SEQUENCE LISTING

<110> Umoja Biopharma, Inc.
Scharenberg, Andrew

<120> RETROVIRAL VECTOR FOR UNIVERAL RECEPTOR THERAPY

<130> UMOJ-003/01WO

<150> US 62/916,110
<151> 2019-10-19

<160> 53

<170> PatentIn version 3.5

<210> 1
<211> 511
<212> PRT
<213> Artificial Sequence

<220>
<223> Cocal G protein

<400> 1

Asn Phe Leu Leu Leu Thr Phe Ile Val Leu Pro Leu Cys Ser His Ala
1 5 10 15

Lys Phe Ser Ile Val Phe Pro Gln Ser Gln Lys Gly Asn Trp Lys Asn
20 25 30

Val Pro Ser Ser Tyr His Tyr Cys Pro Ser Ser Ser Asp Gln Asn Trp
35 40 45

His Asn Asp Leu Leu Gly Ile Thr Met Lys Val Lys Met Pro Lys Thr
50 55 60

His Lys Ala Ile Gln Ala Asp Gly Trp Met Cys His Ala Ala Lys Trp
65 70 75 80

Ile Thr Thr Cys Asp Phe Arg Trp Tyr Gly Pro Lys Tyr Ile Thr His
85 90 95

```
Ser Ile His Ser Ile Gln Pro Thr Ser Glu Gln Cys Lys Glu Ser Ile
            100                 105                 110

Lys Gln Thr Lys Gln Gly Thr Trp Met Ser Pro Gly Phe Pro Pro Gln
        115                 120                 125

Asn Cys Gly Tyr Ala Thr Val Thr Asp Ser Val Ala Val Val Val Gln
    130                 135                 140

Ala Thr Pro His His Val Leu Val Asp Glu Tyr Thr Gly Glu Trp Ile
145                 150                 155                 160

Asp Ser Gln Phe Pro Asn Gly Lys Cys Glu Thr Glu Glu Cys Glu Thr
                165                 170                 175

Val His Asn Ser Thr Val Trp Tyr Ser Asp Tyr Lys Val Thr Gly Leu
            180                 185                 190

Cys Asp Ala Thr Leu Val Asp Thr Glu Ile Thr Phe Phe Ser Glu Asp
        195                 200                 205

Gly Lys Lys Glu Ser Ile Gly Lys Pro Asn Thr Gly Tyr Arg Ser Asn
    210                 215                 220

Tyr Phe Ala Tyr Glu Lys Gly Asp Lys Val Cys Lys Met Asn Tyr Cys
225                 230                 235                 240

Lys His Ala Gly Val Arg Leu Pro Ser Gly Val Trp Phe Glu Phe Val
                245                 250                 255

Asp Gln Asp Val Tyr Ala Ala Ala Lys Leu Pro Glu Cys Pro Val Gly
            260                 265                 270

Ala Thr Ile Ser Ala Pro Thr Gln Thr Ser Val Asp Val Ser Leu Ile
        275                 280                 285
```

```
Leu Asp Val Glu Arg Ile Leu Asp Tyr Ser Leu Cys Gln Glu Thr Trp
    290                 295                 300

Ser Lys Ile Arg Ser Lys Gln Pro Val Ser Pro Val Asp Leu Ser Tyr
305                 310                 315                 320

Leu Ala Pro Lys Asn Pro Gly Thr Gly Pro Ala Phe Thr Ile Ile Asn
                325                 330                 335

Gly Thr Leu Lys Tyr Phe Glu Thr Arg Tyr Ile Arg Ile Asp Ile Asp
            340                 345                 350

Asn Pro Ile Ile Ser Lys Met Val Gly Lys Ile Ser Gly Ser Gln Thr
        355                 360                 365

Glu Arg Glu Leu Trp Thr Glu Trp Phe Pro Tyr Glu Gly Val Glu Ile
    370                 375                 380

Gly Pro Asn Gly Ile Leu Lys Thr Pro Thr Gly Tyr Lys Phe Pro Leu
385                 390                 395                 400

Phe Met Ile Gly His Gly Met Leu Asp Ser Asp Leu His Lys Thr Ser
                405                 410                 415

Gln Ala Glu Val Phe Glu His Pro His Leu Ala Glu Ala Pro Lys Gln
            420                 425                 430

Leu Pro Glu Glu Glu Thr Leu Phe Phe Gly Asp Thr Gly Ile Ser Lys
        435                 440                 445

Asn Pro Val Glu Leu Ile Glu Gly Trp Phe Ser Ser Trp Lys Ser Thr
    450                 455                 460

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

Val Ala Arg Ile Val Ile Ala Val Arg Tyr Arg Tyr Gln Gly Ser Asn
```

485 490 495

Asn Lys Arg Ile Tyr Asn Asp Ile Glu Met Ser Arg Phe Arg Lys
500 505 510

<210> 2

<400> 2
000

<210> 3

<400> 3
000

<210> 4
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> OKT3 CDRH1

<400> 4

Gly Tyr Thr Phe Thr Arg Tyr
1 5

<210> 5
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> OKT3 CDRH2

<400> 5

Asn Pro Ser Arg Gly Tyr
1 5

<210> 6
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> OKT3 CDRH3

<400> 6

Tyr Tyr Asp Asp His Tyr Cys Leu Asp Tyr
1   5   10

<210> 7
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> OKT3 CDRL1

<400> 7

Ser Ala Ser Ser Ser Val Ser Tyr Met Asn
1   5   10

<210> 8
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> OKT3 CDRL2

<400> 8

Asp Thr Ser Lys Leu Ala Ser
1   5

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

<220>
<223> OKT3 CDRL3

<400> 9

Gln Gln Trp Ser Ser Asn Pro Phe Thr

1 5

<210> 10
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> CD28 antibody - CDRH1

<400> 10

Gly Phe Ser Leu Thr Ser Tyr
1 5

<210> 11
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> CD28 antibody - CDRH2

<400> 11

Trp Ala Gly Gly Ser
1 5

<210> 12
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> CD28 antibody - CDRH3

<400> 12

Asp Lys Arg Ala Pro Gly Lys Leu Tyr Tyr Gly Tyr Pro Asp Tyr
1 5 10 15

<210> 13
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> CD28 Antibody - CDRL1

<400> 13

Arg Ala Ser Glu Ser Val Glu Tyr Tyr Val Thr Ser Leu Met Gln
1   5   10   15

<210> 14
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> CD28 antibody - CDRL2

<400> 14

Ala Ala Ser Asn Val Glu Ser
1   5

<210> 15
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> CD28 antibody - CDRL3

<400> 15

Gln Gln Thr Arg Lys Val Pro Ser Thr
1   5

<210> 16
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> TGN1412 - CDRH1

<400> 16

Gly Tyr Thr Phe Ser Tyr

1 5

<210> 17
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> TGN1412 - CDRH2

<400> 17

Tyr Pro Gly Asn Val Asn
1 5

<210> 18
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> TGN1412 - CDRH3

<400> 18

Ser His Tyr Gly Leu Asp Trp Asn Phe Asp Val
1 5 10

<210> 19
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> TGN1412 - CDRL1

<400> 19

His Ala Ser Gln Asn Ile Tyr Val Leu Asn
1 5 10

<210> 20
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> TGN1412 - CDRL2

<400> 20

Lys Ala Ser Asn Leu His Thr
1   5

<210> 21
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> TGN1412 - CDRL3

<400> 21

Gln Gln Gly Gln Thr Tyr Pro Tyr Thr
1   5

<210> 22
<211> 173
<212> PRT
<213> Artificial Sequence

<220>
<223> OX40L sequence

<400> 22

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

Pro Arg Phe Glu Arg Asn Lys Leu Leu Leu Val Ala Ser Val Ile Gln
            20   25   30

Gly Leu Gly Leu Leu Leu Cys Phe Thr Tyr Ile Cys Leu His Phe Ser
        35   40   45

