SEQUENCE LISTING

<110> Fred Hutchinson Cancer Research Center
Juno Therapeutics, Inc.
Schmitt, Thomas M.
Chapuis, Aude G.
Greenberg, Philip D.

<120> IMMUNOTHERAPY TARGETING MESOTHELIN

<130> 360056.475WO

<140> PCT
<141> 2019-11-08

<150> US 62/758,397
<151> 2018-11-09

<160> 123

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 939
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B WT- TCR beta

<400> 1
atgggctcct ggaccctctg ctgtgtgtcc ctttgcatcc tggtagcaaa gcacacagat 60
gctggagtta tccagtcacc ccggcacgag gtgacagaga tgggacaaga agtgactctg 120
agatgtaaac caatttcagg acacgactac cttttctggt acagacagac catgatgcgg 180
ggactggagt tgctcattta ctttaacaac aacgttccga tagatgattc agggatgccc 240
gaggatcgat tctcagctaa gatgcctaat gcatcattct ccactctgaa gatccagccc 300
tcagaaccca gggactcagc tgtgtacttc tgtgccagca gttttactag cgggagctac 360
gagcagtact tcgggccggg caccaggctc acggtcacag aggacctgaa aaacgtgttc 420
ccacccgagg tcgctgtgtt tgagccatca gaagcagaga tctcccacac ccaaaaggcc 480
acactggtgt gcctggccac aggcttctac cccgaccacg tggagctgag ctggtgggtg 540
aatgggaagg aggtgcacag tggggtcagc acagacccgc agcccctcaa ggagcagccc 600
gccctcaatg actccagata ctgcctgagc agccgcctga gggtctcggc caccttctgg 660
cagaaccccc gcaaccactt ccgctgtcaa gtccagttct acgggctctc ggagaatgac 720
gagtggaccc aggatagggc caaacctgtc acccagatcg tcagcgccga ggcctggggt 780
agagcagact gtggcttcac ctccgagtct taccagcaag gggtcctgtc tgccaccatc 840
ctctatgaga tcttgctagg gaaggccacc ttgtatgccg tgctggtcag tgccctcgtg 900
ctgatggcca tggtcaagag aaaggattcc agaggctag 939

<210> 2

<211> 950
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B Codon optimized -TCR
beta

<400> 2
ggcgcgccac catgggaagc tggacactgt gttgcgttag cctgtgtatc ctggtggcca 60
aacacacaga tgctggagtg attcagagcc ctagacacga ggtgacagag atgggacagg 120
aagtgacact gagatgtaag cccattagcg gacacgacta cctgttctgg tacaggcaga 180
ccatgatgag aggactggaa ctgctgatct acttcaacaa caacgtgccc atcgacgata 240
gcggcatgcc tgaggacaga tttagcgcca agatgcctaa tgccagcttt tctaccctga 300
agatccagcc ctctgagccc agagattctg ccgtgtactt ttgtgccagc agctttacat 360
ctggctctta tgagcagtac ttcggcccag gcacaaggct gacagtgaca gaggacctga 420
agaacgtgtt ccccccagag gtggccgtgt tcgagcctag cgaggccgag atcagccaca 480
cccagaaagc caccctcgtg tgcctggcca ccggctttta ccccgaccac gtggaactgt 540
cttggtgggt caacggcaaa gaggtgcaca gcggcgtctg caccgacccc cagcccctga 600
aagagcagcc cgccctgaac gacagccggt actgtctgag cagcagactg agagtgtccg 660
ccaccttctg gcagaacccc cggaaccact tcagatgcca ggtgcagttc tacggcctga 720
gcgagaacga cgagtggacc caggaccggg ccaagcccgt gacccagatc gtgtctgctg 780
aggcctgggg cagagccgat tgcggcttca ccagcgagag ctaccagcag ggcgtgctga 840
gcgccaccat cctgtacgag atcctgctgg gcaaggccac cctgtacgcc gtgctggtgt 900
ccgccctggt gctgatggcc atggtcaagc ggaaggacag ccggggctga 950

<210> 3
<211> 801
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B WT-TCR alpha

<400> 3
atgtggggag ctttccttct ctatgtttcc atgaagatgg gaggcactgc aggacaaagc 60
cttgagcagc cctctgaagt gacagctgtg gaaggagcca ttgtccagat aaactgcacg 120
taccagacat ctgggtttta tgggctgtcc tggtaccagc aacatgatgg cggagcaccc 180
acatttcttt cttacaatgc tctggatggt ttggaggaga caggtcgttt ttcttcattc 240
cttagtcgct ctgatagtta tggttacctc cttctacagg agctccagat gaaagactct 300
gcctcttact tctgcgctgt gaatgatgct tccaagataa tctttggatc agggaccaga 360
ctcagcatcc ggccaaatat ccagaaccct gaccctgccg tgtaccagct gagagactct 420
aaatccagtg acaagtctgt ctgcctattc accgattttg attctcaaac aaatgtgtca 480
caaagtaagg attctgatgt gtatatcaca gacaaaactg tgctagacat gaggtctatg 540
gacttcaaga gcaacagtgc tgtggcctgg agcaacaaat ctgactttgc atgtgcaaac 600
gccttcaaca acagcattat tccagaagac accttcttcc ccagcccaga aagttcctgt 660
gatgtcaagc tggtcgagaa aagctttgaa acagatacga acctaaactt tcaaaacctg 720
tcagtgattg ggttccgaat cctcctcctg aaagtggccg ggtttaatct gctcatgacg 780
ctgcggctgt ggtccagctg a 801

