phe Ala Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Leu Leu Val
        35                  40                  45

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

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

Glu Asp Phe Gly Thr Tyr Tyr Cys Gln His His Tyr Gly Ile Pro Phe
                85                  90                  95

Thr Phe Gly Ser Gly Thr Lys Leu Glu Leu Lys Arg Thr Val Ala Ala
            100                 105                 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
        115                 120                 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
    130                 135                 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145                 150                 155                 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
                165                 170                 175

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
            180                 185                 190

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

Phe Asn Arg Gly Glu Cys
    210


<210>  49
<211>  449
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  antibody fragment

<400>  49

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

```
Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Ala Phe Ser Ser Tyr
            20                  25                  30

Asp Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
        35                  40                  45

Thr Tyr Ile Asn Ser Gly Gly Gly Ile Thr Tyr Tyr Pro Asp Thr Val
    50                  55                  60

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

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

Thr Ala His Tyr Phe Gly Ser Ser Gly Pro Phe Ala Tyr Trp Gly Gln
            100                 105                 110

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

Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala
    130                 135                 140

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

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

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

Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys
        195                 200                 205

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

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly
225                 230                 235                 240

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

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
            260                 265                 270

Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
        275                 280                 285
```

```
Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
    290                 295                 300

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
305                 310                 315                 320

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
                325                 330                 335

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

Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu
        355                 360                 365

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
    370                 375                 380

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

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
                405                 410                 415

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
            420                 425                 430

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
        435                 440                 445

Gly
```

<210> 50
<211> 214
<212> PRT
<213> Artificial

<220>
<223> antibody fragment

<400> 50

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

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

Leu Ala Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Leu Leu Val
        35                  40                  45
```

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

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

Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His His Tyr Gly Thr Pro Phe
                85                  90                  95

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

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
        115                 120                 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
    130                 135                 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145                 150                 155                 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
                165                 170                 175

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
            180                 185                 190

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

Phe Asn Arg Gly Glu Cys
    210


<210>  51
<211>  120
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  antibody fragment

<400>  51

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

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

Asp Met Ser Trp Val Arg Gln Thr Pro Glu Arg Arg Leu Glu Trp Val
        35                  40                  45

Ala Tyr Ile Ser Ser Gly Gly Gly Ile Thr Tyr Phe Pro Ser Thr Val
    50                  55                  60
```

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

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

Ala Ala His Tyr Phe Gly Ser Ser Gly Pro Phe Ala Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Leu Val Thr Val Ser Ala
        115                 120
```

<210> 52
<211> 702
<212> PRT
<213> Homo sapiens

<400> 52

```
Met Glu Ser Pro Ser Ala Pro Pro His Arg Trp Cys Ile Pro Trp Gln
1               5                   10                  15

Arg Leu Leu Leu Thr Ala Ser Leu Leu Thr Phe Trp Asn Pro Pro Thr
            20                  25                  30

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

Lys Glu Val Leu Leu Leu Val His Asn Leu Pro Gln His Leu Phe Gly
    50                  55                  60

Tyr Ser Trp Tyr Lys Gly Glu Arg Val Asp Gly Asn Arg Gln Ile Ile
65                  70                  75                  80

Gly Tyr Val Ile Gly Thr Gln Gln Ala Thr Pro Gly Pro Ala Tyr Ser
                85                  90                  95

Gly Arg Glu Ile Ile Tyr Pro Asn Ala Ser Leu Leu Ile Gln Asn Ile
            100                 105                 110

Ile Gln Asn Asp Thr Gly Phe Tyr Thr Leu His Val Ile Lys Ser Asp
        115                 120                 125

Leu Val Asn Glu Glu Ala Thr Gly Gln Phe Arg Val Tyr Pro Glu Leu
    130                 135                 140

Pro Lys Pro Ser Ile Ser Ser Asn Asn Ser Lys Pro Val Glu Asp Lys
145                 150                 155                 160

Asp Ala Val Ala Phe Thr Cys Glu Pro Glu Thr Gln Asp Ala Thr Tyr
                165                 170                 175
```

```
Leu Trp Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg Leu Gln
            180                 185                 190

Leu Ser Asn Gly Asn Arg Thr Leu Thr Leu Phe Asn Val Thr Arg Asn
        195                 200                 205

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

Arg Ser Asp Ser Val Ile Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro
225                 230                 235                 240

Thr Ile Ser Pro Leu Asn Thr Ser Tyr Arg Ser Gly Glu Asn Leu Asn
                245                 250                 255

Leu Ser Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser Trp Phe
            260                 265                 270

Val Asn Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn
        275                 280                 285

Ile Thr Val Asn Asn Ser Gly Ser Tyr Thr Cys Gln Ala His Asn Ser
    290                 295                 300

Asp Thr Gly Leu Asn Arg Thr Thr Val Thr Thr Ile Thr Val Tyr Ala
305                 310                 315                 320

Glu Pro Pro Lys Pro Phe Ile Thr Ser Asn Asn Ser Asn Pro Val Glu
                325                 330                 335

Asp Glu Asp Ala Val Ala Leu Thr Cys Glu Pro Glu Ile Gln Asn Thr
            340                 345                 350

Thr Tyr Leu Trp Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg
        355                 360                 365

Leu Gln Leu Ser Asn Asp Asn Arg Thr Leu Thr Leu Leu Ser Val Thr
    370                 375                 380

Arg Asn Asp Val Gly Pro Tyr Glu Cys Gly Ile Gln Asn Glu Leu Ser
385                 390                 395                 400

Val Asp His Ser Asp Pro Val Ile Leu Asn Val Leu Tyr Gly Pro Asp
                405                 410                 415

Asp Pro Thr Ile Ser Pro Ser Tyr Thr Tyr Tyr Arg Pro Gly Val Asn
            420                 425                 430

Leu Ser Leu Ser Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser
        435                 440                 445
```

```
Trp Leu Ile Asp Gly Asn Ile Gln Gln His Thr Gln Glu Leu Phe Ile
    450                 455                 460

Ser Asn Ile Thr Glu Lys Asn Ser Gly Leu Tyr Thr Cys Gln Ala Asn
465                 470                 475                 480

Asn Ser Ala Ser Gly His Ser Arg Thr Thr Val Lys Thr Ile Thr Val
                485                 490                 495

Ser Ala Glu Leu Pro Lys Pro Ser Ile Ser Ser Asn Asn Ser Lys Pro
            500                 505                 510

Val Glu Asp Lys Asp Ala Val Ala Phe Thr Cys Glu Pro Glu Ala Gln
        515                 520                 525

Asn Thr Thr Tyr Leu Trp Trp Val Asn Gly Gln Ser Leu Pro Val Ser
    530                 535                 540

Pro Arg Leu Gln Leu Ser Asn Gly Asn Arg Thr Leu Thr Leu Phe Asn
545                 550                 555                 560

Val Thr Arg Asn Asp Ala Arg Ala Tyr Val Cys Gly Ile Gln Asn Ser
                565                 570                 575

Val Ser Ala Asn Arg Ser Asp Pro Val Thr Leu Asp Val Leu Tyr Gly
            580                 585                 590

Pro Asp Thr Pro Ile Ile Ser Pro Pro Asp Ser Ser Tyr Leu Ser Gly
        595                 600                 605

Ala Asn Leu Asn Leu Ser Cys His Ser Ala Ser Asn Pro Ser Pro Gln
    610                 615                 620

Tyr Ser Trp Arg Ile Asn Gly Ile Pro Gln Gln His Thr Gln Val Leu
625                 630                 635                 640

Phe Ile Ala Lys Ile Thr Pro Asn Asn Asn Gly Thr Tyr Ala Cys Phe
                645                 650                 655

Val Ser Asn Leu Ala Thr Gly Arg Asn Asn Ser Ile Val Lys Ser Ile
            660                 665                 670

Thr Val Ser Ala Ser Gly Thr Ser Pro Gly Leu Ser Ala Gly Ala Thr
        675                 680                 685

Val Gly Ile Met Ile Gly Val Leu Val Gly Val Ala Leu Ile
    690                 695                 700
```

<210> 53
<211> 654
<212> PRT

<213> Macaca fascicularis

<400> 53

```
Gln Leu Thr Ile Glu Ser Arg Pro Phe Asn Val Ala Glu Gly Lys Glu
1               5                  10                  15

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

Trp Tyr Lys Gly Glu Arg Val Asp Ala Ser Arg Arg Ile Gly Ser Cys
        35                  40                  45

Val Ile Arg Thr Gln Gln Ile Thr Pro Gly Pro Ala His Ser Gly Arg
    50                  55                  60

Glu Thr Ile Asp Phe Asn Ala Ser Leu Leu Ile Gln Asn Val Thr Gln
65                  70                  75                  80

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

Asn Glu Glu Ala Thr Gly Gln Phe Arg Val Tyr Pro Glu Leu Pro Lys
            100                 105                 110

Pro Tyr Ile Thr Ser Asn Asn Ser Asn Pro Ile Glu Asp Lys Asp Ala
        115                 120                 125