Ala Leu Gln Val Ser His Arg Tyr Pro Arg Ile Gln Ser Ile Lys Val
    50   55   60

```
Gln Phe Thr Glu Tyr Lys Lys Glu Lys Gly Phe Ile Leu Thr Ser Gln
65                  70                  75                  80


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


Gly Tyr Phe Ser Gln Glu Val Asn Ile Ser Leu His Tyr Gln Lys Asp
            100                 105                 110


Glu Glu Pro Leu Phe Gln Leu Lys Lys Val Arg Ser Val Asn Ser Leu
        115                 120                 125


Met Val Ala Ser Leu Thr Tyr Lys Asp Lys Val Tyr Leu Asn Val Thr
    130                 135                 140


Thr Asp Asn Thr Ser Leu Asp Asp Phe His Val Asn Gly Gly Glu Leu
145                 150                 155                 160


Ile Leu Ile His Gln Asn Pro Gly Glu Phe Cys Val Leu
                165                 170
```

<210> 23
<211> 254
<212> PRT
<213> Artificial Sequence

<220>
<223> 4-1BBL sequence

<400> 23

```
Met Glu Tyr Ala Ser Asp Ala Ser Leu Asp Pro Glu Ala Pro Trp Pro
1               5                   10                  15


Pro Ala Pro Arg Ala Arg Ala Cys Arg Val Leu Pro Trp Ala Leu Val
            20                  25                  30


Ala Gly Leu Leu Leu Leu Leu Leu Leu Ala Ala Ala Cys Ala Val Phe
        35                  40                  45
```

```
Leu Ala Cys Pro Trp Ala Val Ser Gly Ala Arg Ala Ser Pro Gly Ser
    50                  55                  60

Ala Ala Ser Pro Arg Leu Arg Glu Gly Pro Glu Leu Ser Pro Asp Asp
65                  70                  75                  80

Pro Ala Gly Leu Leu Asp Leu Arg Gln Gly Met Phe Ala Gln Leu Val
                85                  90                  95

Ala Gln Asn Val Leu Leu Ile Asp Gly Pro Leu Ser Trp Tyr Ser Asp
            100                 105                 110

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

Asp Thr Lys Glu Leu Val Val Ala Lys Ala Gly Val Tyr Tyr Val Phe
    130                 135                 140

Phe Gln Leu Glu Leu Arg Arg Val Val Ala Gly Glu Gly Ser Gly Ser
145                 150                 155                 160

Val Ser Leu Ala Leu His Leu Gln Pro Leu Arg Ser Ala Ala Gly Ala
                165                 170                 175

Ala Ala Leu Ala Leu Thr Val Asp Leu Pro Pro Ala Ser Ser Glu Ala
            180                 185                 190

Arg Asn Ser Ala Phe Gly Phe Gln Gly Arg Leu Leu His Leu Ser Ala
        195                 200                 205

Gly Gln Arg Leu Gly Val His Leu His Thr Glu Ala Arg Ala Arg His
    210                 215                 220

Ala Trp Gln Leu Thr Gln Gly Ala Thr Val Leu Gly Leu Phe Arg Val
225                 230                 235                 240
```

Thr Pro Glu Ile Pro Ala Gly Leu Pro Ser Pro Arg Ser Glu
245 250

<210> 24
<211> 233
<212> PRT
<213> Artificial Sequence

<220>
<223> hinge-CH2CH3 of human lgG1

<400> 24

Ala Glu Pro Lys Ser Pro Asp Lys Thr His Thr Cys Pro Pro Cys Pro
1 5 10 15

Ala Pro Pro Val Ala Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro
20 25 30

Lys Asp Thr Leu Met Ile Ala Arg Thr Pro Glu Val Thr Cys Trp Val
35 40 45

Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp
50 55 60

Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr
65 70 75 80

Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp
85 90 95

Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu
100 105 110

Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg
115 120 125

Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys
130 135 140

```
Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp
145                 150                 155                 160


Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys
                165                 170                 175


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


Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser
        195                 200                 205


Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser
    210                 215                 220


Leu Ser Leu Ser Pro Gly Lys Lys Asp
225                 230


<210>  25
<211>  46
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  human CD8 stalk

<400>  25

Thr Thr Thr Pro Ala Pro Arg Pro Pro Thr Pro Ala Pro Thr Ile Ala
1               5                   10                  15


Ser Gln Pro Leu Ser Leu Arg Pro Glu Ala Cys Arg Pro Ala Ala Gly
            20                  25                  30


Gly Ala Val His Thr Arg Gly Leu Asp Phe Ala Cys Asp Ile
        35                  40                  45


<210>  26
```

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

<220>
<223> human lgG1 hinge

<400> 26

Ala Glu Pro Lys Ser Pro Asp Lys Thr His Thr Cys Pro Pro Cys Pro
1 5 10 15

Lys Asp Pro Lys
20

<210> 27
<211> 185
<212> PRT
<213> Artificial Sequence

<220>
<223> CD2 ectodomain

<400> 27

Lys Glu Ile Thr Asn Ala Leu Glu Thr Trp Gly Ala Leu Gly Gln Asp
1 5 10 15

Ile Asn Leu Asp Ile Pro Ser Phe Gln Met Ser Asp Asp Ile Asp Asp
20 25 30

Ile Lys Trp Glu Lys Thr Ser Asp Lys Lys Lys Ile Ala Gln Phe Arg
35 40 45

Lys Glu Lys Glu Thr Phe Lys Glu Lys Asp Thr Tyr Lys Leu Phe Lys
50 55 60

Asn Gly Thr Leu Lys Ile Lys His Leu Lys Thr Asp Asp Gln Asp Ile
65 70 75 80

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

```
Ile Phe Asp Leu Lys Ile Gln Glu Arg Val Ser Lys Pro Lys Ile Ser
            100                 105                 110

Trp Thr Cys Ile Asn Thr Thr Leu Thr Cys Glu Val Met Asn Gly Thr
        115                 120                 125

Asp Pro Glu Leu Asn Leu Tyr Gln Asp Gly Lys His Leu Lys Leu Ser
    130                 135                 140

Gln Arg Val Ile Thr His Lys Trp Thr Thr Ser Leu Ser Ala Lys Phe
145                 150                 155                 160

Lys Cys Thr Ala Gly Asn Lys Val Ser Lys Glu Ser Ser Val Glu Pro
                165                 170                 175

Val Ser Cys Pro Glu Lys Gly Leu Asp
            180                 185
```

<210> 28
<211> 259
<212> PRT
<213> Artificial Sequence

<220>
<223> CD34 ectodomain

<400> 28

```
Ser Leu Asp Asn Asn Gly Thr Ala Thr Pro Glu Leu Pro Thr Gln Gly
1               5                   10                  15

Thr Phe Ser Asn Val Ser Thr Asn Val Ser Tyr Gln Glu Thr Thr Thr
            20                  25                  30

Pro Ser Thr Leu Gly Ser Thr Ser Leu His Pro Val Ser Gln His Gly
        35                  40                  45

Asn Glu Ala Thr Thr Asn Ile Thr Glu Thr Thr Val Lys Phe Thr Ser
```

