SEQUENCE LISTING

<110> NVIP Pty Ltd
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<120> TUMOUR NECROSIS FACTOR ANTIBODIES AND METHODS OF USING THE SAME

<130> P120969.WO.01

<150> US 61/529020
<151> 2011-08-30

<160> 22

<170> PatentIn version 3.5

<210> 1
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> Caninised anti-TNF Mab VK domain

<400> 1

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

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

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

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

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

Glu Asp Val Ala Val Tyr Tyr Cys Gln Arg Tyr Asn Arg Ala Pro Tyr
85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
100 105

<210> 2
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
<223> Caninised anti-TNF MAb VH domain

<400> 2

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

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

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

Ser Ala Ile Thr Trp Asn Ser Gly His Ile Asp Tyr Ala Asp Ser Val
    50                  55                  60

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

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

Ala Lys Val Ser Tyr Leu Ser Thr Ala Ser Ser Leu Asp Tyr Trp Gly
            100                 105                 110

Gln Gly Thr Leu Val Thr Val Ser Ser
        115                 120


<210>  3
<211>  217
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Caninised anti-TNF MAb kappa light chain

<400>  3

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

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

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

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

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

```
Glu Asp Val Ala Val Tyr Tyr Cys Gln Arg Tyr Asn Arg Ala Pro Tyr
                85                  90                  95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Asn Asp Ala Gln
            100                 105                 110

Pro Ala Val Tyr Leu Phe Gln Pro Ser Pro Asp Gln Leu His Thr Gly
        115                 120                 125

Ser Ala Ser Val Val Cys Leu Leu Asn Ser Phe Tyr Pro Lys Asp Ile
    130                 135                 140

Asn Val Lys Trp Lys Val Asp Gly Val Ile Gln Asp Thr Gly Ile Gln
145                 150                 155                 160

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

Thr Leu Thr Met Ser Ser Thr Glu Tyr Leu Ser His Glu Leu Tyr Ser
            180                 185                 190

Cys Glu Ile Thr His Lys Ser Leu Pro Ser Thr Leu Ile Lys Ser Phe
        195                 200                 205

Gln Arg Ser Glu Cys Gln Arg Val Asp
    210                 215
```

<210> 4
<211> 452
<212> PRT
<213> Artificial Sequence

<220>
<223> Caninised anti-TNF Mab heavy chain A type constant domain

<400> 4

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

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

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

Ser Ala Ile Thr Trp Asn Ser Gly His Ile Asp Tyr Ala Asp Ser Val
    50                  55                  60

Glu Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
```

```
65                  70                  75                  80

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

Ala Lys Val Ser Tyr Leu Ser Thr Ala Ser Ser Leu Asp Tyr Trp Gly
            100                 105                 110

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

Val Phe Pro Leu Ala Pro Ser Cys Gly Ser Thr Ser Gly Ser Thr Val
    130                 135                 140

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

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

Val Leu Gln Ser Ser Gly Leu His Ser Leu Ser Ser Met Val Thr Val
            180                 185                 190

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

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

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

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

Arg Thr Pro Glu Val Thr Cys Val Val Leu Asp Leu Gly Arg Glu Asp
            260                 265                 270

Pro Glu Val Gln Ile Ser Trp Phe Val Asp Gly Lys Glu Val His Thr
        275                 280                 285

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

Val Ser Val Leu Pro Ile Glu His Gln Asp Trp Leu Thr Gly Lys Glu
305                 310                 315                 320
```

```
Phe Lys Cys Arg Val Asn His Ile Asp Leu Pro Ser Pro Ile Glu Arg
                325                 330                 335

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

Leu Pro Pro Ser Pro Lys Glu Leu Ser Ser Ser Asp Thr Val Ser Ile
        355                 360                 365

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

Gln Ser Asn Gly Gln Gln Glu Pro Glu Arg Lys His Arg Met Thr Pro
385                 390                 395                 400

Pro Gln Leu Asp Glu Asp Gly Ser Tyr Phe Leu Tyr Ser Lys Leu Ser
                405                 410                 415

Val Asp Lys Ser Arg Trp Gln Gln Gly Asp Pro Phe Thr Cys Ala Val
            420                 425                 430

Met His Glu Thr Leu Gln Asn His Tyr Thr Asp Leu Ser Leu Ser His
        435                 440                 445