Val Ala Leu Thr Cys Glu Pro Glu Thr Gln Asp Thr Thr Tyr Leu Trp
    130                 135                 140

Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg Leu Glu Leu Ser
145                 150                 155                 160

Ser Asp Asn Arg Thr Leu Thr Val Phe Asn Ile Pro Arg Asn Asp Thr
                165                 170                 175

Thr Ser Tyr Lys Cys Glu Thr Gln Asn Pro Val Ser Val Arg Arg Ser
            180                 185                 190

Asp Pro Val Thr Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro Thr Ile
        195                 200                 205

Ser Pro Leu Asn Thr Pro Tyr Arg Ala Gly Glu Tyr Leu Asn Leu Thr
    210                 215                 220

Cys His Ala Ala Ser Asn Pro Thr Ala Gln Tyr Phe Trp Phe Val Asn
225                 230                 235                 240

Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn Ile Thr
                245                 250                 255
```

```
Val Asn Asn Ser Gly Ser Tyr Met Cys Gln Ala His Asn Ser Ala Thr
            260                 265                 270

Gly Leu Asn Arg Thr Thr Val Thr Ala Ile Thr Val Tyr Ala Glu Leu
        275                 280                 285

Pro Lys Pro Tyr Ile Thr Ser Asn Asn Ser Asn Pro Ile Glu Asp Lys
    290                 295                 300

Asp Ala Val Thr Leu Thr Cys Glu Pro Glu Thr Gln Asp Thr Thr Tyr
305                 310                 315                 320

Leu Trp Trp Val Asn Asn Gln Arg Leu Ser Val Ser Ser Arg Leu Glu
                325                 330                 335

Leu Ser Asn Asp Asn Arg Thr Leu Thr Val Phe Asn Ile Pro Arg Asn
            340                 345                 350

Asp Thr Thr Phe Tyr Glu Cys Glu Thr Gln Asn Pro Val Ser Val Arg
        355                 360                 365

Arg Ser Asp Pro Val Thr Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro
    370                 375                 380

Thr Ile Ser Pro Leu Asn Thr Pro Tyr Arg Ala Gly Glu Asn Leu Asn
385                 390                 395                 400

Leu Ser Cys His Ala Ala Ser Asn Pro Ala Ala Gln Tyr Phe Trp Phe
                405                 410                 415

Val Asn Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn
            420                 425                 430

Ile Thr Val Asn Asn Ser Gly Ser Tyr Met Cys Gln Ala His Asn Ser
        435                 440                 445

Ala Thr Gly Leu Asn Arg Thr Thr Val Thr Ala Ile Thr Val Tyr Val
    450                 455                 460

Glu Leu Pro Lys Pro Tyr Ile Ser Ser Asn Asn Ser Asn Pro Ile Glu
465                 470                 475                 480

Asp Lys Asp Ala Val Thr Leu Thr Cys Glu Pro Val Ala Glu Asn Thr
                485                 490                 495

Thr Tyr Leu Trp Trp Val Asn Asn Gln Ser Leu Ser Val Ser Pro Arg
            500                 505                 510

Leu Gln Leu Ser Asn Gly Asn Arg Ile Leu Thr Leu Leu Ser Val Thr
        515                 520                 525
```

```
Arg Asn Asp Thr Gly Pro Tyr Glu Cys Gly Ile Gln Asn Ser Glu Ser
    530                 535                 540

Ala Lys Arg Ser Asp Pro Val Thr Leu Asn Val Thr Tyr Gly Pro Asp
545                 550                 555                 560

Thr Pro Ile Ile Ser Pro Pro Asp Leu Ser Tyr Arg Ser Gly Ala Asn
                565                 570                 575

Leu Asn Leu Ser Cys His Ser Asp Ser Asn Pro Ser Pro Gln Tyr Ser
            580                 585                 590

Trp Leu Ile Asn Gly Thr Leu Arg Gln His Thr Gln Val Leu Phe Ile
        595                 600                 605

Ser Lys Ile Thr Ser Asn Asn Asn Gly Ala Tyr Ala Cys Phe Val Ser
    610                 615                 620

Asn Leu Ala Thr Gly Arg Asn Asn Ser Ile Val Lys Asn Ile Ser Val
625                 630                 635                 640

Ser Ser Gly Asp Ser Ala Pro Gly Ser Ser Gly Leu Ser Ala
                645                 650
```

<210> 54
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> antibody

<400> 54

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

Glu Thr Val Thr Ile Thr Cys Arg Ala Ser Glu Asn Ile Phe Ser Tyr
            20                  25                  30

Leu Ala Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Leu Leu Val
        35                  40                  45

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

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

Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His His Tyr Gly Thr Pro Phe
                85                  90                  95

Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys Arg Thr Val Ala Ala
            100                 105                 110
```

```
Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
        115                 120                 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
    130                 135                 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145                 150                 155                 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
                165                 170                 175

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
            180                 185                 190

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

Phe Asn Arg Gly Glu Cys
    210


<210>  55
<211>  107
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  antibody

<400>  55

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

Asp Thr Val Thr Ile Thr Cys Arg Ala Ser Glu Asn Ile Phe Ser Tyr
            20                  25                  30

Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ser Pro Lys Leu Leu Val
        35                  40                  45

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

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

Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His His Tyr Gly Thr Pro Phe
                85                  90                  95

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

<210> 56
<211> 418
<212> PRT
<213> Homo sapiens

<220>
<221> DOMAIN
<222> (1)..(394)
<223> extracellular domain of human CEACAM1

<220>
<221> MISC_FEATURE
<222> (395)..(418)
<223> extension with His-tag

<400> 56

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

Val Leu Leu Leu Val His Asn Leu Pro Gln Gln Leu Phe Gly Tyr Ser
            20                  25                  30

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

Ala Ile Gly Thr Gln Gln Ala Thr Pro Gly Pro Ala Asn Ser Gly Arg
    50                  55                  60

Glu Thr Ile Tyr Pro Asn Ala Ser Leu Leu Ile Gln Asn Val Thr Gln
65                  70                  75                  80

Asn Asp Thr Gly Phe Tyr Thr Leu Gln Val Ile Lys Ser Asp Leu Val
                85                  90                  95

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

Pro Ser Ile Ser Ser Asn Asn Ser Asn Pro Val Glu Asp Lys Asp Ala
        115                 120                 125

Val Ala Phe Thr Cys Glu Pro Glu Thr Gln Asp Thr Thr Tyr Leu Trp
    130                 135                 140

Trp Ile Asn Asn Gln Ser Leu Pro Val Ser Pro Arg Leu Gln Leu Ser
145                 150                 155                 160

Asn Gly Asn Arg Thr Leu Thr Leu Leu Ser Val Thr Arg Asn Asp Thr
                165                 170                 175

Gly Pro Tyr Glu Cys Glu Ile Gln Asn Pro Val Ser Ala Asn Arg Ser
            180                 185                 190

Asp Pro Val Thr Leu Asn Val Thr Tyr Gly Pro Asp Thr Pro Thr Ile
        195                 200                 205
```

```
Ser Pro Ser Asp Thr Tyr Tyr Arg Pro Gly Ala Asn Leu Ser Leu Ser
    210                 215                 220

Cys Tyr Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser Trp Leu Ile Asn
225                 230                 235                 240

Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn Ile Thr
                245                 250                 255

Val Asn Asn Ser Gly Ser Tyr Thr Cys His Ala Asn Asn Ser Val Thr
            260                 265                 270

Gly Cys Asn Arg Thr Thr Val Lys Thr Ile Ile Val Thr Glu Leu Ser
        275                 280                 285

Pro Val Val Ala Lys Pro Gln Ile Lys Ala Ser Lys Thr Thr Val Thr
    290                 295                 300

Gly Asp Lys Asp Ser Val Asn Leu Thr Cys Ser Thr Asn Asp Thr Gly
305                 310                 315                 320

Ile Ser Ile Arg Trp Phe Phe Lys Asn Gln Ser Leu Pro Ser Ser Glu
                325                 330                 335

Arg Met Lys Leu Ser Gln Gly Asn Thr Thr Leu Ser Ile Asn Pro Val
            340                 345                 350

Lys Arg Glu Asp Ala Gly Thr Tyr Trp Cys Glu Val Phe Asn Pro Ile
        355                 360                 365

Ser Lys Asn Gln Ser Asp Pro Ile Met Leu Asn Val Asn Tyr Asn Ala
    370                 375                 380

Leu Pro Gln Glu Asn Gly Leu Ser Pro Gly Ser Gly Ser Gly Ser Gly
385                 390                 395                 400

Leu Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu Trp His His His His
                405                 410                 415

His His
```

<210> 57
<211> 418
<212> PRT
<213> Macaca fascicularis

<220>
<221> DOMAIN
<222> (1)..(394)
<223> extracellular domain of cynomolgus monkey CEACAM1

