SEQUENCE LISTING

<110> Adaptimmune Ltd

<120> T cell receptors

<130> P58244WO/NJL

<150> GB1313377.2
<151> 2013-07-26

<160> 28

<170> PatentIn version 3.5

<210> 1
<211> 9
<212> PRT
<213> Homo sapiens

<400> 1

Phe Met Asn Lys Phe Ile Tyr Glu Ile
1 5

<210> 2
<211> 205
<212> PRT
<213> Homo sapiens

<400> 2

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

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

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

Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
50 55 60

Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Val Asn Ser Asp Ser Gly
85 90 95

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

Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
115 120 125

Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
130 135 140

```
Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val
145                 150                 155                 160


Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
                165                 170                 175


Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
            180                 185                 190


Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
        195                 200                 205


<210>  3
<211>  242
<212>  PRT
<213>  Homo sapiens

<400>  3

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


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


Tyr Trp Tyr Gln Gln Ser Leu Asp Gln Gly Leu Gln Phe Leu Ile Gln
        35                  40                  45


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


Ser Ala Gln Gln Phe Pro Asp Leu His Ser Glu Leu Asn Leu Ser Ser
65                  70                  75                  80


Leu Glu Leu Gly Asp Ser Ala Leu Tyr Phe Cys Ala Ser Ser Leu Gly
                85                  90                  95


Gly Glu Ser Glu Gln Tyr Phe Gly Pro Gly Thr Arg Leu Thr Val Thr
            100                 105                 110


Glu Asp Leu Lys Asn Val Phe Pro Pro Glu Val Ala Val Phe Glu Pro
        115                 120                 125


Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala Thr Leu Val Cys Leu
    130                 135                 140


Ala Thr Gly Phe Tyr Pro Asp His Val Glu Leu Ser Trp Trp Val Asn
145                 150                 155                 160


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

Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys Leu Ser Ser Arg Leu
180 185 190

Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg Asn His Phe Arg Cys
195 200 205

Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp Glu Trp Thr Gln Asp
210 215 220

Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala Glu Ala Trp Gly Arg
225 230 235 240

Ala Asp

<210> 4
<211> 205
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<213> Artificial sequence

<220>
<223> T cell receptor alpha chain extracellular domain

<400> 4

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

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

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

Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
50 55 60

Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Val Asn Ser Asp Ser Gly
85 90 95

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

Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
115 120 125

Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
130 135 140

Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Cys Val
145 150 155 160

Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
165 170 175

Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
180 185 190

Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
195 200 205

<210> 5
<211> 242
<212> PRT
<213> Artificial sequence

<220>
<223> T cell receptor beta chain extracellular domain

<400> 5

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

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

Tyr Trp Tyr Gln Gln Ser Leu Asp Gln Gly Leu Gln Phe Leu Ile Gln
35 40 45

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

Ser Ala Gln Gln Phe Pro Asp Leu His Ser Glu Leu Asn Leu Ser Ser
65 70 75 80

Leu Glu Leu Gly Asp Ser Ala Leu Tyr Phe Cys Ala Ser Ser Leu Gly
85 90 95

Gly Glu Ser Glu Gln Tyr Phe Gly Pro Gly Thr Arg Leu Thr Val Thr
100 105 110

Glu Asp Leu Lys Asn Val Phe Pro Pro Glu Val Ala Val Phe Glu Pro
115 120 125

Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala Thr Leu Val Cys Leu
130 135 140

Ala Thr Gly Phe Tyr Pro Asp His Val Glu Leu Ser Trp Trp Val Asn
145 150 155 160

Gly Lys Glu Val His Ser Gly Val Cys Thr Asp Pro Gln Pro Leu Lys
165 170 175

Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Ala Leu Ser Ser Arg Leu
180 185 190

Arg Val Ser Ala Thr Phe Trp Gln Asp Pro Arg Asn His Phe Arg Cys
195 200 205

Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp Glu Trp Thr Gln Asp
210 215 220

Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala Glu Ala Trp Gly Arg
225 230 235 240

Ala Asp

<210> 6
<211> 205
<212> PRT
<213> Artificial sequence

<220>
<223> T cell receptor alpha chain variable domain

<400> 6

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

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

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

Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
50 55 60

Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Val Asn Ser Asp Ser Gly
85 90 95

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

Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
115 120 125

Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
130 135 140

Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val
145 150 155 160

Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
165 170 175

Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
180 185 190

Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
195 200 205

<210> 7
<211> 205
<212> PRT
<213> Artificial sequence

<220>
<223> T cell receptor alpha chain variable domain

<400> 7

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

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

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

Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
50 55 60

Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Val Asn Ser Asp Ser Ser
85 90 95

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

Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
115 120 125

Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
130 135 140

Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val
145 150 155 160

Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
165 170 175