Ser Pro Gly Lys
    450
```

<210> 5
<211> 456
<212> PRT
<213> Artificial Sequence

<220>
<223> Caninised anti-TNF Mab heavy chain B type constant domain

<400> 5

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

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

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

Ser Ala Ile Thr Trp Asn Ser Gly His Ile Asp Tyr Ala Asp Ser Val
    50                  55                  60

Glu Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
```

```
65                  70                  75                  80

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

Ala Lys Val Ser Tyr Leu Ser Thr Ala Ser Ser Leu Asp Tyr Trp Gly
            100                 105                 110

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

Val Phe Pro Leu Ala Pro Ser Cys Gly Ser Thr Ser Gly Ser Thr Val
    130                 135                 140

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

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

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

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

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

Gly Arg Val Pro Arg Pro Pro Asp Cys Pro Lys Cys Pro Ala Pro Glu
225                 230                 235                 240

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

Thr Leu Leu Ile Ala Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
            260                 265                 270

Leu Asp Pro Glu Asp Pro Glu Val Gln Ile Ser Trp Phe Val Asp Gly
        275                 280                 285

Lys Gln Met Gln Thr Ala Lys Thr Gln Pro Arg Glu Glu Gln Phe Asn
    290                 295                 300

Gly Thr Tyr Arg Val Val Ser Val Leu Pro Ile Gly His Gln Asp Trp
305                 310                 315                 320
```

```
Leu Lys Gly Lys Gln Phe Thr Cys Lys Val Asn Asn Lys Ala Leu Pro
                325                 330                 335

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

Pro Ser Val Tyr Val Leu Pro Pro Ser Arg Glu Glu Leu Ser Lys Asn
        355                 360                 365

Thr Val Ser Leu Thr Cys Leu Ile Lys Asp Phe Tyr Pro Pro Asp Ile
    370                 375                 380

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

Arg Thr Thr Pro Pro Gln Leu Asp Glu Asp Gly Ser Tyr Phe Leu Tyr
                405                 410                 415

Ser Lys Leu Ser Val Asp Lys Ser Arg Trp Gln Arg Gly Asp Thr Phe
            420                 425                 430

Ile Cys Ala Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Glu
        435                 440                 445

Ser Leu Ser His Ser Pro Gly Lys
    450                 455
```

<210> 6
<211> 454
<212> PRT
<213> Artificial Sequence

<220>
<223> Caninised anti-TNF Mab heavy chain C type constant domain

<400> 6

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

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

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

Ser Ala Ile Thr Trp Asn Ser Gly His Ile Asp Tyr Ala Asp Ser Val
    50                  55                  60

Glu Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
```

```
65                  70                  75                  80

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

Ala Lys Val Ser Tyr Leu Ser Thr Ala Ser Ser Leu Asp Tyr Trp Gly
            100                 105                 110

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

Val Phe Pro Leu Ala Pro Ser Cys Gly Ser Gln Ser Gly Ser Thr Val
    130                 135                 140

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

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

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

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

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

Cys Lys Cys Asn Cys Asn Asn Cys Pro Cys Pro Gly Cys Gly Leu Leu
225                 230                 235                 240

Gly Gly Pro Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Ile Leu
                245                 250                 255

Val Thr Ala Arg Thr Pro Thr Val Thr Cys Val Val Val Asp Leu Asp
            260                 265                 270

Pro Glu Asn Pro Glu Val Gln Ile Ser Trp Phe Val Asp Ser Lys Gln
        275                 280                 285

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

Tyr Arg Val Val Ser Val Leu Pro Ile Gly His Gln Asp Trp Leu Ser
305                 310                 315                 320
```

```
Gly Lys Gln Phe Lys Cys Lys Val Asn Asn Lys Ala Leu Pro Ser Pro
                325                 330                 335

Ile Glu Glu Ile Ile Ser Lys Thr Pro Gly Gln Ala His Gln Pro Asn
            340                 345                 350

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

Thr Leu Thr Cys Leu Val Lys Asp Phe Phe Pro Pro Glu Ile Asp Val
    370                 375                 380

Glu Trp Gln Ser Asn Gly Gln Gln Glu Pro Glu Ser Lys Tyr Arg Met
385                 390                 395                 400

Thr Pro Pro Gln Leu Asp Glu Asp Gly Ser Tyr Phe Leu Tyr Ser Lys
                405                 410                 415

Leu Ser Val Asp Lys Ser Arg Trp Gln Arg Gly Asp Thr Phe Ile Cys
            420                 425                 430