<220>
<221> MISC_FEATURE
<222> (395)..(418)
<223> extension with His-tag

<400> 57

```
Gln Leu Thr Ile Glu Ser Arg Pro Phe Asn Val Ala Glu Gly Lys Glu
1               5                  10                  15

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

Trp His Lys Gly Glu Arg Val Asp Ala Lys Arg Leu Ile Val Ala Tyr
        35                  40                  45

Val Ile Glu Thr Lys Gln Thr Thr Pro Gly Pro Ala His Ser Gly Arg
    50                  55                  60

Glu Met Ile Tyr Ser Asn Ala Ser Leu Leu Ile Gln Asn Val Thr Gln
65                  70                  75                  80

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

Asn Glu Glu Ala Thr Gly Gln Phe Arg Val Tyr Pro Glu Leu Pro Lys
            100                 105                 110

Pro Asn Ile Thr Ile Asn Asn Ser Asn Pro Val Glu Asp Lys Asp Val
        115                 120                 125

Val Thr Phe Thr Cys Glu Ser Glu Ala Gln Asp Thr Thr Tyr Leu Trp
    130                 135                 140

Trp Val Asn Asn Gln Ser Leu Pro Val Ser Ser Arg Leu Gln Leu Ser
145                 150                 155                 160

Asn Gly Asn Lys Thr Leu Thr Leu Leu Ser Val Leu Arg Asn Asp Thr
                165                 170                 175

Gly Pro Tyr Glu Cys Glu Ile Gln Asn Pro Val Ser Ala Asn Arg Ser
            180                 185                 190

Asp Pro Val Thr Leu Asn Val Thr Tyr Gly Pro Asp Thr Pro Thr Ile
        195                 200                 205

Ser Pro Ser Asp Thr Tyr Tyr Arg Pro Gly Ala Asn Leu Ser Leu Ser
    210                 215                 220

Cys Ser Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser Trp Leu Ile Asn
225                 230                 235                 240
```

```
Glu Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn Ile Thr
                245                 250                 255

Val Asn Asn Ser Gly Ser Tyr Thr Cys His Ala Asn Asn Ser Val Thr
            260                 265                 270

Gly Arg Asn Arg Thr Thr Val Lys Met Ile Ile Val Ser Glu Gln Ser
        275                 280                 285

Leu Val Val Ala Gln Pro Gln Ile Lys Ala Ser Lys Thr Thr Val Thr
    290                 295                 300

Glu Asp Lys Asp Tyr Val Asn Leu Thr Cys Ser Thr Asn Asp Thr Gly
305                 310                 315                 320

Ile Ser Ile Ser Trp Phe Phe Lys Asp Gln Ser Leu Pro Ser Ser Glu
                325                 330                 335

Arg Met Lys Leu Ser Gln Asp Asn Ala Thr Leu Ser Ile Asn Pro Val
            340                 345                 350

Lys Arg Glu Asp Ala Gly Asn Tyr Ser Cys Glu Val Phe Asn Leu Ile
        355                 360                 365

Ser Lys Asn Arg Ser Asp Pro Ile Val Leu Ile Val Asn Tyr Asn Asn
    370                 375                 380

Arg Ala Gln Glu Asn Ile Leu Pro Ala Gly Ser Gly Ser Gly Ser Gly
385                 390                 395                 400

Leu Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu Trp His His His His
                405                 410                 415

His His
```

<210> 58
<211> 675
<212> PRT
<213> Homo sapiens

<220>
<221> DOMAIN
<222> (1)..(651)
<223> extracellular domain of human CEACAM5

<220>
<221> MISC_FEATURE
<222> (652)..(675)
<223> extension with His-tag

<400> 58

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

```
Val Leu Leu Leu Val His Asn Leu Pro Gln His Leu Phe Gly Tyr Ser
            20                  25                  30

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

Val Ile Gly Thr Gln Gln Ala Thr Pro Gly Pro Ala Tyr Ser Gly Arg
    50                  55                  60

Glu Ile Ile Tyr Pro Asn Ala Ser Leu Leu Ile Gln Asn Ile Ile Gln
65                  70                  75                  80

Asn Asp Thr Gly Phe Tyr Thr Leu His Val Ile Lys Ser Asp Leu Val
                85                  90                  95

Asn Glu Glu Ala Thr Gly Gln Phe Arg Val Tyr Pro Glu Leu Pro Lys
            100                 105                 110

Pro Ser Ile Ser Ser Asn Asn Ser Lys Pro Val Glu Asp Lys Asp Ala
        115                 120                 125

Val Ala Phe Thr Cys Glu Pro Glu Thr Gln Asp Ala Thr Tyr Leu Trp
    130                 135                 140

Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg Leu Gln Leu Ser
145                 150                 155                 160

Asn Gly Asn Arg Thr Leu Thr Leu Phe Asn Val Thr Arg Asn Asp Thr
                165                 170                 175

Ala Ser Tyr Lys Cys Glu Thr Gln Asn Pro Val Ser Ala Arg Arg Ser
            180                 185                 190

Asp Ser Val Ile Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro Thr Ile
        195                 200                 205

Ser Pro Leu Asn Thr Ser Tyr Arg Ser Gly Glu Asn Leu Asn Leu Ser
    210                 215                 220

Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser Trp Phe Val Asn
225                 230                 235                 240

Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn Ile Thr
                245                 250                 255

Val Asn Asn Ser Gly Ser Tyr Thr Cys Gln Ala His Asn Ser Asp Thr
            260                 265                 270

Gly Leu Asn Arg Thr Thr Val Thr Thr Ile Thr Val Tyr Ala Glu Pro
        275                 280                 285
```

```
Pro Lys Pro Phe Ile Thr Ser Asn Asn Ser Asn Pro Val Glu Asp Glu
    290                 295                 300

Asp Ala Val Ala Leu Thr Cys Glu Pro Glu Ile Gln Asn Thr Thr Tyr
305                 310                 315                 320

Leu Trp Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg Leu Gln
                325                 330                 335

Leu Ser Asn Asp Asn Arg Thr Leu Thr Leu Leu Ser Val Thr Arg Asn
            340                 345                 350

Asp Val Gly Pro Tyr Glu Cys Gly Ile Gln Asn Glu Leu Ser Val Asp
        355                 360                 365

His Ser Asp Pro Val Ile Leu Asn Val Leu Tyr Gly Pro Asp Asp Pro
    370                 375                 380

Thr Ile Ser Pro Ser Tyr Thr Tyr Tyr Arg Pro Gly Val Asn Leu Ser
385                 390                 395                 400

Leu Ser Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser Trp Leu
                405                 410                 415

Ile Asp Gly Asn Ile Gln Gln His Thr Gln Glu Leu Phe Ile Ser Asn
            420                 425                 430

Ile Thr Glu Lys Asn Ser Gly Leu Tyr Thr Cys Gln Ala Asn Asn Ser
        435                 440                 445

Ala Ser Gly His Ser Arg Thr Thr Val Lys Thr Ile Thr Val Ser Ala
    450                 455                 460

Glu Leu Pro Lys Pro Ser Ile Ser Ser Asn Asn Ser Lys Pro Val Glu
465                 470                 475                 480

Asp Lys Asp Ala Val Ala Phe Thr Cys Glu Pro Glu Ala Gln Asn Thr
                485                 490                 495

Thr Tyr Leu Trp Trp Val Asn Gly Gln Ser Leu Pro Val Ser Pro Arg
            500                 505                 510

Leu Gln Leu Ser Asn Gly Asn Arg Thr Leu Thr Leu Phe Asn Val Thr
        515                 520                 525

Arg Asn Asp Ala Arg Ala Tyr Val Cys Gly Ile Gln Asn Ser Val Ser
    530                 535                 540

Ala Asn Arg Ser Asp Pro Val Thr Leu Asp Val Leu Tyr Gly Pro Asp
545                 550                 555                 560
```

```
Thr Pro Ile Ile Ser Pro Pro Asp Ser Ser Tyr Leu Ser Gly Ala Asn
                565                 570                 575

Leu Asn Leu Ser Cys His Ser Ala Ser Asn Pro Ser Pro Gln Tyr Ser
            580                 585                 590

Trp Arg Ile Asn Gly Ile Pro Gln Gln His Thr Gln Val Leu Phe Ile
        595                 600                 605

Ala Lys Ile Thr Pro Asn Asn Asn Gly Thr Tyr Ala Cys Phe Val Ser
    610                 615                 620

Asn Leu Ala Thr Gly Arg Asn Asn Ser Ile Val Lys Ser Ile Thr Val
625                 630                 635                 640

Ser Ala Ser Gly Thr Ser Pro Gly Leu Ser Ala Ser Gly Ser Gly Ser
                645                 650                 655

Gly Leu Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu Trp His His His
            660                 665                 670

His His His
        675


<210>  59
<211>  678
<212>  PRT
<213>  Macaca fascicularis


<220>
<221>  DOMAIN
<222>  (1)..(654)
<223>  extracellular domain of cynomolgus monkey CEACAM5

<220>
<221>  MISC_FEATURE
<222>  (655)..(678)
<223>  extension with His-tag

<400>  59

Gln Leu Thr Ile Glu Ser Arg Pro Phe Asn Val Ala Glu Gly Lys Glu
1               5                   10                  15

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

Trp Tyr Lys Gly Glu Arg Val Asp Ala Ser Arg Arg Ile Gly Ser Cys
        35                  40                  45

Val Ile Arg Thr Gln Gln Ile Thr Pro Gly Pro Ala His Ser Gly Arg
    50                  55                  60
```

```
Glu Thr Ile Asp Phe Asn Ala Ser Leu Leu Ile Gln Asn Val Thr Gln
65                  70                  75                  80

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

Asn Glu Glu Ala Thr Gly Gln Phe Arg Val Tyr Pro Glu Leu Pro Lys
            100                 105                 110

Pro Tyr Ile Thr Ser Asn Asn Ser Asn Pro Ile Glu Asp Lys Asp Ala
        115                 120                 125

Val Ala Leu Thr Cys Glu Pro Glu Thr Gln Asp Thr Thr Tyr Leu Trp
    130                 135                 140

Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg Leu Glu Leu Ser
145                 150                 155                 160

Ser Asp Asn Arg Thr Leu Thr Val Phe Asn Ile Pro Arg Asn Asp Thr
                165                 170                 175

Thr Ser Tyr Lys Cys Glu Thr Gln Asn Pro Val Ser Val Arg Arg Ser
            180                 185                 190

Asp Pro Val Thr Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro Thr Ile
        195                 200                 205

Ser Pro Leu Asn Thr Pro Tyr Arg Ala Gly Glu Tyr Leu Asn Leu Thr
    210                 215                 220

Cys His Ala Ala Ser Asn Pro Thr Ala Gln Tyr Phe Trp Phe Val Asn
225                 230                 235                 240

Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn Ile Thr
                245                 250                 255

Val Asn Asn Ser Gly Ser Tyr Met Cys Gln Ala His Asn Ser Ala Thr
            260                 265                 270

Gly Leu Asn Arg Thr Thr Val Thr Ala Ile Thr Val Tyr Ala Glu Leu
        275                 280                 285

Pro Lys Pro Tyr Ile Thr Ser Asn Asn Ser Asn Pro Ile Glu Asp Lys
    290                 295                 300

Asp Ala Val Thr Leu Thr Cys Glu Pro Glu Thr Gln Asp Thr Thr Tyr
305                 310                 315                 320

Leu Trp Trp Val Asn Asn Gln Arg Leu Ser Val Ser Ser Arg Leu Glu
                325                 330                 335
```

```
Leu Ser Asn Asp Asn Arg Thr Leu Thr Val Phe Asn Ile Pro Arg Asn
            340                 345                 350

Asp Thr Thr Phe Tyr Glu Cys Glu Thr Gln Asn Pro Val Ser Val Arg
        355                 360                 365

Arg Ser Asp Pro Val Thr Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro
    370                 375                 380

Thr Ile Ser Pro Leu Asn Thr Pro Tyr Arg Ala Gly Glu Asn Leu Asn
385                 390                 395                 400

Leu Ser Cys His Ala Ala Ser Asn Pro Ala Ala Gln Tyr Phe Trp Phe
                405                 410                 415

Val Asn Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn
            420                 425                 430

Ile Thr Val Asn Asn Ser Gly Ser Tyr Met Cys Gln Ala His Asn Ser
        435                 440                 445

Ala Thr Gly Leu Asn Arg Thr Thr Val Thr Ala Ile Thr Val Tyr Val
    450                 455                 460

Glu Leu Pro Lys Pro Tyr Ile Ser Ser Asn Asn Ser Asn Pro Ile Glu
465                 470                 475                 480

Asp Lys Asp Ala Val Thr Leu Thr Cys Glu Pro Val Ala Glu Asn Thr
                485                 490                 495

Thr Tyr Leu Trp Trp Val Asn Asn Gln Ser Leu Ser Val Ser Pro Arg
            500                 505                 510

Leu Gln Leu Ser Asn Gly Asn Arg Ile Leu Thr Leu Leu Ser Val Thr
        515                 520                 525

Arg Asn Asp Thr Gly Pro Tyr Glu Cys Gly Ile Gln Asn Ser Glu Ser
    530                 535                 540

Ala Lys Arg Ser Asp Pro Val Thr Leu Asn Val Thr Tyr Gly Pro Asp
545                 550                 555                 560

Thr Pro Ile Ile Ser Pro Pro Asp Leu Ser Tyr Arg Ser Gly Ala Asn
                565                 570                 575

Leu Asn Leu Ser Cys His Ser Asp Ser Asn Pro Ser Pro Gln Tyr Ser
            580                 585                 590

Trp Leu Ile Asn Gly Thr Leu Arg Gln His Thr Gln Val Leu Phe Ile
        595                 600                 605
```

```
Ser Lys Ile Thr Ser Asn Asn Asn Gly Ala Tyr Ala Cys Phe Val Ser
    610                 615                 620

Asn Leu Ala Thr Gly Arg Asn Asn Ser Ile Val Lys Asn Ile Ser Val
625                 630                 635                 640

Ser Ser Gly Asp Ser Ala Pro Gly Ser Ser Gly Leu Ser Ala Ser Gly
                645                 650                 655

Ser Gly Ser Gly Leu Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu Trp
            660                 665                 670

His His His His His His
        675
```