50 55 60

Thr Ser Val Ile Thr Ser Val Tyr Gly Asn Thr Asn Ser Ser Val Gln
65 70 75 80

Ser Gln Thr Ser Val Ile Ser Thr Val Phe Thr Thr Pro Ala Asn Val
85 90 95

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

Ser Asp Leu Ser Thr Thr Ser Thr Ser Leu Ala Thr Ser Pro Thr Lys
115 120 125

Pro Tyr Thr Ser Ser Ser Pro Ile Leu Ser Asp Ile Lys Ala Glu Ile
130 135 140

Lys Cys Ser Gly Ile Arg Glu Val Lys Leu Thr Gln Gly Ile Cys Leu
145 150 155 160

Glu Gln Asn Lys Thr Ser Ser Cys Ala Glu Phe Lys Lys Asp Arg Gly
165 170 175

Glu Gly Leu Ala Arg Val Leu Cys Gly Glu Glu Gln Ala Asp Ala Asp
180 185 190

Ala Gly Ala Gln Val Cys Ser Leu Leu Leu Ala Gln Ser Glu Val Arg
195 200 205

Pro Gln Cys Leu Leu Leu Val Leu Ala Asn Arg Thr Glu Ile Ser Ser
210 215 220

Lys Leu Gln Leu Met Lys Lys His Gln Ser Asp Leu Lys Lys Leu Gly
225 230 235 240

Ile Leu Asp Phe Thr Glu Gln Asp Val Ala Ser His Gln Ser Tyr Ser
245 250 255

Gln Lys Thr

<210> 29
<211> 153
<212> PRT
<213> Artificial Sequence

<220>
<223> IL2

<400> 29

```
Met Tyr Arg Met Gln Leu Leu Ser Cys Ile Ala Leu Ser Leu Ala Leu
1               5                  10                  15

Val Thr Asn Ser Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu
            20                  25                  30

Gln Leu Glu His Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile
        35                  40                  45

Asn Asn Tyr Lys Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe
    50                  55                  60

Tyr Met Pro Lys Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu
65                  70                  75                  80

Glu Glu Leu Lys Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys
                85                  90                  95

Asn Phe His Leu Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile
            100                 105                 110

Val Leu Glu Leu Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala
        115                 120                 125

Asp Glu Thr Ala Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe
```

130 135 140

Cys Gln Ser Ile Ile Ser Thr Leu Thr
145 150

<210> 30
<211> 177
<212> PRT
<213> Artificial Sequence

<220>
<223> IL7

<400> 30

Met Phe His Val Ser Phe Arg Tyr Ile Phe Gly Leu Pro Pro Leu Ile
1 5 10 15

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

Asp Gly Lys Gln Tyr Glu Ser Val Leu Met Val Ser Ile Asp Gln Leu
35 40 45

Leu Asp Ser Met Lys Glu Ile Gly Ser Asn Cys Leu Asn Asn Glu Phe
50 55 60

Asn Phe Phe Lys Arg His Ile Cys Asp Ala Asn Lys Glu Gly Met Phe
65 70 75 80

Leu Phe Arg Ala Ala Arg Lys Leu Arg Gln Phe Leu Lys Met Asn Ser
85 90 95

Thr Gly Asp Phe Asp Leu His Leu Leu Lys Val Ser Glu Gly Thr Thr
100 105 110

Ile Leu Leu Asn Cys Thr Gly Gln Val Lys Gly Arg Lys Pro Ala Ala
115 120 125

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

Lys Glu Gln Lys Lys Leu Asn Asp Leu Cys Phe Leu Lys Arg Leu Leu
145 150 155 160

Gln Glu Ile Lys Thr Cys Trp Asn Lys Ile Leu Met Gly Thr Lys Glu
165 170 175

His

<210> 31
<211> 162
<212> PRT
<213> Artificial Sequence

<220>
<223> IL15

<400> 31

Met Arg Ile Ser Lys Pro His Leu Arg Ser Ile Ser Ile Gln Cys Tyr
1 5 10 15

Leu Cys Leu Leu Leu Asn Ser His Phe Leu Thr Glu Ala Gly Ile His
20 25 30

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

Asn Trp Val Asn Val Ile Ser Asp Leu Lys Lys Ile Glu Asp Leu Ile
50 55 60

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

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

Val Ile Ser Leu Glu Ser Gly Asp Ala Ser Ile His Asp Thr Val Glu
100 105 110

Asn Leu Ile Ile Leu Ala Asn Asn Ser Leu Ser Ser Asn Gly Asn Val
115 120 125

Thr Glu Ser Gly Cys Lys Glu Cys Glu Glu Leu Glu Glu Lys Asn Ile
130 135 140

Lys Glu Phe Leu Gln Ser Phe Val His Ile Val Gln Met Phe Ile Asn
145 150 155 160

Thr Ser

<210> 32
<211> 271
<212> PRT
<213> Artificial Sequence

<220>
<223> membrane-IL7

<400> 32

Met Ala His Val Ser Phe Arg Tyr Ile Phe Gly Leu Pro Pro Leu Ile
1 5 10 15

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

Asp Gly Lys Gln Tyr Glu Ser Val Leu Met Val Ser Ile Asp Gln Leu
35 40 45

Leu Asp Ser Met Lys Glu Ile Gly Ser Asn Cys Leu Asn Asn Glu Phe
50 55 60

Asn Phe Phe Lys Arg His Ile Cys Asp Ala Asn Lys Glu Gly Met Phe
65 70 75 80

```
Leu Phe Arg Ala Ala Arg Lys Leu Arg Gln Phe Leu Lys Met Asn Ser
                85                  90                  95

Thr Gly Asp Phe Asp Leu His Leu Leu Lys Val Ser Glu Gly Thr Thr
            100                 105                 110

Ile Leu Leu Asn Cys Thr Gly Gln Val Lys Gly Arg Lys Pro Ala Ala
        115                 120                 125

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

Lys Glu Gln Lys Lys Leu Asn Asp Leu Cys Phe Leu Lys Arg Leu Leu
145                 150                 155                 160

Gln Glu Ile Lys Thr Cys Trp Asn Lys Ile Leu Met Gly Thr Lys Glu
                165                 170                 175

His Ser Gly Gly Gly Ser Pro Ala Lys Pro Thr Thr Thr Pro Ala Pro
            180                 185                 190

Arg Pro Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu Ser Leu
        195                 200                 205

Arg Pro Glu Ala Cys Arg Pro Ala Ala Gly Gly Ala Val His Thr Arg
    210                 215                 220

Gly Leu Asp Phe Ala Cys Asp Ile Tyr Ile Trp Ala Pro Leu Ala Gly
225                 230                 235                 240

Thr Cys Gly Val Leu Leu Leu Ser Leu Val Ile Thr Leu Tyr Cys Asn
                245                 250                 255

His Arg Asn Arg Arg Arg Val Cys Lys Cys Pro Arg Pro Val Val
            260                 265                 270
```

<210> 33
<211> 256
<212> PRT
<213> Artificial Sequence

<220>
<223> membrane-IL15

<400> 33

```
Met Gly Leu Val Arg Arg Gly Ala Arg Ala Gly Pro Arg Met Pro Arg
1               5                   10                  15


Gly Trp Thr Ala Leu Cys Leu Leu Ser Leu Leu Pro Ser Gly Phe Met
            20                  25                  30


Ala Gly Ile His Val Phe Ile Leu Gly Cys Phe Ser Ala Gly Leu Pro
        35                  40                  45


Lys Thr Glu Ala Asn Trp Val Asn Val Ile Ser Asp Leu Lys Lys Ile
    50                  55                  60


Glu Asp Leu Ile Gln Ser Met His Ile Asp Ala Thr Leu Tyr Thr Glu
65                  70                  75                  80


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


Leu Glu Leu Gln Val Ile Ser Leu Glu Ser Gly Asp Ala Ser Ile His
            100                 105                 110


Asp Thr Val Glu Asn Leu Ile Ile Leu Ala Asn Asn Ser Leu Ser Ser
        115                 120                 125


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


Glu Lys Asn Ile Lys Glu Phe Leu Gln Ser Phe Val His Ile Val Gln
145                 150                 155                 160
```

```
Met Phe Ile Asn Thr Ser Ser Pro Ala Lys Pro Thr Thr Thr Pro Ala
                165                 170                 175

Pro Arg Pro Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu Ser
            180                 185                 190

Leu Arg Pro Glu Ala Cys Arg Pro Ala Ala Gly Gly Ala Val His Thr
        195                 200                 205

Arg Gly Leu Asp Phe Ala Cys Asp Ile Tyr Ile Trp Ala Pro Leu Ala
    210                 215                 220

Gly Thr Cys Gly Val Leu Leu Leu Ser Leu Val Ile Thr Leu Tyr Cys
225                 230                 235                 240

Asn His Arg Asn Arg Arg Arg Val Cys Lys Cys Pro Arg Pro Val Val
                245                 250                 255
```