Ala Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Ile Ser Leu
        435                 440                 445

Ser His Ser Pro Gly Lys
    450
```

<210> 7
<211> 452
<212> PRT
<213> Artificial Sequence

<220>
<223> Caninised anti-TNF Mab heavy chain D type constant domain

<400> 7

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

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

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

Ser Ala Ile Thr Trp Asn Ser Gly His Ile Asp Tyr Ala Asp Ser Val
    50                  55                  60

Glu Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
```

```
65                  70                  75                  80

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

Ala Lys Val Ser Tyr Leu Ser Thr Ala Ser Ser Leu Asp Tyr Trp Gly
            100                 105                 110

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

Val Phe Pro Leu Ala Pro Ser Cys Gly Ser Thr Ser Gly Ser Thr Val
    130                 135                 140

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

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

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

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

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

Cys Lys Cys Ile Ser Pro Cys Pro Val Pro Glu Ser Leu Gly Gly Pro
225                 230                 235                 240

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

Arg Thr Pro Glu Ile Thr Cys Val Val Leu Asp Leu Gly Arg Glu Asp
            260                 265                 270

Pro Glu Val Gln Ile Ser Trp Phe Val Asp Gly Lys Glu Val His Thr
        275                 280                 285

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

Val Ser Val Leu Pro Ile Glu His Gln Asp Trp Leu Thr Gly Lys Glu
305                 310                 315                 320
```

```
Phe Lys Cys Arg Val Asn His Ile Gly Leu Pro Ser Pro Ile Glu Arg
                325                 330                 335

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

Leu Pro Pro Ser Pro Lys Glu Leu Ser Ser Ser Asp Thr Val Thr Leu
        355                 360                 365

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

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

Pro Gln Leu Asp Glu Asp Gly Ser Tyr Phe Leu Tyr Ser Lys Leu Ser
                405                 410                 415

Val Asp Lys Ser Arg Trp Gln Gln Gly Asp Thr Phe Thr Cys Ala Val
            420                 425                 430

Met His Glu Ala Leu Gln Asn His Tyr Thr Asp Leu Ser Leu Ser His
        435                 440                 445

Ser Pro Gly Lys
    450
```

<210> 8
<211> 217
<212> PRT
<213> Artificial Sequence

<220>
<223> Chimeric anti-TNF MAb. Human VK - canine kappa light chain

<400> 8

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

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

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

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

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
```

65 70 75 80

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

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Asn Asp Ala Gln
100 105 110

Pro Ala Val Tyr Leu Phe Gln Pro Ser Pro Asp Gln Leu His Thr Gly
115 120 125

Ser Ala Ser Val Val Cys Leu Leu Asn Ser Phe Tyr Pro Lys Asp Ile
130 135 140

Asn Val Lys Trp Lys Val Asp Gly Val Ile Gln Asp Thr Gly Ile Gln
145 150 155 160

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

Thr Leu Thr Met Ser Ser Thr Glu Tyr Leu Ser His Glu Leu Tyr Ser
180 185 190

Cys Glu Ile Thr His Lys Ser Leu Pro Ser Thr Leu Ile Lys Ser Phe
195 200 205

Gln Arg Ser Glu Cys Gln Arg Val Asp
210 215

<210> 9
<211> 402
<212> PRT
<213> Artificial Sequence

<220>
<223> Chimeric anti-TNF MAb. Human VH - canine heavy chain type B constant domain

<400> 9

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

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

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

Ser Ala Ile Thr Trp Asn Ser Gly His Ile Asp Tyr Ala Asp Ser Val

```
    50                  55                  60

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

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

Ala Lys Val Ser Tyr Leu Ser Thr Ala Ser Ser Leu Asp Tyr Trp Gly
            100                 105                 110

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

Val Phe Pro Leu Ala Pro Ser Cys Gly Ser Thr Ser Gly Ser Thr Val
    130                 135                 140

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

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

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

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

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

Gly Arg Val Pro Arg Pro Pro Asp Cys Pro Lys Cys Pro Ala Pro Glu
225                 230                 235                 240

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

Thr Leu Leu Ile Ala Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
            260                 265                 270

Leu Asp Pro Glu Asp Pro Glu Val Gln Ile Ser Trp Phe Val Asp Gly
        275                 280                 285

Lys Gln Met Gln Thr Ala Lys Thr Gln Pro Arg Glu Glu Gln Phe Asn
    290                 295                 300
```