<210> 60
<211> 317
<212> PRT
<213> Homo sapiens

<220>
<221> DOMAIN
<222> (1)..(293)
<223> extracellular domain of human CEACAM6

<220>
<221> MISC_FEATURE
<222> (294)..(317)
<223> extension with His-tag

<400> 60

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

Val Leu Leu Leu Ala His Asn Leu Pro Gln Asn Arg Ile Gly Tyr Ser
            20                  25                  30

Trp Tyr Lys Gly Glu Arg Val Asp Gly Asn Ser Leu Ile Val Gly Tyr
        35                  40                  45

Val Ile Gly Thr Gln Gln Ala Thr Pro Gly Pro Ala Tyr Ser Gly Arg
    50                  55                  60

Glu Thr Ile Tyr Pro Asn Ala Ser Leu Leu Ile Gln Asn Val Thr Gln
65                  70                  75                  80

Asn Asp Thr Gly Phe Tyr Thr Leu Gln Val Ile Lys Ser Asp Leu Val
                85                  90                  95

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

Pro Ser Ile Ser Ser Asn Asn Ser Asn Pro Val Glu Asp Lys Asp Ala
        115                 120                 125
```

```
Val Ala Phe Thr Cys Glu Pro Glu Val Gln Asn Thr Thr Tyr Leu Trp
    130                 135                 140

Trp Val Asn Gly Gln Ser Leu Pro Val Ser Pro Arg Leu Gln Leu Ser
145                 150                 155                 160

Asn Gly Asn Met Thr Leu Thr Leu Leu Ser Val Lys Arg Asn Asp Ala
                165                 170                 175

Gly Ser Tyr Glu Cys Glu Ile Gln Asn Pro Ala Ser Ala Asn Arg Ser
            180                 185                 190

Asp Pro Val Thr Leu Asn Val Leu Tyr Gly Pro Asp Gly Pro Thr Ile
        195                 200                 205

Ser Pro Ser Lys Ala Asn Tyr Arg Pro Gly Glu Asn Leu Asn Leu Ser
    210                 215                 220

Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser Trp Phe Ile Asn
225                 230                 235                 240

Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn Ile Thr
                245                 250                 255

Val Asn Asn Ser Gly Ser Tyr Met Cys Gln Ala His Asn Ser Ala Thr
            260                 265                 270

Gly Leu Asn Arg Thr Thr Val Thr Met Ile Thr Val Ser Gly Ser Ala
        275                 280                 285

Pro Val Leu Ser Ala Ser Gly Ser Gly Ser Gly Leu Asn Asp Ile Phe
    290                 295                 300

Glu Ala Gln Lys Ile Glu Trp His His His His His His
305                 310                 315


<210>  61
<211>  317
<212>  PRT
<213>  Macaca fascicularis


<220>
<221>  DOMAIN
<222>  (1)..(293)
<223>  extracellular domain of cynomolgus monkey CEACAM6

<220>
<221>  MISC_FEATURE
<222>  (294)..(317)
<223>  extension with His-tag

<400>  61
```

```
Gln Leu Thr Ile Glu Ser Arg Pro Phe Asn Val Ala Glu Gly Lys Glu
1               5                  10                  15

Val Leu Leu Leu Ala His Asn Leu Pro Gln Asn Thr Leu Gly Phe Asn
            20                  25                  30

Trp Tyr Lys Gly Glu Arg Val Asp Ala Lys Arg Leu Ile Val Ala Tyr
        35                  40                  45

Val Ile Gly Thr Gln Gln Thr Thr Pro Gly Pro Ala His Ser Gly Arg
    50                  55                  60

Glu Met Ile Tyr Ser Asn Ala Ser Leu Leu Ile Gln Asn Val Thr Gln
65                  70                  75                  80

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

Thr Glu Glu Ala Thr Gly Arg Phe Trp Val Tyr Pro Glu Leu Pro Lys
            100                 105                 110

Pro Tyr Ile Thr Ser Asn Asn Ser Asn Pro Val Glu Asp Lys Asp Ala
        115                 120                 125