```
Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
            180                 185                 190

Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
        195                 200                 205
```

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

<220>
<223> T cell receptor alpha chain variable domain

<400> 8

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

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

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

Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
    50                  55                  60

Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65                  70                  75                  80

Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Val Asn Ser Asp Ser Gly
                85                  90                  95

Val Ala Leu Asn Phe Gly Lys Gly Thr Ser Leu Leu Val Thr Pro His
            100                 105                 110

Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
        115                 120                 125

Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
    130                 135                 140

Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val
145                 150                 155                 160

Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
                165                 170                 175

Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
            180                 185                 190

Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
        195                 200                 205
```

<210> 9
<211> 205
<212> PRT
<213> Artificial sequence

<220>
<223> T cell receptor alpha chain variable domain

<400> 9

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


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


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


Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
    50                  55                  60


Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65                  70                  75                  80


Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Val Asn Ser Asp Ser Gly
                85                  90                  95


Val Ala Leu Asn Phe Gly Lys Gly Thr Ser Leu Leu Val Thr Pro His
            100                 105                 110


Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
        115                 120                 125


Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
    130                 135                 140


Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val
145                 150                 155                 160


Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
                165                 170                 175


Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
            180                 185                 190


Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
        195                 200                 205
```

<210> 10
<211> 205
<212> PRT
<213> Artificial sequence

<220>
<223> T cell receptor alpha chain variable domain

<400> 10

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

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

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

Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
50 55 60

Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Val Asn Ser Gln Ser Gly
85 90 95

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

Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
115 120 125

Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
130 135 140

Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val
145 150 155 160

Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
165 170 175

Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
180 185 190

Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
195 200 205

<210> 11
<211> 205
<212> PRT
<213> Artificial sequence

<220>
<223> T cell receptor alpha chain variable domain

<400> 11

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

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

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

Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
    50                  55                  60

Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65                  70                  75                  80

Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Val Asn Ser Gln Ser Gly
                85                  90                  95

Tyr Ser Leu Asn Phe Gly Lys Gly Thr Ser Leu Leu Val Thr Pro His
            100                 105                 110

Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
        115                 120                 125

Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
    130                 135                 140

Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val
145                 150                 155                 160

Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
                165                 170                 175

Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
            180                 185                 190

Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
        195                 200                 205


<210>  12
<211>  205
<212>  PRT
<213>  Artificial sequence

<220>
<223>  T cell receptor alpha chain variable domain

<400>  12

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

Ala Ile Ala Ser Leu Asn Cys Thr Tyr Ser Asp Arg Gly Ser Gln Ser
            20                  25                  30
```

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

Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
    50                  55                  60

Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65                  70                  75                  80

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

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

Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
        115                 120                 125

Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
    130                 135                 140

Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val
145                 150                 155                 160

Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
                165                 170                 175

Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
            180                 185                 190

Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
        195                 200                 205


<210>  13
<211>  205
<212>  PRT
<213>  Artificial sequence

<220>
<223>  T cell receptor alpha chain variable domain

<400>  13

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

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

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

```
Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
    50                  55                  60

Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65                  70                  75                  80

Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Val Asn Ser Gln Ser Gly
                85                  90                  95

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

Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
        115                 120                 125

Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
    130                 135                 140

Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val
145                 150                 155                 160

Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
                165                 170                 175

Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
            180                 185                 190

Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
        195                 200                 205
```