<210> 34
<211> 251
<212> PRT
<213> Artificial Sequence

<220>
<223> IL2Ry complex

<400> 34

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

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

Arg Thr Phe Pro Lys Arg Gly Gln Thr Cys Val Val His Tyr Thr Gly
        35                  40                  45

Met Leu Glu Asp Gly Lys Lys Phe Asp Ser Ser Arg Asp Arg Asn Lys
```

50 55 60

Pro Phe Lys Phe Met Leu Gly Lys Gln Glu Val Ile Arg Gly Trp Glu
65 70 75 80

Glu Gly Val Ala Gln Met Ser Val Gly Gln Arg Ala Lys Leu Thr Ile
85 90 95

Ser Pro Asp Tyr Ala Tyr Gly Ala Thr Gly His Pro Gly Ile Ile Pro
100 105 110

Pro His Ala Thr Leu Val Phe Asp Val Glu Leu Leu Lys Leu Gly Glu
115 120 125

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

Val Val Ile Ser Val Gly Ser Met Gly Leu Ile Ile Ser Leu Leu Cys
145 150 155 160

Val Tyr Phe Trp Leu Glu Arg Thr Met Pro Arg Ile Pro Thr Leu Lys
165 170 175

Asn Leu Glu Asp Leu Val Thr Glu Tyr His Gly Asn Phe Ser Ala Trp
180 185 190

Ser Gly Val Ser Lys Gly Leu Ala Glu Ser Leu Gln Pro Asp Tyr Ser
195 200 205

Glu Arg Leu Cys Leu Val Ser Glu Ile Pro Pro Lys Gly Gly Ala Leu
210 215 220

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

Ala Pro Pro Cys Tyr Thr Leu Lys Pro Glu Thr
245 250

<210> 35

<400> 35
000

<210> 36
<211> 251
<212> PRT
<213> Artificial Sequence

<220>
<223> IL2Ry complex

<400> 36

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

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

Arg Thr Phe Pro Lys Arg Gly Gln Thr Cys Val Val His Tyr Thr Gly
35 40 45

Met Leu Glu Asp Gly Lys Lys Phe Asp Ser Ser Arg Asp Arg Asn Lys
50 55 60

Pro Phe Lys Phe Met Leu Gly Lys Gln Glu Val Ile Arg Gly Trp Glu
65 70 75 80

Glu Gly Val Ala Gln Met Ser Val Gly Gln Arg Ala Lys Leu Thr Ile
85 90 95

Ser Pro Asp Tyr Ala Tyr Gly Ala Thr Gly His Pro Gly Ile Ile Pro
100 105 110

Pro His Ala Thr Leu Val Phe Asp Val Glu Leu Leu Lys Leu Gly Glu
115 120 125

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

Val Val Ile Ser Val Gly Ser Met Gly Leu Ile Ile Ser Leu Leu Cys
145 150 155 160

Val Tyr Phe Trp Leu Glu Arg Thr Met Pro Arg Ile Pro Thr Leu Lys
165 170 175

Asn Leu Glu Asp Leu Val Thr Glu Tyr His Gly Asn Phe Ser Ala Trp
180 185 190

Ser Gly Val Ser Lys Gly Leu Ala Glu Ser Leu Gln Pro Asp Tyr Ser
195 200 205

Glu Arg Leu Cys Leu Val Ser Glu Ile Pro Pro Lys Gly Gly Ala Leu
210 215 220

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

Ala Pro Pro Cys Tyr Thr Leu Lys Pro Glu Thr
245 250

<210> 37
<211> 251
<212> PRT
<213> Artificial Sequence

<220>
<223> IL2Ry complex

<400> 37

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

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

```
Arg Thr Phe Pro Lys Arg Gly Gln Thr Cys Val Val His Tyr Thr Gly
        35                  40                  45

Met Leu Glu Asp Gly Lys Lys Phe Asp Ser Ser Arg Asp Arg Asn Lys
    50                  55                  60

Pro Phe Lys Phe Met Leu Gly Lys Gln Glu Val Ile Arg Gly Trp Glu
65                  70                  75                  80

Glu Gly Val Ala Gln Met Ser Val Gly Gln Arg Ala Lys Leu Thr Ile
                85                  90                  95

Ser Pro Asp Tyr Ala Tyr Gly Ala Thr Gly His Pro Gly Ile Ile Pro
            100                 105                 110

Pro His Ala Thr Leu Val Phe Asp Val Glu Leu Leu Lys Leu Gly Glu
        115                 120                 125

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

Val Val Ile Ser Val Gly Ser Met Gly Leu Ile Ile Ser Leu Leu Cys
145                 150                 155                 160

Val Tyr Phe Trp Leu Glu Arg Thr Met Pro Arg Ile Pro Thr Leu Lys
                165                 170                 175

Asn Leu Glu Asp Leu Val Thr Glu Tyr His Gly Asn Phe Ser Ala Trp
            180                 185                 190

Ser Gly Val Ser Lys Gly Leu Ala Glu Ser Leu Gln Pro Asp Tyr Ser
        195                 200                 205

Glu Arg Leu Cys Leu Val Ser Glu Ile Pro Pro Lys Gly Gly Ala Leu
    210                 215                 220
```

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

Ala Pro Pro Cys Tyr Thr Leu Lys Pro Glu Thr
245 250

<210> 38
<211> 251
<212> PRT
<213> Artificial Sequence

<220>
<223> IL2Ry complex

<400> 38

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

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

Arg Thr Phe Pro Lys Arg Gly Gln Thr Cys Val Val His Tyr Thr Gly
35 40 45

Met Leu Glu Asp Gly Lys Lys Phe Asp Ser Ser Arg Asp Arg Asn Lys
50 55 60

Pro Phe Lys Phe Met Leu Gly Lys Gln Glu Val Ile Arg Gly Trp Glu
65 70 75 80

Glu Gly Val Ala Gln Met Ser Val Gly Gln Arg Ala Lys Leu Thr Ile
85 90 95

Ser Pro Asp Tyr Ala Tyr Gly Ala Thr Gly His Pro Gly Ile Ile Pro
100 105 110

Pro His Ala Thr Leu Val Phe Asp Val Glu Leu Leu Lys Leu Gly Glu
115 120 125

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

Val Val Ile Ser Val Gly Ser Met Gly Leu Ile Ile Ser Leu Leu Cys
145                 150                 155                 160

Val Tyr Phe Trp Leu Glu Arg Thr Met Pro Arg Ile Pro Thr Leu Lys
                165                 170                 175

Asn Leu Glu Asp Leu Val Thr Glu Tyr His Gly Asn Phe Ser Ala Trp
            180                 185                 190

Ser Gly Val Ser Lys Gly Leu Ala Glu Ser Leu Gln Pro Asp Tyr Ser
        195                 200                 205

Glu Arg Leu Cys Leu Val Ser Glu Ile Pro Pro Lys Gly Gly Ala Leu
    210                 215                 220

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

Ala Pro Pro Cys Tyr Thr Leu Lys Pro Glu Thr
                245                 250
```