```
Gly Thr Tyr Arg Val Val Ser Val Leu Pro Ile Gly His Gln Asp Trp
305                 310                 315                 320

Leu Lys Gly Lys Gln Phe Thr Cys Lys Val Asn Asn Lys Ala Leu Pro
                325                 330                 335

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

Pro Ser Val Tyr Val Leu Pro Pro Ser Arg Glu Glu Leu Ser Lys Asn
        355                 360                 365

Thr Val Ser Leu Thr Cys Leu Ile Lys Asp Phe Tyr Pro Pro Asp Ile
    370                 375                 380

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

Arg Thr
```

<210> 10
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> VL FR1

<400> 10

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

Glu Lys Val Thr Ile Thr Cys
            20
```

<210> 11
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> VL FR2

<400> 11

```
Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Lys Leu Leu Ile Tyr
1               5                   10                  15
```

<210> 12
<211> 32
<212> PRT

<213> Artificial Sequence

<220>
<223> VL FR3

<400> 12

Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr
1 5 10 15

Leu Thr Ile Ser Ser Leu Glu Pro Glu Asp Val Ala Val Tyr Tyr Cys
20 25 30

<210> 13
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> VL FR4

<400> 13

Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
1 5 10

<210> 14
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> VH1 FR1

<400> 14

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

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe
20 25

<210> 15
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> VH1 FR2

<400> 15

Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ser
1 5 10

<210> 16
<211> 32

<212> PRT
<213> Artificial Sequence

<220>
<223> VH1 FR3

<400> 16

Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr Leu Gln
1 5 10 15

Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Lys
20 25 30

<210> 17
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> VH1 FR4

<400> 17

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
1 5 10

<210> 18
<211> 480
<212> PRT
<213> Artificial Sequence

<220>
<223> ca148-HCB

<400> 18

Met Gly Phe Gly Leu Ser Trp Val Phe Leu Val Ala Leu Leu Arg Gly
1 5 10 15

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

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ile Phe
35 40 45

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

Glu Trp Val Ala Phe Met Ser Tyr Asp Gly Ser Asn Lys Lys Tyr Ala
65 70 75 80

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

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

Tyr Tyr Cys Ala Arg Asp Arg Gly Ile Ala Ala Gly Gly Asn Tyr Tyr
        115                 120                 125

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

Ser Ala Ser Thr Thr Ala Pro Ser Val Phe Pro Leu Ala Pro Ser Cys
145                 150                 155                 160

Gly Ser Thr Ser Gly Ser Thr Val Ala Leu Ala Cys Leu Val Ser Gly
                165                 170                 175

Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ser Leu Thr
            180                 185                 190

Ser Gly Val His Thr Phe Pro Ser Val Leu Gln Ser Ser Gly Leu Tyr
        195                 200                 205

Ser Leu Ser Ser Met Val Thr Val Pro Ser Ser Arg Trp Pro Ser Glu
    210                 215                 220

Thr Phe Thr Cys Asn Val Ala His Pro Ala Ser Lys Thr Lys Val Asp
225                 230                 235                 240

Lys Pro Val Pro Lys Arg Glu Asn Gly Arg Val Pro Arg Pro Pro Asp
                245                 250                 255

Cys Pro Lys Cys Pro Ala Pro Glu Met Leu Gly Gly Pro Ser Val Phe
            260                 265                 270

Ile Phe Pro Pro Lys Pro Lys Asp Thr Leu Leu Ile Ala Arg Thr Pro
        275                 280                 285

Glu Val Thr Cys Val Val Val Asp Leu Asp Pro Glu Asp Pro Glu Val
    290                 295                 300

Gln Ile Ser Trp Phe Val Asp Gly Lys Gln Met Gln Thr Ala Lys Thr
305                 310                 315                 320

Gln Pro Arg Glu Glu Gln Phe Asn Gly Thr Tyr Arg Val Val Ser Val
                325                 330                 335

Leu Pro Ile Gly His Gln Asp Trp Leu Lys Gly Lys Gln Phe Thr Cys
            340                 345                 350
```

```
Lys Val Asn Asn Lys Ala Leu Pro Ser Pro Ile Glu Arg Thr Ile Ser
        355                 360                 365

Lys Ala Arg Gly Gln Ala His Gln Pro Ser Val Tyr Val Leu Pro Pro
    370                 375                 380

Ser Arg Glu Glu Leu Ser Lys Asn Thr Val Ser Leu Thr Cys Leu Ile
385                 390                 395                 400