Val Asp Phe Thr Cys Glu Pro Asp Ile His Ser Thr Thr Tyr Leu Trp
    130                 135                 140

Trp Val Asn Asp Gln Ser Leu Pro Val Ser Pro Arg Leu Gln Leu Ser
145                 150                 155                 160

Asn Gly Asn Arg Thr Leu Thr Leu Leu Ser Val Lys Arg Asn Asp Ala
                165                 170                 175

Gly Ala Tyr Glu Cys Glu Ile Gln Asn Pro Val Ser Ala Asn Leu Ser
            180                 185                 190

Asp Pro Val Ile Leu Asn Val Leu Tyr Gly Pro Asp Val Pro Thr Ile
        195                 200                 205

Ser Pro Ser Asn Ser Asn Tyr Arg Pro Gly Glu Asn Leu Asn Leu Ser
    210                 215                 220

Cys His Ala Ala Ser Asn Pro Thr Ala Gln Tyr Ser Trp Phe Val Asn
225                 230                 235                 240

Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn Ile Thr
                245                 250                 255

Val Asn Asn Ser Gly Ser Tyr Met Cys Gln Ala Tyr Asn Ser Ala Thr
            260                 265                 270
```

```
Gly Leu Asn Arg Thr Thr Val Met Met Ile Thr Val Ser Gly Ser Ala
        275                 280                 285


Pro Gly Leu Ser Ala Ser Gly Ser Gly Ser Gly Leu Asn Asp Ile Phe
    290                 295                 300


Glu Ala Gln Lys Ile Glu Trp His His His His His His
305                 310                 315


<210>  62
<211>  322
<212>  PRT
<213>  Homo sapiens


<220>
<221>  DOMAIN
<222>  (1)..(298)
<223>  extracellular domain of human CEACAM8

<220>
<221>  MISC_FEATURE
<222>  (299)..(322)
<223>  extension with His-tag

<400>  62

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


Val Leu Leu Leu Val His Asn Leu Pro Gln Asp Pro Arg Gly Tyr Asn
            20                  25                  30


Trp Tyr Lys Gly Glu Thr Val Asp Ala Asn Arg Arg Ile Ile Gly Tyr
        35                  40                  45


Val Ile Ser Asn Gln Gln Ile Thr Pro Gly Pro Ala Tyr Ser Asn Arg
    50                  55                  60


Glu Thr Ile Tyr Pro Asn Ala Ser Leu Leu Met Arg Asn Val Thr Arg
65                  70                  75                  80


Asn Asp Thr Gly Ser Tyr Thr Leu Gln Val Ile Lys Leu Asn Leu Met
                85                  90                  95


Ser Glu Glu Val Thr Gly Gln Phe Ser Val His Pro Glu Thr Pro Lys
            100                 105                 110


Pro Ser Ile Ser Ser Asn Asn Ser Asn Pro Val Glu Asp Lys Asp Ala
        115                 120                 125


Val Ala Phe Thr Cys Glu Pro Glu Thr Gln Asn Thr Thr Tyr Leu Trp
    130                 135                 140


Trp Val Asn Gly Gln Ser Leu Pro Val Ser Pro Arg Leu Gln Leu Ser
145                 150                 155                 160
```

```
Asn Gly Asn Arg Thr Leu Thr Leu Leu Ser Val Thr Arg Asn Asp Val
                165                 170                 175

Gly Pro Tyr Glu Cys Glu Ile Gln Asn Pro Ala Ser Ala Asn Phe Ser
            180                 185                 190

Asp Pro Val Thr Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro Thr Ile
        195                 200                 205

Ser Pro Ser Asp Thr Tyr Tyr His Ala Gly Val Asn Leu Asn Leu Ser
    210                 215                 220

Cys His Ala Ala Ser Asn Pro Pro Ser Gln Tyr Ser Trp Ser Val Asn
225                 230                 235                 240

Gly Thr Phe Gln Gln Tyr Thr Gln Lys Leu Phe Ile Pro Asn Ile Thr
                245                 250                 255

Thr Lys Asn Ser Gly Ser Tyr Ala Cys His Thr Thr Asn Ser Ala Thr
            260                 265                 270

Gly Arg Asn Arg Thr Thr Val Arg Met Ile Thr Val Ser Asp Ala Leu
        275                 280                 285

Val Gln Gly Ser Ser Pro Gly Leu Ser Ala Ser Gly Ser Gly Ser Gly
    290                 295                 300

Leu Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu Trp His His His His
305                 310                 315                 320

His His
```

<210> 63
<211> 322
<212> PRT
<213> Macaca fascicularis

<220>
<221> DOMAIN
<222> (1)..(298)
<223> extracellular domain of cynomolgus monkey CEACAM8

<220>
<221> MISC_FEATURE
<222> (299)..(322)
<223> extension with His-tag

<400> 63

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

```
Val Leu Leu Leu Ala His Asn Leu Pro Gln Asp Pro Leu Gly Tyr Asn
            20                  25                  30

Trp Tyr Lys Gly Glu Thr Val Asp Ala Asn Arg Arg Ile Ile Gly Tyr
        35                  40                  45

Val Ile Ala Thr Gln Val Asn Ile Ser Gly Pro Ala Asp Ser Gly Arg
    50                  55                  60

Glu Thr Ile Tyr Pro Asn Ala Thr Leu Leu Met Gln Asn Val Thr Arg
65                  70                  75                  80

Asn Asp Thr Gly Ser Tyr Thr Leu Gln Val Ile Thr Leu Asn Leu Val
                85                  90                  95

Asn Glu Glu Val Thr Gly Gln Phe Ser Val His Pro Glu Thr Pro Lys
            100                 105                 110

Pro Ser Ile Ser Ser Asn Asn Ser Asn Pro Val Glu Asp Arg Asp Ala
        115                 120                 125

Val Ala Leu Thr Cys Glu Pro Glu Thr Gln Asn Thr Thr Tyr Leu Trp
    130                 135                 140

Trp Val Asn Gly Gln Ser Leu Pro Val Ser Pro Arg Leu Gln Leu Ser
145                 150                 155                 160

Asp Gly Asn Arg Thr Leu Thr Leu Leu Asn Val Thr Arg Asn Asp Thr
                165                 170                 175

Gly Pro Tyr Glu Cys Glu Ile Gln Asn Pro Val Ser Val Asn Phe Ser
            180                 185                 190

Asp Pro Val Thr Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro Asn Ile
        195                 200                 205

Ser Pro Ser Asp Thr Tyr Tyr Leu Pro Gly Val Asn Leu Asn Leu Ser
    210                 215                 220

Cys His Ala Ala Ser Asn Pro Leu Ala Gln Tyr Ser Trp Ser Val Asn
225                 230                 235                 240

Gly Thr Phe Gln Gln His Thr Gln Asn Leu Phe Ile Pro Asn Ile Thr
                245                 250                 255

Ala Lys Asn Ser Gly Ser Tyr Ala Cys His Ala Thr Asn Ser Ala Thr
            260                 265                 270

Gly His Asn Gly Thr Thr Val Arg Met Ile Thr Val Ser Asp Ala Ser
        275                 280                 285
```

Val Gln Gly Ser Ser Pro Gly Leu Ser Ala Ser Gly Ser Gly Ser Gly
290 295 300

Leu Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu Trp His His His His
305 310 315 320

His His

<210> 64
<211> 237
<212> PRT
<213> Homo sapiens

<220>
<221> DOMAIN
<222> (1)..(213)
<223> extracellular domain of human CEACAM7

<220>
<221> DOMAIN
<222> (214)..(237)
<223> extension with His-tag

<400> 64

Thr Asn Ile Asp Val Val Pro Phe Asn Val Ala Glu Gly Lys Glu Val
1 5 10 15

Leu Leu Val Val His Asn Glu Ser Gln Asn Leu Tyr Gly Tyr Asn Trp
20 25 30

Tyr Lys Gly Glu Arg Val His Ala Asn Tyr Arg Ile Ile Gly Tyr Val
35 40 45

Lys Asn Ile Ser Gln Glu Asn Ala Pro Gly Pro Ala His Asn Gly Arg
50 55 60

Glu Thr Ile Tyr Pro Asn Gly Thr Leu Leu Ile Gln Asn Val Thr His
65 70 75 80

Asn Asp Ala Gly Ile Tyr Thr Leu His Val Ile Lys Glu Asn Leu Val
85 90 95

Asn Glu Glu Val Thr Arg Gln Phe Tyr Val Phe Ser Glu Pro Pro Lys
100 105 110

Pro Ser Ile Thr Ser Asn Asn Phe Asn Pro Val Glu Asn Lys Asp Ile
115 120 125

Val Val Leu Thr Cys Gln Pro Glu Thr Gln Asn Thr Thr Tyr Leu Trp
130 135 140

Trp Val Asn Asn Gln Ser Leu Leu Val Ser Pro Arg Leu Leu Leu Ser
145 150 155 160

```
Thr Asp Asn Arg Thr Leu Val Leu Leu Ser Ala Thr Lys Asn Asp Ile
                165                 170                 175