<210> 14
<211> 205
<212> PRT
<213> Artificial sequence

<220>
<223> T cell receptor alpha chain variable domain

<400> 14

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

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

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

Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
    50                  55                  60

Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65                  70                  75                  80
```

```
Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Val Asn Ser Gln Ser Gly
                85                  90                  95

Val Ala Leu Asn Phe Gly Lys Gly Thr Ser Leu Leu Val Thr Pro His
            100                 105                 110

Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
        115                 120                 125

Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
    130                 135                 140

Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val
145                 150                 155                 160

Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
                165                 170                 175

Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
            180                 185                 190

Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
        195                 200                 205


<210>  15
<211>  205
<212>  PRT
<213>  Artificial sequence

<220>
<223>  T cell receptor alpha chain variable domain

<400>  15

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

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

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

Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
    50                  55                  60

Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65                  70                  75                  80

Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Val Asn Ser Gln Asn Gly
                85                  90                  95
```

```
Tyr Ala Leu Asn Phe Gly Lys Gly Thr Ser Leu Leu Val Thr Pro His
            100                 105                 110

Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
        115                 120                 125

Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
    130                 135                 140

Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val
145                 150                 155                 160

Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
                165                 170                 175

Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
            180                 185                 190

Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
        195                 200                 205
```

<210> 16
<211> 205
<212> PRT
<213> Artificial sequence

<220>
<223> T cell receptor alpha chain variable domain

<400> 16

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

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

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

Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
    50                  55                  60

Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65                  70                  75                  80

Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Val Asn Ser Asp Ser Gly
                85                  90                  95

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

Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
        115                 120                 125
```

```
Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
    130                 135                 140

Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val
145                 150                 155                 160

Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
                165                 170                 175

Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
            180                 185                 190

Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
        195                 200                 205
```

<210> 17
<211> 205
<212> PRT
<213> Artificial sequence

<220>
<223> T cell receptor alpha chain variable domain

<400> 17

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

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

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

Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
    50                  55                  60

Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65                  70                  75                  80

Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Val Asn Ser Asp Ser Gly
                85                  90                  95

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

Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
        115                 120                 125

Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
    130                 135                 140
```

```
Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val
145                 150                 155                 160

Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
                165                 170                 175

Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
            180                 185                 190

Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
        195                 200                 205
```

<210> 18
<211> 205
<212> PRT
<213> Artificial sequence

<220>
<223> T cell receptor alpha chain variable domain

<400> 18

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

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

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

Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
    50                  55                  60

Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65                  70                  75                  80

Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Val Asn Ser Asp Ser Ser
                85                  90                  95

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

Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
        115                 120                 125

Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
    130                 135                 140

Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val
145                 150                 155                 160

Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
                165                 170                 175
```

Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
180 185 190

Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
195 200 205

<210> 19
<211> 205
<212> PRT
<213> Artificial sequence

<220>
<223> T cell receptor alpha chain variable domain

<400> 19

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

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

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

Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
50 55 60

Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Val Asn Ser Asp Ser Gly
85 90 95

Val Ala Leu Asn Phe Gly Lys Gly Thr Ser Leu Leu Val Thr Pro His
100 105 110

Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
115 120 125

Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
130 135 140

Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val
145 150 155 160

Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
165 170 175

Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
180 185 190

Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
195 200 205

<210> 20
<211> 205
<212> PRT
<213> Artificial sequence

<220>
<223> T cell receptor alpha chain variable domain

<400> 20

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

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

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

Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp Gly Arg Phe Thr Ala Gln
50 55 60

Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu Leu Ile Arg Asp Ser Gln
65 70 75 80

Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Val Asn Ser Gln Ser Gly
85 90 95