<210> 4
<211> 801
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B Codon optimized -TCR
alpha

<400> 4
atgtggggcg cttttcttct gtatgtgagc atgaagatgg gcggaacagc tggacagtct 60
ctggaacagc ctagcgaggt tacagctgtt gaaggagcta ttgtgcagat caactgcacc 120
taccagacaa gcggcttcta cggcctgagc tggtatcaac agcacgatgg aggagctcct 180
acatttctga gctataatgc cctggatggc ctggaggaga caggcagatt tagcagcttc 240
ctgagcagat ctgactctta cggatatctg ctgctgcagg agctgcagat gaaggatagc 300
gccagctact tttgtgccgt gaatgatgcc tctaagatca tcttcggcag cggcaccaga 360
ctgagcatca ggcccaatat ccagaatcca gatcctgctg tgtaccagct gcgggacagc 420
aagagcagcg acaagagcgt gtgcctgttc accgacttcg acagccagac caacgtgtcc 480
cagagcaagg acagcgacgt gtacatcacc gataagtgcg tgctggacat gcggagcatg 540
gacttcaaga gcaacagcgc cgtggcctgg tccaacaaga gcgacttcgc ctgcgccaac 600
gccttcaaca acagcattat ccccgaggac acattcttcc caagccccga gagcagctgc 660
gacgtgaagc tggtggaaaa gagcttcgag acagacacca acctgaactt ccagaacctc 720
agcgtgatcg gcttccggat cctgctgctg aaggtggccg gcttcaacct gctgatgacc 780
ctgcggctgt ggtccagctg a 801

<210> 5
<211> 1820
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B CO-TCR beta-P2A-TCR
alpha