Lys Asp Phe Tyr Pro Pro Asp Ile Asp Val Glu Trp Gln Ser Asn Gly
                405                 410                 415

Gln Gln Glu Pro Glu Ser Lys Tyr Arg Thr Thr Pro Pro Gln Leu Asp
            420                 425                 430

Glu Asp Gly Ser Tyr Phe Leu Tyr Ser Lys Leu Ser Val Asp Lys Ser
        435                 440                 445

Arg Trp Gln Arg Gly Asp Thr Phe Ile Cys Ala Val Met His Glu Ala
    450                 455                 460

Leu His Asn His Tyr Thr Gln Glu Ser Leu Ser His Ser Pro Gly Lys
465                 470                 475                 480
```

<210> 19
<211> 238
<212> PRT
<213> Artificial Sequence

<220>
<223> ca148-kLC

<400> 19

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

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

Leu Ser Pro Gly Glu Lys Ala Thr Ile Ser Cys Arg Ala Ser Gln Ser
        35                  40                  45

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

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

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

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

Asn Trp Pro Pro Phe Thr Phe Gly Pro Gly Thr Lys Val Asp Ile Lys
        115                 120                 125

Arg Asn Asp Ala Gln Pro Ala Val Tyr Leu Phe Gln Pro Ser Pro Asp
    130                 135                 140

Gln Leu His Thr Gly Ser Ala Ser Val Val Cys Leu Leu Asn Ser Phe
145                 150                 155                 160

Tyr Pro Lys Asp Ile Asn Val Lys Trp Lys Val Asp Gly Val Ile Gln
                165                 170                 175

Asp Thr Gly Ile Gln Glu Ser Val Thr Glu Gln Asp Lys Asp Ser Thr
            180                 185                 190

Tyr Ser Leu Ser Ser Thr Leu Thr Met Ser Ser Thr Glu Tyr Leu Ser
        195                 200                 205

His Glu Leu Tyr Ser Cys Glu Ile Thr His Lys Ser Leu Pro Ser Thr
    210                 215                 220

Leu Ile Lys Ser Phe Gln Arg Ser Glu Cys Gln Arg Val Asp
225                 230                 235
```

<210> 20
<211> 452
<212> PRT
<213> Artificial Sequence

<220>
<223> Chimeric anti-TNF MAb. Human VH - canine heavy chain type A constant domain

<400> 20

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

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

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

```
Ser Ala Ile Thr Trp Asn Ser Gly His Ile Asp Tyr Ala Asp Ser Val
    50                  55                  60

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

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

Ala Lys Val Ser Tyr Leu Ser Thr Ala Ser Ser Leu Asp Tyr Trp Gly
            100                 105                 110

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

Val Phe Pro Leu Ala Pro Ser Cys Gly Ser Thr Ser Gly Ser Thr Val
    130                 135                 140

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

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

Val Leu Gln Ser Ser Gly Leu His Ser Leu Ser Ser Met Val Thr Val
            180                 185                 190

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

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

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

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

Arg Thr Pro Glu Val Thr Cys Val Val Leu Asp Leu Gly Arg Glu Asp
            260                 265                 270

Pro Glu Val Gln Ile Ser Trp Phe Val Asp Gly Lys Glu Val His Thr
        275                 280                 285

Ala Lys Thr Gln Ser Arg Glu Gln Gln Phe Asn Gly Thr Tyr Arg Val
    290                 295                 300
```

```
Val Ser Val Leu Pro Ile Glu His Gln Asp Trp Leu Thr Gly Lys Glu
305                 310                 315                 320

Phe Lys Cys Arg Val Asn His Ile Asp Leu Pro Ser Pro Ile Glu Arg
                325                 330                 335

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

Leu Pro Pro Ser Pro Lys Glu Leu Ser Ser Ser Asp Thr Val Ser Ile
        355                 360                 365

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

Gln Ser Asn Gly Gln Gln Glu Pro Glu Arg Lys His Arg Met Thr Pro
385                 390                 395                 400

Pro Gln Leu Asp Glu Asp Gly Ser Tyr Phe Leu Tyr Ser Lys Leu Ser
                405                 410                 415

Val Asp Lys Ser Arg Trp Gln Gln Gly Asp Pro Phe Thr Cys Ala Val
            420                 425                 430

Met His Glu Thr Leu Gln Asn His Tyr Thr Asp Leu Ser Leu Ser His
        435                 440                 445

Ser Pro Gly Lys
    450
```