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

Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser
115 120 125

Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn
130 135 140

Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Thr Val
145 150 155 160

Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp
165 170 175

Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile
180 185 190

Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
195 200 205

<210> 21
<211> 615

<212> DNA
<213> Artificial sequence

<220>
<223> T cell receptor alpha chain extracellular domain

<400> 21
caaaaagaag ttgagcagaa ttctggaccc ctcagtgttc cagagggagc cattgcctct 60

ctcaactgca cttacagtga ccgaggttcc cagtccttct tctggtacag acaatattct 120

gggaaaagcc ctgagttgat aatgtccata tactccaatg gtgacaaaga agatggaagg 180

tttacagcac agctcaataa agccagccag tatgtttctc tgctcatcag agactcccag 240

cccagtgatt cagccaccta cctctgtgcc gtgaatagtg attccgggta tgcactcaac 300

ttcggcaaag gcacctcgct gttggtcaca ccccatatcc agaaccctga ccctgccgtg 360

taccagctga gagactctaa gtcgagtgac aagtctgtct gcctattcac cgattttgat 420

tctcaaacaa atgtgtcaca aagtaaggat tctgatgtgt atatcacaga caaatgtgtg 480

ctagacatga ggtctatgga cttcaagagc aacagtgctg tggcctggag caacaaatct 540

gactttgcat gtgcaaacgc cttcaacaac agcattattc cagaagacac cttcttcccc 600

agcccagaaa gttcc 615

<210> 22
<211> 726
<212> DNA
<213> Artificial sequence

<220>
<223> T cell receptor alpha chain extracellular domain

<400> 22
gattctggag tcacacaaac cccaaagcac ctgatcacag caactggaca gcgagtgacg 60

ctgagatgct cccctaggtc tggagacctc tctgtgtact ggtaccaaca gagcctggac 120

cagggcctcc agttcctcat tcagtattat aatggagaag agagagcaaa aggaaacatt 180

cttgaacgat tctccgcaca acagttccct gacttgcact ctgaactaaa cctgagctct 240

ctggagctgg gggactcagc tttgtatttc tgtgccagca gcctcggggg ggaatctgag 300

cagtacttcg ggccgggcac caggctcacg gtcacagagg acctgaaaaa cgtgttccca 360

cccgaggtcg ctgtgtttga gccatcagaa gcagagatct cccacaccca aaaggccaca 420

ctggtgtgcc tggccaccgg tttctacccc gaccacgtgg agctgagctg gtgggtgaat 480

gggaaggagg tgcacagtgg ggtctgcaca gacccgcagc ccctcaagga gcagcccgcc 540

ctcaatgact ccagatacgc tctgagcagc cgcctgaggg tctcggccac cttctggcag 600

gacccccgca accacttccg ctgtcaagtc cagttctacg ggctctcgga gaatgacgag 660

tggacccagg atagggccaa acccgtcacc cagatcgtca gcgccgaggc ctggggtaga 720

gcagac 726

<210> 23
<211> 1867

<212> DNA
<213> Artificial sequence

<220>
<223> T cell receptor fused to porcine teschovirus-1 2A

<400> 23
gctagccgcc accatgatga agtccctgcg ggtgctgctg gtcatcctgt ggctgcagct 60

gtcctgggtc tggtcccagc agaaagaggt ggagcagaac agcggccctc tgagcgtgcc 120

cgagggcgct atcgccagcc tgaactgcac ctacagcgac agaggcagcc agagcttctt 180

ctggtacaga cagtacagcg gcaagagccc cgagctgatc atgagcatct acagcaacgg 240

cgacaaagag gacggccggt tcaccgccca gctgaacaag gccagccagt acgtgtccct 300

gctgatccgg gacagccagc ccagcgacag cgccacctac ctgtgcgccg tgaacagcga 360