<210> 39
<211> 429
<212> PRT
<213> Artificial Sequence

<220>
<223> IL2Rb complex

<400> 39

```
Met Ala Leu Pro Val Thr Ala Leu Leu Leu Pro Leu Ala Leu Leu Leu
1               5                   10                  15

His Ala Ala Arg Pro Ile Leu Trp His Glu Met Trp His Glu Gly Leu
            20                  25                  30
```

```
Glu Glu Ala Ser Arg Leu Tyr Phe Gly Glu Arg Asn Val Lys Gly Met
        35                  40                  45

Phe Glu Val Leu Glu Pro Leu His Ala Met Met Glu Arg Gly Pro Gln
    50                  55                  60

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

Glu Ala Gln Glu Trp Cys Arg Lys Tyr Met Lys Ser Gly Asn Val Lys
                85                  90                  95

Asp Leu Leu Gln Ala Trp Asp Leu Tyr Tyr His Val Phe Arg Arg Ile
            100                 105                 110

Ser Lys Gly Lys Asp Thr Ile Pro Trp Leu Gly His Leu Leu Val Gly
        115                 120                 125

Leu Ser Gly Ala Phe Gly Phe Ile Ile Leu Val Tyr Leu Leu Ile Asn
    130                 135                 140

Cys Arg Asn Thr Gly Pro Trp Leu Lys Lys Val Leu Lys Cys Asn Thr
145                 150                 155                 160

Pro Asp Pro Ser Lys Phe Phe Ser Gln Leu Ser Ser Glu His Gly Gly
                165                 170                 175

Asp Val Gln Lys Trp Leu Ser Ser Pro Phe Pro Ser Ser Ser Phe Ser
            180                 185                 190

Pro Gly Gly Leu Ala Pro Glu Ile Ser Pro Leu Glu Val Leu Glu Arg
        195                 200                 205

Asp Lys Val Thr Gln Leu Leu Leu Gln Gln Asp Lys Val Pro Glu Pro
    210                 215                 220
```

```
Ala Ser Leu Ser Ser Asn His Ser Leu Thr Ser Cys Phe Thr Asn Gln
225                 230                 235                 240

Gly Tyr Phe Phe Phe His Leu Pro Asp Ala Leu Glu Ile Glu Ala Cys
                245                 250                 255

Gln Val Tyr Phe Thr Tyr Asp Pro Tyr Ser Glu Glu Asp Pro Asp Glu
            260                 265                 270

Gly Val Ala Gly Ala Pro Thr Gly Ser Ser Pro Gln Pro Leu Gln Pro
        275                 280                 285

Leu Ser Gly Glu Asp Asp Ala Tyr Cys Thr Phe Pro Ser Arg Asp Asp
    290                 295                 300

Leu Leu Leu Phe Ser Pro Ser Leu Leu Gly Gly Pro Ser Pro Pro Ser
305                 310                 315                 320

Thr Ala Pro Gly Gly Ser Gly Ala Gly Glu Glu Arg Met Pro Pro Ser
                325                 330                 335

Leu Gln Glu Arg Val Pro Arg Asp Trp Asp Pro Gln Pro Leu Gly Pro
            340                 345                 350

Pro Thr Pro Gly Val Pro Asp Leu Val Asp Phe Gln Pro Pro Pro Glu
        355                 360                 365

Leu Val Leu Arg Glu Ala Gly Glu Glu Val Pro Asp Ala Gly Pro Arg
    370                 375                 380

Glu Gly Val Ser Phe Pro Trp Ser Arg Pro Pro Gly Gln Gly Glu Phe
385                 390                 395                 400

Arg Ala Leu Asn Ala Arg Leu Pro Leu Asn Thr Asp Ala Tyr Leu Ser
                405                 410                 415
```

Leu Gln Glu Leu Gln Gly Gln Asp Pro Thr His Leu Val
420 425

<210> 40
<211> 429
<212> PRT
<213> Artificial Sequence

<220>
<223> IL2Rb complex

<400> 40

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

His Ala Ala Arg Pro Ile Leu Trp His Glu Met Trp His Glu Gly Leu
20 25 30

Glu Glu Ala Ser Arg Leu Tyr Phe Gly Glu Arg Asn Val Lys Gly Met
35 40 45

Phe Glu Val Leu Glu Pro Leu His Ala Met Met Glu Arg Gly Pro Gln
50 55 60

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

Glu Ala Gln Glu Trp Cys Arg Lys Tyr Met Lys Ser Gly Asn Val Lys
85 90 95

Asp Leu Leu Gln Ala Trp Asp Leu Tyr Tyr His Val Phe Arg Arg Ile
100 105 110

Ser Lys Gly Lys Asp Thr Ile Pro Trp Leu Gly His Leu Leu Val Gly
115 120 125

Leu Ser Gly Ala Phe Gly Phe Ile Ile Leu Val Tyr Leu Leu Ile Asn
130 135 140

```
Cys Arg Asn Thr Gly Pro Trp Leu Lys Lys Val Leu Lys Cys Asn Thr
145                 150                 155                 160

Pro Asp Pro Ser Lys Phe Phe Ser Gln Leu Ser Ser Glu His Gly Gly
                165                 170                 175

Asp Val Gln Lys Trp Leu Ser Ser Pro Phe Pro Ser Ser Ser Phe Ser
            180                 185                 190

Pro Gly Gly Leu Ala Pro Glu Ile Ser Pro Leu Glu Val Leu Glu Arg
        195                 200                 205

Asp Lys Val Thr Gln Leu Leu Leu Gln Gln Asp Lys Val Pro Glu Pro
    210                 215                 220

Ala Ser Leu Ser Ser Asn His Ser Leu Thr Ser Cys Phe Thr Asn Gln
225                 230                 235                 240

Gly Tyr Phe Phe Phe His Leu Pro Asp Ala Leu Glu Ile Glu Ala Cys
                245                 250                 255

Gln Val Tyr Phe Thr Tyr Asp Pro Tyr Ser Glu Glu Asp Pro Asp Glu
            260                 265                 270

Gly Val Ala Gly Ala Pro Thr Gly Ser Ser Pro Gln Pro Leu Gln Pro
        275                 280                 285

Leu Ser Gly Glu Asp Asp Ala Tyr Cys Thr Phe Pro Ser Arg Asp Asp
    290                 295                 300

Leu Leu Leu Phe Ser Pro Ser Leu Leu Gly Gly Pro Ser Pro Pro Ser
305                 310                 315                 320

Thr Ala Pro Gly Gly Ser Gly Ala Gly Glu Glu Arg Met Pro Pro Ser
                325                 330                 335
```

Leu Gln Glu Arg Val Pro Arg Asp Trp Asp Pro Gln Pro Leu Gly Pro
340 345 350

Pro Thr Pro Gly Val Pro Asp Leu Val Asp Phe Gln Pro Pro Pro Glu
355 360 365

Leu Val Leu Arg Glu Ala Gly Glu Glu Val Pro Asp Ala Gly Pro Arg
370 375 380

Glu Gly Val Ser Phe Pro Trp Ser Arg Pro Pro Gly Gln Gly Glu Phe
385 390 395 400

Arg Ala Leu Asn Ala Arg Leu Pro Leu Asn Thr Asp Ala Tyr Leu Ser
405 410 415

Leu Gln Glu Leu Gln Gly Gln Asp Pro Thr His Leu Val
420 425

<210> 41
<211> 429
<212> PRT
<213> Artificial Sequence

<220>
<223> IL2Rb complex

<400> 41

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

His Ala Ala Arg Pro Ile Leu Trp His Glu Met Trp His Glu Gly Leu
20 25 30

Glu Glu Ala Ser Arg Leu Tyr Phe Gly Glu Arg Asn Val Lys Gly Met
35 40 45

Phe Glu Val Leu Glu Pro Leu His Ala Met Met Glu Arg Gly Pro Gln
50 55 60

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

Glu Ala Gln Glu Trp Cys Arg Lys Tyr Met Lys Ser Gly Asn Val Lys
                85                  90                  95

Asp Leu Leu Gln Ala Trp Asp Leu Tyr Tyr His Val Phe Arg Arg Ile
            100                 105                 110

Ser Lys Gly Lys Asp Thr Ile Pro Trp Leu Gly His Leu Leu Val Gly
        115                 120                 125

Leu Ser Gly Ala Phe Gly Phe Ile Ile Leu Val Tyr Leu Leu Ile Asn
    130                 135                 140

Cys Arg Asn Thr Gly Pro Trp Leu Lys Lys Val Leu Lys Cys Asn Thr
145                 150                 155                 160

Pro Asp Pro Ser Lys Phe Phe Ser Gln Leu Ser Ser Glu His Gly Gly
                165                 170                 175