Gly Pro Tyr Glu Cys Glu Ile Gln Asn Pro Val Gly Ala Ser Arg Ser
            180                 185                 190

Asp Pro Val Thr Leu Asn Val Arg Tyr Glu Ser Val Gln Ala Ser Ser
        195                 200                 205

Pro Asp Leu Ser Ala Ser Gly Ser Gly Ser Gly Leu Asn Asp Ile Phe
    210                 215                 220

Glu Ala Gln Lys Ile Glu Trp His His His His His His
225                 230                 235


<210>  65
<211>  292
<212>  PRT
<213>  Homo sapiens


<220>
<221>  DOMAIN
<222>  (1)..(286)
<223>  hCEACAM5 N-A1-B1

<220>
<221>  MISC_FEATURE
<222>  (287)..(292)
<223>  His-tag

<400>  65

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

Val Leu Leu Leu Val His Asn Leu Pro Gln His Leu Phe Gly Tyr Ser
            20                  25                  30

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

Val Ile Gly Thr Gln Gln Ala Thr Pro Gly Pro Ala Tyr Ser Gly Arg
    50                  55                  60

Glu Ile Ile Tyr Pro Asn Ala Ser Leu Leu Ile Gln Asn Ile Ile Gln
65                  70                  75                  80

Asn Asp Thr Gly Phe Tyr Thr Leu His Val Ile Lys Ser Asp Leu Val
                85                  90                  95

Asn Glu Glu Ala Thr Gly Gln Phe Arg Val Tyr Pro Glu Leu Pro Lys
            100                 105                 110
```

```
Pro Ser Ile Ser Ser Asn Asn Ser Lys Pro Val Glu Asp Lys Asp Ala
        115                 120                 125


Val Ala Phe Thr Cys Glu Pro Glu Thr Gln Asp Ala Thr Tyr Leu Trp
    130                 135                 140


Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg Leu Gln Leu Ser
145                 150                 155                 160


Asn Gly Asn Arg Thr Leu Thr Leu Phe Asn Val Thr Arg Asn Asp Thr
                165                 170                 175


Ala Ser Tyr Lys Cys Glu Thr Gln Asn Pro Val Ser Ala Arg Arg Ser
            180                 185                 190


Asp Ser Val Ile Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro Thr Ile
        195                 200                 205


Ser Pro Leu Asn Thr Ser Tyr Arg Ser Gly Glu Asn Leu Asn Leu Ser
    210                 215                 220


Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser Trp Phe Val Asn
225                 230                 235                 240


Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn Ile Thr
                245                 250                 255


Val Asn Asn Ser Gly Ser Tyr Thr Cys Gln Ala His Asn Ser Asp Thr
            260                 265                 270


Gly Leu Asn Arg Thr Thr Val Thr Thr Ile Thr Val Tyr Ala His His
        275                 280                 285


His His His His
    290


<210>  66
<211>  184
<212>  PRT
<213>  Homo sapiens


<220>
<221>  DOMAIN
<222>  (1)..(178)
<223>  hCEACAM5 A2-B2

<220>
<221>  MISC_FEATURE
<222>  (179)..(184)
<223>  His-tag

<400>  66

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

```
Asp Glu Asp Ala Val Ala Leu Thr Cys Glu Pro Glu Ile Gln Asn Thr
            20                  25                  30

Thr Tyr Leu Trp Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg
        35                  40                  45

Leu Gln Leu Ser Asn Asp Asn Arg Thr Leu Thr Leu Leu Ser Val Thr
    50                  55                  60

Arg Asn Asp Val Gly Pro Tyr Glu Cys Gly Ile Gln Asn Glu Leu Ser
65                  70                  75                  80

Val Asp His Ser Asp Pro Val Ile Leu Asn Val Leu Tyr Gly Pro Asp
                85                  90                  95

Asp Pro Thr Ile Ser Pro Ser Tyr Thr Tyr Tyr Arg Pro Gly Val Asn
            100                 105                 110

Leu Ser Leu Ser Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser
        115                 120                 125

Trp Leu Ile Asp Gly Asn Ile Gln Gln His Thr Gln Glu Leu Phe Ile
    130                 135                 140

Ser Asn Ile Thr Glu Lys Asn Ser Gly Leu Tyr Thr Cys Gln Ala Asn
145                 150                 155                 160

Asn Ser Ala Ser Gly His Ser Arg Thr Thr Val Lys Thr Ile Thr Val
                165                 170                 175

Ser Ala His His His His His His
            180


<210>  67
<211>  193
<212>  PRT
<213>  Homo sapiens


<220>
<221>  DOMAIN
<222>  (1)..(187)
<223>  hCEACAM5 A3-B3

<220>
<221>  MISC_FEATURE
<222>  (188)..(193)
<223>  His-tag

<400>  67

Glu Leu Pro Lys Pro Ser Ile Ser Ser Asn Asn Ser Lys Pro Val Glu
1               5                   10                  15
```

```
Asp Lys Asp Ala Val Ala Phe Thr Cys Glu Pro Glu Ala Gln Asn Thr
            20                  25                  30

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

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

Arg Asn Asp Ala Arg Ala Tyr Val Cys Gly Ile Gln Asn Ser Val Ser
65                  70                  75                  80

Ala Asn Arg Ser Asp Pro Val Thr Leu Asp Val Leu Tyr Gly Pro Asp
                85                  90                  95

Thr Pro Ile Ile Ser Pro Pro Asp Ser Ser Tyr Leu Ser Gly Ala Asn
            100                 105                 110

Leu Asn Leu Ser Cys His Ser Ala Ser Asn Pro Ser Pro Gln Tyr Ser
        115                 120                 125

Trp Arg Ile Asn Gly Ile Pro Gln Gln His Thr Gln Val Leu Phe Ile
    130                 135                 140

Ala Lys Ile Thr Pro Asn Asn Asn Gly Thr Tyr Ala Cys Phe Val Ser
145                 150                 155                 160

Asn Leu Ala Thr Gly Arg Asn Asn Ser Ile Val Lys Ser Ile Thr Val
                165                 170                 175

Ser Ala Ser Gly Thr Ser Pro Gly Leu Ser Ala His His His His His
            180                 185                 190

His
```

<210> 68
<211> 310
<212> PRT
<213> Macaca fascicularis

<220>
<221> DOMAIN
<222> (1)..(286)
<223> domain N-A1-B1 of cynomolgus monkey CEACAM5

<220>
<221> MISC_FEATURE
<222> (287)..(310)
<223> extension with His-tag

<400> 68

```
Gln Leu Thr Ile Glu Ser Arg Pro Phe Asn Val Ala Glu Gly Lys Glu
1               5                   10                  15
```

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

Trp Tyr Lys Gly Glu Arg Val Asp Ala Ser Arg Arg Ile Gly Ser Cys
        35                  40                  45

Val Ile Arg Thr Gln Gln Ile Thr Pro Gly Pro Ala His Ser Gly Arg
    50                  55                  60

Glu Thr Ile Asp Phe Asn Ala Ser Leu Leu Ile Gln Asn Val Thr Gln
65                  70                  75                  80

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

Asn Glu Glu Ala Thr Gly Gln Phe Arg Val Tyr Pro Glu Leu Pro Lys
            100                 105                 110

Pro Tyr Ile Thr Ser Asn Asn Ser Asn Pro Ile Glu Asp Lys Asp Ala
        115                 120                 125

Val Ala Leu Thr Cys Glu Pro Glu Thr Gln Asp Thr Thr Tyr Leu Trp
    130                 135                 140

Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg Leu Glu Leu Ser
145                 150                 155                 160

Ser Asp Asn Arg Thr Leu Thr Val Phe Asn Ile Pro Arg Asn Asp Thr
                165                 170                 175

Thr Ser Tyr Lys Cys Glu Thr Gln Asn Pro Val Ser Val Arg Arg Ser
            180                 185                 190

Asp Pro Val Thr Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro Thr Ile
        195                 200                 205

Ser Pro Leu Asn Thr Pro Tyr Arg Ala Gly Glu Tyr Leu Asn Leu Thr
    210                 215                 220

Cys His Ala Ala Ser Asn Pro Thr Ala Gln Tyr Phe Trp Phe Val Asn
225                 230                 235                 240

Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn Ile Thr
                245                 250                 255

Val Asn Asn Ser Gly Ser Tyr Met Cys Gln Ala His Asn Ser Ala Thr
            260                 265                 270

Gly Leu Asn Arg Thr Thr Val Thr Ala Ile Thr Val Tyr Ala Ser Gly
        275                 280                 285
```

```
Ser Gly Ser Gly Leu Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu Trp
    290                 295                 300


His His His His His His
305                 310


<210>  69
<211>  202
<212>  PRT
<213>  Macaca fascicularis


<220>
<221>  DOMAIN
<222>  (1)..(178)
<223>  domain A2-B2 of cunomolgus monkey CEACAM5

<220>
<221>  MISC_FEATURE
<222>  (179)..(202)
<223>  extension with His-tag

<400>  69

Glu Leu Pro Lys Pro Tyr Ile Thr Ser Asn Asn Ser Asn Pro Ile Glu
1               5                   10                  15