ctccggctac gccctgaact tcggcaaggg caccagcctg ctggtgacac cccacattca 420

gaaccccgac cccgccgtgt accagctgcg ggacagcaag agcagcgaca agagcgtgtg 480

cctgttcacc gacttcgaca gccagaccaa cgtgtcccag agcaaggaca gcgacgtgta 540

catcaccgac aagaccgtgc tggacatgcg gagcatggac ttcaagagca acagcgccgt 600

ggcctggtcc aacaagagcg acttcgcctg cgccaacgcc ttcaacaaca gcatcatccc 660

cgaggacaca tttttcccaa gccccgagag cagctgcgac gtcaaactgg tggagaagtc 720

cttcgagaca gacaccaacc tgaacttcca gaacctgagc gtgatcggct tcagaatcct 780

gctgctgaag gtggccggct tcaatctgct gatgaccctg cggctgtggt ccagcggcag 840

cagagccaag agaagcggat ccggcgccac caacttcagc ctgctgaagc aggccggcga 900

cgtggaggaa aaccctggcc ctaggatggg cttccggctg ctgtgctgcg tggccttctg 960

cctgctggga gccggccctg tggatagcgg cgtgacccag acccccaagc acctgatcac 1020

cgccaccggc cagagagtga ccctgcgctg cagccctaga agcggcgacc tgtccgtgta 1080

ctggtatcag cagagcctgg accagggact gcagttcctc atccagtact acaacggcga 1140

ggaacgggcc aagggcaaca tcctggaaag attcagcgcc cagcagttcc ccgacctgca 1200

cagcgagctg aacctgagca gcctggaact gggcgactcc gccctgtact tctgcgccag 1260

cagcctgggc ggcgagagcg aacagtactt cggccctggc acccggctga cggtaaccga 1320

ggacctgaag aacgtgttcc ccccagaggt ggccgtgttc gagccctctg aggccgagat 1380

cagccacacc cagaaagcca ccctggtctg cctggccacc ggcttctacc ccgaccacgt 1440

ggaactgtct tggtgggtga acggcaaaga ggtgcacagc ggcgtcagca ccgaccctca 1500

gcccctgaaa gagcagcccg ccctgaacga cagccggtac tgcctgagca gcagactgcg 1560

ggtgtccgcc accttctggc agaacccccg gaaccacttc agatgccagg tgcagttcta 1620

cggcctgagc gagaacgacg agtggaccca ggaccgggcc aagcctgtga cccagatcgt 1680

gtctgccgaa gcatgggggc gcgccgattg cggcttcaca agcgagagct accagcaggg 1740

cgtgctgagc gccaccatcc tgtacgagat cctgctgggc aaggccaccc tgtacgccgt 1800

gctggtgtcc gctctggtgc tgatggccat ggtgaaacgg aaggacagcc ggggctaata 1860

agtcgac 1867

<210> 24
<211> 614
<212> PRT
<213> Artificial sequence

<220>
<223> T cell receptor fused to porcine teschovirus-1 2A

<400> 24

Met Met Lys Ser Leu Arg Val Leu Leu Val Ile Leu Trp Leu Gln Leu
1 5 10 15

Ser Trp Val Trp Ser Gln Gln Lys Glu Val Glu Gln Asn Ser Gly Pro
20 25 30

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

Asp Arg Gly Ser Gln Ser Phe Phe Trp Tyr Arg Gln Tyr Ser Gly Lys
50 55 60

Ser Pro Glu Leu Ile Met Ser Ile Tyr Ser Asn Gly Asp Lys Glu Asp
65 70 75 80

Gly Arg Phe Thr Ala Gln Leu Asn Lys Ala Ser Gln Tyr Val Ser Leu
85 90 95

Leu Ile Arg Asp Ser Gln Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala
100 105 110

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

Leu Leu Val Thr Pro His Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln
130 135 140

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

Phe Asp Ser Gln Thr Asn Val Ser Gln Ser Lys Asp Ser Asp Val Tyr
165 170 175

Ile Thr Asp Lys Thr Val Leu Asp Met Arg Ser Met Asp Phe Lys Ser
180 185 190

Asn Ser Ala Val Ala Trp Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn
195 200 205