Asp Val Gln Lys Trp Leu Ser Ser Pro Phe Pro Ser Ser Ser Phe Ser
            180                 185                 190

Pro Gly Gly Leu Ala Pro Glu Ile Ser Pro Leu Glu Val Leu Glu Arg
        195                 200                 205

Asp Lys Val Thr Gln Leu Leu Leu Gln Gln Asp Lys Val Pro Glu Pro
    210                 215                 220

Ala Ser Leu Ser Ser Asn His Ser Leu Thr Ser Cys Phe Thr Asn Gln
225                 230                 235                 240

Gly Tyr Phe Phe Phe His Leu Pro Asp Ala Leu Glu Ile Glu Ala Cys
                245                 250                 255
```

```
Gln Val Tyr Phe Thr Tyr Asp Pro Tyr Ser Glu Glu Asp Pro Asp Glu
            260                 265                 270

Gly Val Ala Gly Ala Pro Thr Gly Ser Ser Pro Gln Pro Leu Gln Pro
        275                 280                 285

Leu Ser Gly Glu Asp Asp Ala Tyr Cys Thr Phe Pro Ser Arg Asp Asp
    290                 295                 300

Leu Leu Leu Phe Ser Pro Ser Leu Leu Gly Gly Pro Ser Pro Pro Ser
305                 310                 315                 320

Thr Ala Pro Gly Gly Ser Gly Ala Gly Glu Glu Arg Met Pro Pro Ser
                325                 330                 335

Leu Gln Glu Arg Val Pro Arg Asp Trp Asp Pro Gln Pro Leu Gly Pro
            340                 345                 350

Pro Thr Pro Gly Val Pro Asp Leu Val Asp Phe Gln Pro Pro Pro Glu
        355                 360                 365

Leu Val Leu Arg Glu Ala Gly Glu Glu Val Pro Asp Ala Gly Pro Arg
    370                 375                 380

Glu Gly Val Ser Phe Pro Trp Ser Arg Pro Pro Gly Gln Gly Glu Phe
385                 390                 395                 400

Arg Ala Leu Asn Ala Arg Leu Pro Leu Asn Thr Asp Ala Tyr Leu Ser
                405                 410                 415

Leu Gln Glu Leu Gln Gly Gln Asp Pro Thr His Leu Val
            420                 425
```

<210> 42
<211> 429
<212> PRT
<213> Artificial Sequence

<220>
<223> IL2Rb complex

<400> 42

```
Met Ala Leu Pro Val Thr Ala Leu Leu Leu Pro Leu Ala Leu Leu Leu
1               5                  10                  15


His Ala Ala Arg Pro Ile Leu Trp His Glu Met Trp His Glu Gly Leu
            20                  25                  30


Glu Glu Ala Ser Arg Leu Tyr Phe Gly Glu Arg Asn Val Lys Gly Met
        35                  40                  45


Phe Glu Val Leu Glu Pro Leu His Ala Met Met Glu Arg Gly Pro Gln
    50                  55                  60


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


Glu Ala Gln Glu Trp Cys Arg Lys Tyr Met Lys Ser Gly Asn Val Lys
                85                  90                  95


Asp Leu Leu Gln Ala Trp Asp Leu Tyr Tyr His Val Phe Arg Arg Ile
            100                 105                 110


Ser Lys Gly Lys Asp Thr Ile Pro Trp Leu Gly His Leu Leu Val Gly
        115                 120                 125


Leu Ser Gly Ala Phe Gly Phe Ile Ile Leu Val Tyr Leu Leu Ile Asn
    130                 135                 140


Cys Arg Asn Thr Gly Pro Trp Leu Lys Lys Val Leu Lys Cys Asn Thr
145                 150                 155                 160


Pro Asp Pro Ser Lys Phe Phe Ser Gln Leu Ser Ser Glu His Gly Gly
                165                 170                 175
```

```
Asp Val Gln Lys Trp Leu Ser Ser Pro Phe Pro Ser Ser Ser Phe Ser
            180                 185                 190

Pro Gly Gly Leu Ala Pro Glu Ile Ser Pro Leu Glu Val Leu Glu Arg
        195                 200                 205

Asp Lys Val Thr Gln Leu Leu Leu Gln Gln Asp Lys Val Pro Glu Pro
    210                 215                 220

Ala Ser Leu Ser Ser Asn His Ser Leu Thr Ser Cys Phe Thr Asn Gln
225                 230                 235                 240

Gly Tyr Phe Phe Phe His Leu Pro Asp Ala Leu Glu Ile Glu Ala Cys
                245                 250                 255

Gln Val Tyr Phe Thr Tyr Asp Pro Tyr Ser Glu Glu Asp Pro Asp Glu
            260                 265                 270

Gly Val Ala Gly Ala Pro Thr Gly Ser Ser Pro Gln Pro Leu Gln Pro
        275                 280                 285

Leu Ser Gly Glu Asp Asp Ala Tyr Cys Thr Phe Pro Ser Arg Asp Asp
    290                 295                 300

Leu Leu Leu Phe Ser Pro Ser Leu Leu Gly Gly Pro Ser Pro Pro Ser
305                 310                 315                 320

Thr Ala Pro Gly Gly Ser Gly Ala Gly Glu Glu Arg Met Pro Pro Ser
                325                 330                 335

Leu Gln Glu Arg Val Pro Arg Asp Trp Asp Pro Gln Pro Leu Gly Pro
            340                 345                 350

Pro Thr Pro Gly Val Pro Asp Leu Val Asp Phe Gln Pro Pro Pro Glu
        355                 360                 365

Leu Val Leu Arg Glu Ala Gly Glu Glu Val Pro Asp Ala Gly Pro Arg
```

370 375 380

Glu Gly Val Ser Phe Pro Trp Ser Arg Pro Pro Gly Gln Gly Glu Phe
385 390 395 400

Arg Ala Leu Asn Ala Arg Leu Pro Leu Asn Thr Asp Ala Tyr Leu Ser
405 410 415

Leu Gln Glu Leu Gln Gly Gln Asp Pro Thr His Leu Val
420 425

<210> 43
<211> 429
<212> PRT
<213> Artificial Sequence

<220>
<223> IL7Ra complex

<400> 43

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

His Ala Ala Arg Pro Ile Leu Trp His Glu Met Trp His Glu Gly Leu
20 25 30

Glu Glu Ala Ser Arg Leu Tyr Phe Gly Glu Arg Asn Val Lys Gly Met
35 40 45

Phe Glu Val Leu Glu Pro Leu His Ala Met Met Glu Arg Gly Pro Gln
50 55 60

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

Glu Ala Gln Glu Trp Cys Arg Lys Tyr Met Lys Ser Gly Asn Val Lys
85 90 95

```
Asp Leu Leu Gln Ala Trp Asp Leu Tyr Tyr His Val Phe Arg Arg Ile
            100                 105                 110

Ser Lys Gly Lys Asp Thr Ile Pro Trp Leu Gly His Leu Leu Val Gly
        115                 120                 125

Leu Ser Gly Ala Phe Gly Phe Ile Ile Leu Val Tyr Leu Leu Ile Asn
    130                 135                 140

Cys Arg Asn Thr Gly Pro Trp Leu Lys Lys Val Leu Lys Cys Asn Thr
145                 150                 155                 160

Pro Asp Pro Ser Lys Phe Phe Ser Gln Leu Ser Ser Glu His Gly Gly
                165                 170                 175

Asp Val Gln Lys Trp Leu Ser Ser Pro Phe Pro Ser Ser Ser Phe Ser
            180                 185                 190

Pro Gly Gly Leu Ala Pro Glu Ile Ser Pro Leu Glu Val Leu Glu Arg
        195                 200                 205

Asp Lys Val Thr Gln Leu Leu Leu Gln Gln Asp Lys Val Pro Glu Pro
    210                 215                 220