Asp Lys Asp Ala Val Thr Leu Thr Cys Glu Pro Glu Thr Gln Asp Thr
            20                  25                  30


Thr Tyr Leu Trp Trp Val Asn Asn Gln Arg Leu Ser Val Ser Ser Arg
        35                  40                  45


Leu Glu Leu Ser Asn Asp Asn Arg Thr Leu Thr Val Phe Asn Ile Pro
    50                  55                  60


Arg Asn Asp Thr Thr Phe Tyr Glu Cys Glu Thr Gln Asn Pro Val Ser
65                  70                  75                  80


Val Arg Arg Ser Asp Pro Val Thr Leu Asn Val Leu Tyr Gly Pro Asp
                85                  90                  95


Ala Pro Thr Ile Ser Pro Leu Asn Thr Pro Tyr Arg Ala Gly Glu Asn
            100                 105                 110


Leu Asn Leu Ser Cys His Ala Ala Ser Asn Pro Ala Ala Gln Tyr Phe
        115                 120                 125


Trp Phe Val Asn Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile
    130                 135                 140


Pro Asn Ile Thr Val Asn Asn Ser Gly Ser Tyr Met Cys Gln Ala His
145                 150                 155                 160
```

```
Asn Ser Ala Thr Gly Leu Asn Arg Thr Thr Val Thr Ala Ile Thr Val
                165                 170                 175


Tyr Val Ser Gly Ser Gly Ser Gly Leu Asn Asp Ile Phe Glu Ala Gln
            180                 185                 190


Lys Ile Glu Trp His His His His His His
        195                 200


<210>  70
<211>  214
<212>  PRT
<213>  Macaca fascicularis


<220>
<221>  DOMAIN
<222>  (1)..(190)
<223>  doamin A3-B3 of cynomolgus monkey CEACAM5

<220>
<221>  MISC_FEATURE
<222>  (191)..(214)
<223>  extension with His-tag

<400>  70

Glu Leu Pro Lys Pro Tyr Ile Ser Ser Asn Asn Ser Asn Pro Ile Glu
1               5                   10                  15


Asp Lys Asp Ala Val Thr Leu Thr Cys Glu Pro Val Ala Glu Asn Thr
            20                  25                  30


Thr Tyr Leu Trp Trp Val Asn Asn Gln Ser Leu Ser Val Ser Pro Arg
        35                  40                  45


Leu Gln Leu Ser Asn Gly Asn Arg Ile Leu Thr Leu Leu Ser Val Thr
    50                  55                  60


Arg Asn Asp Thr Gly Pro Tyr Glu Cys Gly Ile Gln Asn Ser Glu Ser
65                  70                  75                  80


Ala Lys Arg Ser Asp Pro Val Thr Leu Asn Val Thr Tyr Gly Pro Asp
                85                  90                  95


Thr Pro Ile Ile Ser Pro Pro Asp Leu Ser Tyr Arg Ser Gly Ala Asn
            100                 105                 110


Leu Asn Leu Ser Cys His Ser Asp Ser Asn Pro Ser Pro Gln Tyr Ser
        115                 120                 125


Trp Leu Ile Asn Gly Thr Leu Arg Gln His Thr Gln Val Leu Phe Ile
    130                 135                 140


Ser Lys Ile Thr Ser Asn Asn Asn Gly Ala Tyr Ala Cys Phe Val Ser
145                 150                 155                 160
```

```
Asn Leu Ala Thr Gly Arg Asn Asn Ser Ile Val Lys Asn Ile Ser Val
                165                 170                 175

Ser Ser Gly Asp Ser Ala Pro Gly Ser Ser Gly Leu Ser Ala Ser Gly
            180                 185                 190

Ser Gly Ser Gly Leu Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu Trp
        195                 200                 205

His His His His His His
    210
```

<210> 71
<211> 344
<212> PRT
<213> Homo sapiens

<400> 71

```
Met Gly Pro Pro Ser Ala Pro Pro Cys Arg Leu His Val Pro Trp Lys
1               5                   10                  15

Glu Val Leu Leu Thr Ala Ser Leu Leu Thr Phe Trp Asn Pro Pro Thr
            20                  25                  30

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

Lys Glu Val Leu Leu Leu Ala His Asn Leu Pro Gln Asn Arg Ile Gly
    50                  55                  60

Tyr Ser Trp Tyr Lys Gly Glu Arg Val Asp Gly Asn Ser Leu Ile Val
65                  70                  75                  80

Gly Tyr Val Ile Gly Thr Gln Gln Ala Thr Pro Gly Pro Ala Tyr Ser
                85                  90                  95

Gly Arg Glu Thr Ile Tyr Pro Asn Ala Ser Leu Leu Ile Gln Asn Val
            100                 105                 110

Thr Gln Asn Asp Thr Gly Phe Tyr Thr Leu Gln Val Ile Lys Ser Asp
        115                 120                 125

Leu Val Asn Glu Glu Ala Thr Gly Gln Phe His Val Tyr Pro Glu Leu
    130                 135                 140

Pro Lys Pro Ser Ile Ser Ser Asn Asn Ser Asn Pro Val Glu Asp Lys
145                 150                 155                 160

Asp Ala Val Ala Phe Thr Cys Glu Pro Glu Val Gln Asn Thr Thr Tyr
                165                 170                 175
```

```
Leu Trp Trp Val Asn Gly Gln Ser Leu Pro Val Ser Pro Arg Leu Gln
            180                 185                 190

Leu Ser Asn Gly Asn Met Thr Leu Thr Leu Leu Ser Val Lys Arg Asn
        195                 200                 205

Asp Ala Gly Ser Tyr Glu Cys Glu Ile Gln Asn Pro Ala Ser Ala Asn
    210                 215                 220

Arg Ser Asp Pro Val Thr Leu Asn Val Leu Tyr Gly Pro Asp Gly Pro
225                 230                 235                 240

Thr Ile Ser Pro Ser Lys Ala Asn Tyr Arg Pro Gly Glu Asn Leu Asn
                245                 250                 255

Leu Ser Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser Trp Phe
            260                 265                 270

Ile Asn Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn
        275                 280                 285

Ile Thr Val Asn Asn Ser Gly Ser Tyr Met Cys Gln Ala His Asn Ser
    290                 295                 300

Ala Thr Gly Leu Asn Arg Thr Thr Val Thr Met Ile Thr Val Ser Gly
305                 310                 315                 320

Ser Ala Pro Val Leu Ser Ala Val Ala Thr Val Gly Ile Thr Ile Gly
                325                 330                 335

Val Leu Ala Arg Val Ala Leu Ile
            340


<210>  72
<211>  265
<212>  PRT
<213>  Homo sapiens

<400>  72

Met Gly Ser Pro Ser Ala Cys Pro Tyr Arg Val Cys Ile Pro Trp Gln
1               5                   10                  15

Gly Leu Leu Leu Thr Ala Ser Leu Leu Thr Phe Trp Asn Leu Pro Asn
            20                  25                  30

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

Lys Glu Val Leu Leu Val Val His Asn Glu Ser Gln Asn Leu Tyr Gly
    50                  55                  60
```

```
Tyr Asn Trp Tyr Lys Gly Glu Arg Val His Ala Asn Tyr Arg Ile Ile
65                  70                  75                  80

Gly Tyr Val Lys Asn Ile Ser Gln Glu Asn Ala Pro Gly Pro Ala His
                85                  90                  95

Asn Gly Arg Glu Thr Ile Tyr Pro Asn Gly Thr Leu Leu Ile Gln Asn
            100                 105                 110

Val Thr His Asn Asp Ala Gly Phe Tyr Thr Leu His Val Ile Lys Glu
        115                 120                 125

Asn Leu Val Asn Glu Glu Val Thr Arg Gln Phe Tyr Val Phe Ser Glu
    130                 135                 140

Pro Pro Lys Pro Ser Ile Thr Ser Asn Asn Phe Asn Pro Val Glu Asn
145                 150                 155                 160

Lys Asp Ile Val Val Leu Thr Cys Gln Pro Glu Thr Gln Asn Thr Thr
                165                 170                 175

Tyr Leu Trp Trp Val Asn Asn Gln Ser Leu Leu Val Ser Pro Arg Leu
            180                 185                 190

Leu Leu Ser Thr Asp Asn Arg Thr Leu Val Leu Leu Ser Ala Thr Lys
        195                 200                 205

Asn Asp Ile Gly Pro Tyr Glu Cys Glu Ile Gln Asn Pro Val Gly Ala
    210                 215                 220

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

Ala Ser Ser Pro Asp Leu Ser Ala Gly Thr Ala Val Ser Ile Met Ile
                245                 250                 255

Gly Val Leu Ala Gly Met Ala Leu Ile
            260                 265


<210>  73
<211>  349
<212>  PRT
<213>  Homo sapiens

<400>  73

Met Gly Pro Ile Ser Ala Pro Ser Cys Arg Trp Arg Ile Pro Trp Gln
1               5                   10                  15