Ala Phe Asn Asn Ser Ile Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro
210 215 220

```
Glu Ser Ser Cys Asp Val Lys Leu Val Glu Lys Ser Phe Glu Thr Asp
225                 230                 235                 240

Thr Asn Leu Asn Phe Gln Asn Leu Ser Val Ile Gly Phe Arg Ile Leu
                245                 250                 255

Leu Leu Lys Val Ala Gly Phe Asn Leu Leu Met Thr Leu Arg Leu Trp
            260                 265                 270

Ser Ser Gly Ser Arg Ala Lys Arg Ser Gly Ser Gly Ala Thr Asn Phe
        275                 280                 285

Ser Leu Leu Lys Gln Ala Gly Asp Val Glu Glu Asn Pro Gly Pro Arg
    290                 295                 300

Met Gly Phe Arg Leu Leu Cys Cys Val Ala Phe Cys Leu Leu Gly Ala
305                 310                 315                 320

Gly Pro Val Asp Ser Gly Val Thr Gln Thr Pro Lys His Leu Ile Thr
                325                 330                 335

Ala Thr Gly Gln Arg Val Thr Leu Arg Cys Ser Pro Arg Ser Gly Asp
            340                 345                 350

Leu Ser Val Tyr Trp Tyr Gln Gln Ser Leu Asp Gln Gly Leu Gln Phe
        355                 360                 365

Leu Ile Gln Tyr Tyr Asn Gly Glu Glu Arg Ala Lys Gly Asn Ile Leu
    370                 375                 380

Glu Arg Phe Ser Ala Gln Gln Phe Pro Asp Leu His Ser Glu Leu Asn
385                 390                 395                 400

Leu Ser Ser Leu Glu Leu Gly Asp Ser Ala Leu Tyr Phe Cys Ala Ser
                405                 410                 415

Ser Leu Gly Gly Glu Ser Glu Gln Tyr Phe Gly Pro Gly Thr Arg Leu
            420                 425                 430

Thr Val Thr Glu Asp Leu Lys Asn Val Phe Pro Pro Glu Val Ala Val
        435                 440                 445

Phe Glu Pro Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala Thr Leu
    450                 455                 460

Val Cys Leu Ala Thr Gly Phe Tyr Pro Asp His Val Glu Leu Ser Trp
465                 470                 475                 480

Trp Val Asn Gly Lys Glu Val His Ser Gly Val Ser Thr Asp Pro Gln
                485                 490                 495
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Pro Leu Lys Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys Leu Ser
500 505 510

Ser Arg Leu Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg Asn His
515 520 525

Phe Arg Cys Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp Glu Trp
530 535 540

Thr Gln Asp Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala Glu Ala
545 550 555 560

Trp Gly Arg Ala Asp Cys Gly Phe Thr Ser Glu Ser Tyr Gln Gln Gly
565 570 575

Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys Ala Thr
580 585 590

Leu Tyr Ala Val Leu Val Ser Ala Leu Val Leu Met Ala Met Val Lys
595 600 605

Arg Lys Asp Ser Arg Gly
610

<210> 25
<211> 45
<212> DNA
<213> Artificial sequence

<220>
<223> PCR primer

<400> 25
gaattccata tgcaaaaaga agttgaacaa aattctggac ccctc 45

<210> 26
<211> 36
<212> DNA
<213> Artificial sequence

<220>
<223> PCR primer

<400> 26
ttgtcagtcg acttagagtc tctcagctgg tacacg 36

<210> 27
<211> 45
<212> DNA
<213> Artificial sequence

<220>
<223> PCR primer

<400> 27
gaattccata tggattctgg agttacacaa accccaaagc acctg 45

<210> 28
<211> 32
<212> DNA
<213> Artificial sequence

<220>
<223> PCR primer

<400> 28
tagaaaccgg tggccaggca caccagtgtg gc 32