Ala Ser Leu Ser Ser Asn His Ser Leu Thr Ser Cys Phe Thr Asn Gln
225                 230                 235                 240

Gly Tyr Phe Phe Phe His Leu Pro Asp Ala Leu Glu Ile Glu Ala Cys
                245                 250                 255

Gln Val Tyr Phe Thr Tyr Asp Pro Tyr Ser Glu Glu Asp Pro Asp Glu
            260                 265                 270

Gly Val Ala Gly Ala Pro Thr Gly Ser Ser Pro Gln Pro Leu Gln Pro
        275                 280                 285

Leu Ser Gly Glu Asp Asp Ala Tyr Cys Thr Phe Pro Ser Arg Asp Asp
```

290 295 300

Leu Leu Leu Phe Ser Pro Ser Leu Leu Gly Gly Pro Ser Pro Pro Ser
305 310 315 320

Thr Ala Pro Gly Gly Ser Gly Ala Gly Glu Glu Arg Met Pro Pro Ser
325 330 335

Leu Gln Glu Arg Val Pro Arg Asp Trp Asp Pro Gln Pro Leu Gly Pro
340 345 350

Pro Thr Pro Gly Val Pro Asp Leu Val Asp Phe Gln Pro Pro Pro Glu
355 360 365

Leu Val Leu Arg Glu Ala Gly Glu Glu Val Pro Asp Ala Gly Pro Arg
370 375 380

Glu Gly Val Ser Phe Pro Trp Ser Arg Pro Pro Gly Gln Gly Glu Phe
385 390 395 400

Arg Ala Leu Asn Ala Arg Leu Pro Leu Asn Thr Asp Ala Tyr Leu Ser
405 410 415

Leu Gln Glu Leu Gln Gly Gln Asp Pro Thr His Leu Val
420 425

<210> 44
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> glycine spacer

<400> 44

Gly Gly Gly Ser
1

<210> 45
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> glycine spacer

<400> 45

Gly Gly Gly Ser Gly Gly Gly
1 5

<210> 46
<211> 3
<212> PRT
<213> Artificial Sequence

<220>
<223> glycine spacer

<400> 46

Gly Gly Gly
1

<210> 47
<211> 251
<212> PRT
<213> Artificial Sequence

<220>
<223> IL2Ry complex

<400> 47

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

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

Arg Thr Phe Pro Lys Arg Gly Gln Thr Cys Val Val His Tyr Thr Gly
35 40 45

```
Met Leu Glu Asp Gly Lys Lys Phe Asp Ser Ser Arg Asp Arg Asn Lys
    50                  55                  60

Pro Phe Lys Phe Met Leu Gly Lys Gln Glu Val Ile Arg Gly Trp Glu
65                  70                  75                  80

Glu Gly Val Ala Gln Met Ser Val Gly Gln Arg Ala Lys Leu Thr Ile
                85                  90                  95

Ser Pro Asp Tyr Ala Tyr Gly Ala Thr Gly His Pro Gly Ile Ile Pro
            100                 105                 110

Pro His Ala Thr Leu Val Phe Asp Val Glu Leu Leu Lys Leu Gly Glu
        115                 120                 125

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

Val Val Ile Ser Val Gly Ser Met Gly Leu Ile Ile Ser Leu Leu Cys
145                 150                 155                 160

Val Tyr Phe Trp Leu Glu Arg Thr Met Pro Arg Ile Pro Thr Leu Lys
                165                 170                 175

Asn Leu Glu Asp Leu Val Thr Glu Tyr His Gly Asn Phe Ser Ala Trp
            180                 185                 190

Ser Gly Val Ser Lys Gly Leu Ala Glu Ser Leu Gln Pro Asp Tyr Ser
        195                 200                 205

Glu Arg Leu Cys Leu Val Ser Glu Ile Pro Pro Lys Gly Gly Ala Leu
    210                 215                 220

Gly Glu Gly Pro Gly Ala Ser Pro Cys Asn Gln His Ser Pro Tyr Trp
225                 230                 235                 240
```

Ala Pro Pro Cys Tyr Thr Leu Lys Pro Glu Thr
245 250

<210> 48
<211> 429
<212> PRT
<213> Artificial Sequence

<220>
<223> IL2Rb complex

<400> 48

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

His Ala Ala Arg Pro Ile Leu Trp His Glu Met Trp His Glu Gly Leu
20 25 30

Glu Glu Ala Ser Arg Leu Tyr Phe Gly Glu Arg Asn Val Lys Gly Met
35 40 45

Phe Glu Val Leu Glu Pro Leu His Ala Met Met Glu Arg Gly Pro Gln
50 55 60

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

Glu Ala Gln Glu Trp Cys Arg Lys Tyr Met Lys Ser Gly Asn Val Lys
85 90 95

Asp Leu Leu Gln Ala Trp Asp Leu Tyr Tyr His Val Phe Arg Arg Ile
100 105 110

Ser Lys Gly Lys Asp Thr Ile Pro Trp Leu Gly His Leu Leu Val Gly
115 120 125

Leu Ser Gly Ala Phe Gly Phe Ile Ile Leu Val Tyr Leu Leu Ile Asn
130 135 140

```
Cys Arg Asn Thr Gly Pro Trp Leu Lys Lys Val Leu Lys Cys Asn Thr
145                 150                 155                 160

Pro Asp Pro Ser Lys Phe Phe Ser Gln Leu Ser Ser Glu His Gly Gly
                165                 170                 175

Asp Val Gln Lys Trp Leu Ser Ser Pro Phe Pro Ser Ser Ser Phe Ser
            180                 185                 190

Pro Gly Gly Leu Ala Pro Glu Ile Ser Pro Leu Glu Val Leu Glu Arg
        195                 200                 205

Asp Lys Val Thr Gln Leu Leu Leu Gln Gln Asp Lys Val Pro Glu Pro
    210                 215                 220

Ala Ser Leu Ser Ser Asn His Ser Leu Thr Ser Cys Phe Thr Asn Gln
225                 230                 235                 240

Gly Tyr Phe Phe Phe His Leu Pro Asp Ala Leu Glu Ile Glu Ala Cys
                245                 250                 255

Gln Val Tyr Phe Thr Tyr Asp Pro Tyr Ser Glu Glu Asp Pro Asp Glu
            260                 265                 270

Gly Val Ala Gly Ala Pro Thr Gly Ser Ser Pro Gln Pro Leu Gln Pro
        275                 280                 285

Leu Ser Gly Glu Asp Asp Ala Tyr Cys Thr Phe Pro Ser Arg Asp Asp
    290                 295                 300

Leu Leu Leu Phe Ser Pro Ser Leu Leu Gly Gly Pro Ser Pro Pro Ser
305                 310                 315                 320