<210> 21
<211> 454
<212> PRT
<213> Artificial Sequence

<220>
<223> Chimeric anti-TNF MAb. Human VH - canine heavy chain type C constant domain

<400> 21

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

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

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

```
Ser Ala Ile Thr Trp Asn Ser Gly His Ile Asp Tyr Ala Asp Ser Val
    50                  55                  60

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

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

Ala Lys Val Ser Tyr Leu Ser Thr Ala Ser Ser Leu Asp Tyr Trp Gly
            100                 105                 110

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

Val Phe Pro Leu Ala Pro Ser Cys Gly Ser Gln Ser Gly Ser Thr Val
    130                 135                 140

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

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

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

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

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

Cys Lys Cys Asn Cys Asn Asn Cys Pro Cys Pro Gly Cys Gly Leu Leu
225                 230                 235                 240

Gly Gly Pro Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Ile Leu
                245                 250                 255

Val Thr Ala Arg Thr Pro Thr Val Thr Cys Val Val Val Asp Leu Asp
            260                 265                 270

Pro Glu Asn Pro Glu Val Gln Ile Ser Trp Phe Val Asp Ser Lys Gln
        275                 280                 285

Val Gln Thr Ala Asn Thr Gln Pro Arg Glu Glu Gln Ser Asn Gly Thr
```

290 295 300

Tyr Arg Val Val Ser Val Leu Pro Ile Gly His Gln Asp Trp Leu Ser
305 310 315 320

Gly Lys Gln Phe Lys Cys Lys Val Asn Asn Lys Ala Leu Pro Ser Pro
325 330 335

Ile Glu Glu Ile Ile Ser Lys Thr Pro Gly Gln Ala His Gln Pro Asn
340 345 350

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

Thr Leu Thr Cys Leu Val Lys Asp Phe Phe Pro Pro Glu Ile Asp Val
370 375 380

Glu Trp Gln Ser Asn Gly Gln Gln Glu Pro Glu Ser Lys Tyr Arg Met
385 390 395 400

Thr Pro Pro Gln Leu Asp Glu Asp Gly Ser Tyr Phe Leu Tyr Ser Lys
405 410 415

Leu Ser Val Asp Lys Ser Arg Trp Gln Arg Gly Asp Thr Phe Ile Cys
420 425 430

Ala Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Ile Ser Leu
435 440 445

Ser His Ser Pro Gly Lys
450

<210> 22
<211> 452
<212> PRT
<213> Artificial Sequence

<220>
<223> Chimeric anti-TNF MAb. Human VH - canine heavy chain type D constant domain

<400> 22

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

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

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

```
        35                  40                  45

Ser Ala Ile Thr Trp Asn Ser Gly His Ile Asp Tyr Ala Asp Ser Val
    50                  55                  60

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

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

Ala Lys Val Ser Tyr Leu Ser Thr Ala Ser Ser Leu Asp Tyr Trp Gly
            100                 105                 110

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

Val Phe Pro Leu Ala Pro Ser Cys Gly Ser Thr Ser Gly Ser Thr Val
    130                 135                 140

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

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

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

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

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

Cys Lys Cys Ile Ser Pro Cys Pro Val Pro Glu Ser Leu Gly Gly Pro
225                 230                 235                 240

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

Arg Thr Pro Glu Ile Thr Cys Val Val Leu Asp Leu Gly Arg Glu Asp
            260                 265                 270

Pro Glu Val Gln Ile Ser Trp Phe Val Asp Gly Lys Glu Val His Thr
        275                 280                 285
```

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

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

Phe Lys Cys Arg Val Asn His Ile Gly Leu Pro Ser Pro Ile Glu Arg
                325                 330                 335

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

Leu Pro Pro Ser Pro Lys Glu Leu Ser Ser Ser Asp Thr Val Thr Leu
        355                 360                 365

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

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

Pro Gln Leu Asp Glu Asp Gly Ser Tyr Phe Leu Tyr Ser Lys Leu Ser
                405                 410                 415

Val Asp Lys Ser Arg Trp Gln Gln Gly Asp Thr Phe Thr Cys Ala Val
            420                 425                 430

Met His Glu Ala Leu Gln Asn His Tyr Thr Asp Leu Ser Leu Ser His
        435                 440                 445

Ser Pro Gly Lys
    450
```