Gly Leu Leu Leu Thr Ala Ser Leu Phe Thr Phe Trp Asn Pro Pro Thr
            20                  25                  30

Thr Ala Gln Leu Thr Ile Glu Ala Val Pro Ser Asn Ala Ala Glu Gly
```

35 40 45

Lys Glu Val Leu Leu Leu Val His Asn Leu Pro Gln Asp Pro Arg Gly
50 55 60

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

Gly Tyr Val Ile Ser Asn Gln Gln Ile Thr Pro Gly Pro Ala Tyr Ser
85 90 95

Asn Arg Glu Thr Ile Tyr Pro Asn Ala Ser Leu Leu Met Arg Asn Val
100 105 110

Thr Arg Asn Asp Thr Gly Ser Tyr Thr Leu Gln Val Ile Lys Leu Asn
115 120 125

Leu Met Ser Glu Glu Val Thr Gly Gln Phe Ser Val His Pro Glu Thr
130 135 140

Pro Lys Pro Ser Ile Ser Ser Asn Asn Ser Asn Pro Val Glu Asp Lys
145 150 155 160

Asp Ala Val Ala Phe Thr Cys Glu Pro Glu Thr Gln Asn Thr Thr Tyr
165 170 175

Leu Trp Trp Val Asn Gly Gln Ser Leu Pro Val Ser Pro Arg Leu Gln
180 185 190

Leu Ser Asn Gly Asn Arg Thr Leu Thr Leu Leu Ser Val Thr Arg Asn
195 200 205

Asp Val Gly Pro Tyr Glu Cys Glu Ile Gln Asn Pro Ala Ser Ala Asn
210 215 220

Phe Ser Asp Pro Val Thr Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro
225 230 235 240

Thr Ile Ser Pro Ser Asp Thr Tyr Tyr His Ala Gly Val Asn Leu Asn
245 250 255

Leu Ser Cys His Ala Ala Ser Asn Pro Pro Ser Gln Tyr Ser Trp Ser
260 265 270

Val Asn Gly Thr Phe Gln Gln Tyr Thr Gln Lys Leu Phe Ile Pro Asn
275 280 285

Ile Thr Thr Lys Asn Ser Gly Ser Tyr Ala Cys His Thr Thr Asn Ser
290 295 300

Ala Thr Gly Arg Asn Arg Thr Thr Val Arg Met Ile Thr Val Ser Asp

305 310 315 320

Ala Leu Val Gln Gly Ser Ser Pro Gly Leu Ser Ala Arg Ala Thr Val
325 330 335

Ser Ile Met Ile Gly Val Leu Ala Arg Val Ala Leu Ile
340 345

<210> 74
<211> 120
<212> PRT
<213> Artificial Sequence

<220>
<223> MAb2_VHg2

<400> 74

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

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

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

Ser Tyr Ile Ser Ser Gly Gly Gly Ile Thr Tyr Tyr Ala Asp Ser Val
50 55 60

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

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

Ala Ala His Tyr Phe Gly Ser Ser Gly Pro Phe Ala Tyr Trp Gly Gln
100 105 110

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 75
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> MAb2_VLg5

<400> 75

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

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Glu Asn Ile Phe Ser Tyr

```
            20                  25                  30

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

Tyr Asn Thr Arg Thr 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 His His Tyr Gly Thr Pro Phe
                85                  90                  95

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


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

<220>
<223>  residues at positions 109-115 of human CEACAM5-A3B3

<400>  76

Ser Gly Ala Asn Leu Asn Leu
1               5


<210>  77
<211>  13
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  residues at positions 131-143  of human CEACAM5-A3B3

<400>  77

Ile Asn Gly Ile Pro Gln Gln His Thr Gln Val Leu Phe
1               5                   10


<210>  78
<211>  8
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  CDR


<220>
<221>  MISC_FEATURE
<222>  (3)..(3)
<223>  Xaa is is T, A or V

<400>  78

Gly Phe Xaa Phe Ser Ser Tyr Asp
```

1 5

<210> 79
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa is S or N (in particular S)

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa is Y or G (in particular G)

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa is R or I (in particular I)

<400> 79

Ile Xaa Ser Xaa Gly Gly Xaa Thr
1 5

<210> 80
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa is A or T (in particular A)

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa is T or S (in particular S)

<400> 80

Xaa Ala His Tyr Phe Gly Xaa Ser Gly Pro Phe Ala Tyr
1 5 10

<210> 81
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR

<220>

<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa is R or S, in particular S

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa is A or D

<400> 81

Gly Phe Thr Phe Ser Xaa Tyr Xaa
1 5

<210> 82
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa is absent, S or G (in particular G)

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa is D, Y or I

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa is T or I (in particular T)

<400> 82

Ile Ser Ser Gly Gly Xaa Xaa Xaa
1 5

<210> 83
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR

<220>
<221> MISC_FEATURE
<222> (1)..(6)
<223> Xaa is any amino acid

<400> 83

Xaa Xaa Xaa Xaa Xaa Xaa Tyr Asp
1 5

<210> 84
<211> 13
<212> PRT

<213> Artificial Sequence

<220>
<223> CDR

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa is any amino acid

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa is A or S

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa is Y, F or W

<220>
<221> MISC_FEATURE
<222> (7)..(8)
<223> Xaa is any amino acid

<220>
<221> MISC_FEATURE
<222> (11)..(11)
<223> Xaa is any amino acid

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa is any amino acid

<400> 84

Xaa Xaa His Xaa Phe Gly Xaa Xaa Gly Pro Xaa Ala Xaa
1 5 10

<210> 85
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR

<220>
<221> MISC_FEATURE
<222> (1)..(3)
<223> Xaa is any amino acid

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa is Y, F or W

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa is any amino acid

<400> 85

Xaa Xaa Xaa Xaa Xaa Tyr
1 5

<210> 86
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR

<220>
<221> MISC_FEATURE
<222> (1)..(2)
<223> Xaa is any amino acid

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa is Y, F or W

<220>
<221> MISC_FEATURE
<222> (5)..(6)
<223> Xaa is any amino acid

<220>
<221> MISC_FEATURE
<222> (8)..(9)
<223> Xaa is any amino acid

<400> 86

Xaa Xaa His Xaa Xaa Xaa Pro Xaa Xaa
1 5

<210> 87
<211> 449
<212> PRT
<213> Artificial Sequence

<220>
<223> heavy chain sequence of huMAb2-3

<400> 87

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

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

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

Ala Tyr Ile Ser Ser Gly Gly Gly Ile Thr Tyr Ala Pro Ser Thr Val
50 55 60

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

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

Ala Ala His Tyr Phe Gly Ser Ser Gly Pro Phe Ala Tyr Trp Gly Gln
            100                 105                 110

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

Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala
    130                 135                 140

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

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

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

Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys
        195                 200                 205

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

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly
225                 230                 235                 240

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

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
            260                 265                 270

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

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
    290                 295                 300

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
305                 310                 315                 320

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
                325                 330                 335

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

```
Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu
        355                 360                 365

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
    370                 375                 380

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

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
                405                 410                 415

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
            420                 425                 430

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
        435                 440                 445

Gly
```

<210> 88
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> light chain sequence of huMAb2-3

<400> 88

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

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Glu Asn Ile Phe Ser Tyr
            20                  25                  30

Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ser Pro Lys Leu Leu Val
        35                  40                  45

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

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

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln His His Tyr Gly Thr Pro Phe
                85                  90                  95

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

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
```

115 120 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
130 135 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145 150 155 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
165 170 175

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
180 185 190

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

Phe Asn Arg Gly Glu Cys
210

<210> 89
<211> 449
<212> PRT
<213> Artificial Sequence

<220>
<223> MAb2 heavy chain VH1-IgG1

<400> 89

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

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

Asp Met Ser Trp Val Arg Gln Thr Pro Glu Arg Arg Leu Glu Trp Val
35 40 45

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

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

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

Ala Ala His Tyr Phe Gly Ser Ser Gly Pro Phe Ala Tyr Trp Gly Gln
100 105 110

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

```
Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala
    130                 135                 140

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

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

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

Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys
        195                 200                 205

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

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly
225                 230                 235                 240

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

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
            260                 265                 270

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

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
    290                 295                 300

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
305                 310                 315                 320

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
                325                 330                 335

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

Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu
        355                 360                 365

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
    370                 375                 380

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val
385                 390                 395                 400
```

```
Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
                405                 410                 415

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
            420                 425                 430

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
        435                 440                 445

Gly
```

<210> 90
<211> 214
<212> PRT
<213> Artificial Sequence

<220>
<223> MAb2 light chain VL1d

<400> 90

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

Asp Thr Val Thr Ile Thr Cys Arg Ala Ser Glu Asn Ile Phe Ser Tyr
            20                  25                  30

Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ser Pro Lys Leu Leu Val
        35                  40                  45

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

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

Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His His Tyr Gly Thr Pro Phe
                85                  90                  95

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

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
        115                 120                 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
    130                 135                 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145                 150                 155                 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
```

```
                165                 170                 175

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
            180                 185                 190

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

Phe Asn Arg Gly Glu Cys
    210
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