Thr Ala Pro Gly Gly Ser Gly Ala Gly Glu Glu Arg Met Pro Pro Ser
                325                 330                 335
```

Leu Gln Glu Arg Val Pro Arg Asp Trp Asp Pro Gln Pro Leu Gly Pro
340 345 350

Pro Thr Pro Gly Val Pro Asp Leu Val Asp Phe Gln Pro Pro Pro Glu
355 360 365

Leu Val Leu Arg Glu Ala Gly Glu Glu Val Pro Asp Ala Gly Pro Arg
370 375 380

Glu Gly Val Ser Phe Pro Trp Ser Arg Pro Pro Gly Gln Gly Glu Phe
385 390 395 400

Arg Ala Leu Asn Ala Arg Leu Pro Leu Asn Thr Asp Ala Tyr Leu Ser
405 410 415

Leu Gln Glu Leu Gln Gly Gln Asp Pro Thr His Leu Val
420 425

<210> 49
<211> 429
<212> PRT
<213> Artificial Sequence

<220>
<223> IL2Ra complex

<400> 49

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

His Ala Ala Arg Pro Ile Leu Trp His Glu Met Trp His Glu Gly Leu
20 25 30

Glu Glu Ala Ser Arg Leu Tyr Phe Gly Glu Arg Asn Val Lys Gly Met
35 40 45

Phe Glu Val Leu Glu Pro Leu His Ala Met Met Glu Arg Gly Pro Gln
50 55 60

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

Glu Ala Gln Glu Trp Cys Arg Lys Tyr Met Lys Ser Gly Asn Val Lys
                85                  90                  95

Asp Leu Leu Gln Ala Trp Asp Leu Tyr Tyr His Val Phe Arg Arg Ile
            100                 105                 110

Ser Lys Gly Lys Asp Thr Ile Pro Trp Leu Gly His Leu Leu Val Gly
        115                 120                 125

Leu Ser Gly Ala Phe Gly Phe Ile Ile Leu Val Tyr Leu Leu Ile Asn
    130                 135                 140

Cys Arg Asn Thr Gly Pro Trp Leu Lys Lys Val Leu Lys Cys Asn Thr
145                 150                 155                 160

Pro Asp Pro Ser Lys Phe Phe Ser Gln Leu Ser Ser Glu His Gly Gly
                165                 170                 175

Asp Val Gln Lys Trp Leu Ser Ser Pro Phe Pro Ser Ser Ser Phe Ser
            180                 185                 190

Pro Gly Gly Leu Ala Pro Glu Ile Ser Pro Leu Glu Val Leu Glu Arg
        195                 200                 205

Asp Lys Val Thr Gln Leu Leu Leu Gln Gln Asp Lys Val Pro Glu Pro
    210                 215                 220

Ala Ser Leu Ser Ser Asn His Ser Leu Thr Ser Cys Phe Thr Asn Gln
225                 230                 235                 240

Gly Tyr Phe Phe Phe His Leu Pro Asp Ala Leu Glu Ile Glu Ala Cys
                245                 250                 255
```

```
Gln Val Tyr Phe Thr Tyr Asp Pro Tyr Ser Glu Glu Asp Pro Asp Glu
            260                 265                 270

Gly Val Ala Gly Ala Pro Thr Gly Ser Ser Pro Gln Pro Leu Gln Pro
        275                 280                 285

Leu Ser Gly Glu Asp Asp Ala Tyr Cys Thr Phe Pro Ser Arg Asp Asp
    290                 295                 300

Leu Leu Leu Phe Ser Pro Ser Leu Leu Gly Gly Pro Ser Pro Pro Ser
305                 310                 315                 320

Thr Ala Pro Gly Gly Ser Gly Ala Gly Glu Glu Arg Met Pro Pro Ser
                325                 330                 335

Leu Gln Glu Arg Val Pro Arg Asp Trp Asp Pro Gln Pro Leu Gly Pro
            340                 345                 350

Pro Thr Pro Gly Val Pro Asp Leu Val Asp Phe Gln Pro Pro Pro Glu
        355                 360                 365

Leu Val Leu Arg Glu Ala Gly Glu Glu Val Pro Asp Ala Gly Pro Arg
    370                 375                 380

Glu Gly Val Ser Phe Pro Trp Ser Arg Pro Pro Gly Gln Gly Glu Phe
385                 390                 395                 400

Arg Ala Leu Asn Ala Arg Leu Pro Leu Asn Thr Asp Ala Tyr Leu Ser
                405                 410                 415

Leu Gln Glu Leu Gln Gly Gln Asp Pro Thr His Leu Val
            420                 425
```

<210> 50
<211> 251
<212> PRT
<213> Artificial Sequence

<220>
<223> IL7Ra complex

<400> 50

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

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

Arg Thr Phe Pro Lys Arg Gly Gln Thr Cys Val Val His Tyr Thr Gly
        35                  40                  45

Met Leu Glu Asp Gly Lys Lys Phe Asp Ser Ser Arg Asp Arg Asn Lys
    50                  55                  60

Pro Phe Lys Phe Met Leu Gly Lys Gln Glu Val Ile Arg Gly Trp Glu
65                  70                  75                  80

Glu Gly Val Ala Gln Met Ser Val Gly Gln Arg Ala Lys Leu Thr Ile
                85                  90                  95

Ser Pro Asp Tyr Ala Tyr Gly Ala Thr Gly His Pro Gly Ile Ile Pro
            100                 105                 110

Pro His Ala Thr Leu Val Phe Asp Val Glu Leu Leu Lys Leu Gly Glu
        115                 120                 125

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

Val Val Ile Ser Val Gly Ser Met Gly Leu Ile Ile Ser Leu Leu Cys
145                 150                 155                 160

Val Tyr Phe Trp Leu Glu Arg Thr Met Pro Arg Ile Pro Thr Leu Lys
                165                 170                 175
```

                                                50
Asn Leu Glu Asp Leu Val Thr Glu Tyr His Gly Asn Phe Ser Ala Trp
            180   185   190

Ser Gly Val Ser Lys Gly Leu Ala Glu Ser Leu Gln Pro Asp Tyr Ser
        195   200   205

Glu Arg Leu Cys Leu Val Ser Glu Ile Pro Pro Lys Gly Gly Ala Leu
    210   215   220

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

Ala Pro Pro Cys Tyr Thr Leu Lys Pro Glu Thr
                245   250

<210> 51
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> 2a-like self-cleaving peptide

<400> 51

Arg Ala Glu Gly Arg Gly Ser Leu Leu Thr Cys Gly Asp Val Glu Glu
1   5   10   15

Asn Pro Gly Pro
            20

<210> 52
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> 2a-like self-cleaving peptide

<400> 52

Gln Cys Thr Asn Tyr Ala Leu Leu Lys Leu Ala Gly Asp Val Glu Ser

1 5 10 15

Asn Pro Gly Pro
20

<210> 53
<211> 448
<212> PRT
<213> Artificial Sequence

<220>
<223> FITC-CAR

<400> 53

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

Val Thr Ile Ser Cys Ser Gly Ser Thr Ser Asn Ile Gly Asn Asn Tyr
20 25 30

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

Tyr Asp Val Ser Lys Arg Pro Ser Gly Val Pro Asp Arg Phe Ser Gly
50 55 60

Ser Lys Ser Gly Asn Ser Ala Ser Leu Asp Ile Ser Gly Leu Gln Ser
65 70 75 80

Glu Asp Glu Ala Asp Tyr Tyr Cys Ala Ala Trp Asp Asp Ser Leu Ser
85 90 95

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

Ser Gly Ser Gly Lys Pro Gly Ser Gly Glu Gly Ser Thr Lys Gly Gln
115 120 125

```
Val Gln Leu Val Glu Ser Gly Gly Asn Leu Val Gln Pro Gly Gly Ser
    130                 135                 140

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

Met Ser Trp Val Arg Gln Ala Pro Gly Gly Gly Leu Glu Trp Val Ala
                165                 170                 175

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

Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Val Tyr Leu
        195                 200                 205

Gln Met Asn Ser Leu Arg Val Glu Asp Thr Ala Val Tyr Tyr Cys Ala
    210                 215                 220

Arg Arg Ser Tyr Asp Ser Ser Gly Tyr Trp Gly His Phe Tyr Ser Tyr
225                 230                 235                 240

Met Asp Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Glu Ser
                245                 250                 255

Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Met Phe Trp Val Leu Val
            260                 265                 270

Val Val Gly Gly Val Leu Ala Cys Tyr Ser Leu Leu Val Thr Val Ala
        275                 280                 285

Phe Ile Ile Phe Trp Val Lys Arg Gly Arg Lys Lys Leu Leu Tyr Ile
    290                 295                 300

Phe Lys Gln Pro Phe Met Arg Pro Val Gln Thr Thr Gln Glu Glu Asp
305                 310                 315                 320

Gly Cys Ser Cys Arg Phe Pro Glu Glu Glu Glu Gly Gly Cys Glu Leu
```

325 330 335

Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly
340 345 350

Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr
355 360 365

Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys
370 375 380

Pro Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys
385 390 395 400

Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg
405 410 415

Arg Arg Gly Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala
420 425 430

Thr Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
435 440 445