<400> 5
ggcgcgccac catgggaagc tggacactgt gttgcgttag cctgtgtatc ctggtggcca 60
aacacacaga tgctggagtg attcagagcc ctagacacga ggtgacagag atgggacagg 120
aagtgacact gagatgtaag cccattagcg gacacgacta cctgttctgg tacaggcaga 180
ccatgatgag aggactggaa ctgctgatct acttcaacaa caacgtgccc atcgacgata 240
gcggcatgcc tgaggacaga tttagcgcca agatgcctaa tgccagcttt tctaccctga 300
agatccagcc ctctgagccc agagattctg ccgtgtactt ttgtgccagc agctttacat 360
ctggctctta tgagcagtac ttcggcccag gcacaaggct gacagtgaca gaggacctga 420
agaacgtgtt ccccccagag gtggccgtgt tcgagcctag cgaggccgag atcagccaca 480
cccagaaagc caccctcgtg tgcctggcca ccggctttta ccccgaccac gtggaactgt 540
cttggtgggt caacggcaaa gaggtgcaca gcggcgtctg caccgacccc cagcccctga 600
aagagcagcc cgccctgaac gacagccggt actgtctgag cagcagactg agagtgtccg 660
ccaccttctg gcagaacccc cggaaccact tcagatgcca ggtgcagttc tacggcctga 720
gcgagaacga cgagtggacc caggaccggg ccaagcccgt gacccagatc gtgtctgctg 780
aggcctgggg cagagccgat tgcggcttca ccagcgagag ctaccagcag ggcgtgctga 840
gcgccaccat cctgtacgag atcctgctgg gcaaggccac cctgtacgcc gtgctggtgt 900

```
ccgccctggt gctgatggcc atggtcaagc ggaaggacag ccggggcggt tccggagcca     960
cgaacttctc tctgttaaag caagcaggag acgtggaaga aaaccccggt cccatgtggg    1020
gcgcttttct tctgtatgtg agcatgaaga tgggcggaac agctggacag tctctggaac    1080
agcctagcga ggttacagct gttgaaggag ctattgtgca gatcaactgc acctaccaga    1140
caagcggctt ctacggcctg agctggtatc aacagcacga tggaggagct cctacatttc    1200
tgagctataa tgccctggat ggcctggagg agacaggcag atttagcagc ttcctgagca    1260
gatctgactc ttacggatat ctgctgctgc aggagctgca gatgaaggat agcgccagct    1320
acttttgtgc cgtgaatgat gcctctaaga tcatcttcgg cagcggcacc agactgagca    1380
tcaggcccaa tatccagaat ccagatcctg ctgtgtacca gctgcgggac agcaagagca    1440
gcgacaagag cgtgtgcctg ttcaccgact tcgacagcca gaccaacgtg tcccagagca    1500
aggacagcga cgtgtacatc accgataagt gcgtgctgga catgcggagc atggacttca    1560
agagcaacag cgccgtggcc tggtccaaca agagcgactt cgcctgcgcc aacgccttca    1620
acaacagcat tatccccgag gacacattct tcccaagccc cgagagcagc tgcgacgtga    1680
agctggtgga aaagagcttc gagacagaca ccaacctgaa cttccagaac ctcagcgtga    1740
tcggcttccg gatcctgctg ctgaaggtgg ccggcttcaa cctgctgatg accctgcggc    1800
tgtggtccag ctgagtcgac                                               1820

<210> 6
<211> 312
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B Protein TCRbeta -
      with signal peptide

<400> 6
Met Gly Ser Trp Thr Leu Cys Cys Val Ser Leu Cys Ile Leu Val Ala
 1               5                  10                  15
Lys His Thr Asp Ala Gly Val Ile Gln Ser Pro Arg His Glu Val Thr
            20                  25                  30
Glu Met Gly Gln Glu Val Thr Leu Arg Cys Lys Pro Ile Ser Gly His
        35                  40                  45
Asp Tyr Leu Phe Trp Tyr Arg Gln Thr Met Met Arg Gly Leu Glu Leu
    50                  55                  60
Leu Ile Tyr Phe Asn Asn Asn Val Pro Ile Asp Asp Ser Gly Met Pro
65                  70                  75                  80
Glu Asp Arg Phe Ser Ala Lys Met Pro Asn Ala Ser Phe Ser Thr Leu
                85                  90                  95
Lys Ile Gln Pro Ser Glu Pro Arg Asp Ser Ala Val Tyr Phe Cys Ala
            100                 105                 110
Ser Ser Phe Thr Ser Gly Ser Tyr Glu Gln Tyr Phe Gly Pro Gly Thr
        115                 120                 125
Arg Leu Thr Val Thr Glu Asp Leu Lys Asn Val Phe Pro Pro Glu Val
    130                 135                 140
Ala Val Phe Glu Pro Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala
145                 150                 155                 160
Thr Leu Val Cys Leu Ala Thr Gly Phe Tyr Pro Asp His Val Glu Leu
                165                 170                 175
Ser Trp Trp Val Asn Gly Lys Glu Val His Ser Gly Val Cys Thr Asp
```

```
            180                 185                 190
Pro Gln Pro Leu Lys Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys
        195                 200                 205
Leu Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg
    210                 215                 220
Asn His Phe Arg Cys Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp
225                 230                 235                 240
Glu Trp Thr Gln Asp Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala
                245                 250                 255
Glu Ala Trp Gly Arg Ala Asp Cys Gly Phe Thr Ser Glu Ser Tyr Gln
            260                 265                 270
Gln Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys
        275                 280                 285
Ala Thr Leu Tyr Ala Val Leu Val Ser Ala Leu Val Leu Met Ala Met
    290                 295                 300
Val Lys Arg Lys Asp Ser Arg Gly
305                 310
```

<210> 7
<211> 266
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B Protein TCRalpha -
with signal peptide

<400> 7

```
Met Trp Gly Ala Phe Leu Leu Tyr Val Ser Met Lys Met Gly Gly Thr
 1               5                  10                  15
Ala Gly Gln Ser Leu Glu Gln Pro Ser Glu Val Thr Ala Val Glu Gly
            20                  25                  30
Ala Ile Val Gln Ile Asn Cys Thr Tyr Gln Thr Ser Gly Phe Tyr Gly
        35                  40                  45
Leu Ser Trp Tyr Gln Gln His Asp Gly Gly Ala Pro Thr Phe Leu Ser
    50                  55                  60
Tyr Asn Ala Leu Asp Gly Leu Glu Glu Thr Gly Arg Phe Ser Ser Phe
65                  70                  75                  80
Leu Ser Arg Ser Asp Ser Tyr Gly Tyr Leu Leu Leu Gln Glu Leu Gln
                85                  90                  95
Met Lys Asp Ser Ala Ser Tyr Phe Cys Ala Val Asn Asp Ala Ser Lys
            100                 105                 110
Ile Ile Phe Gly Ser Gly Thr Arg Leu Ser Ile Arg Pro Asn Ile Gln
        115                 120                 125
Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser Ser Asp
    130                 135                 140
Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn Val Ser
145                 150                 155                 160
Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Cys Val Leu Asp
                165                 170                 175
```

```
Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp Ser Asn
            180                 185                 190
Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile Ile Pro
        195                 200                 205
Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser Cys Asp Val Lys Leu
    210                 215                 220
Val Glu Lys Ser Phe Glu Thr Asp Thr Asn Leu Asn Phe Gln Asn Leu
225                 230                 235                 240
Ser Val Ile Gly Phe Arg Ile Leu Leu Leu Lys Val Ala Gly Phe Asn
                245                 250                 255
Leu Leu Met Thr Leu Arg Leu Trp Ser Ser
            260                 265
```

<210> 8
<211> 600
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B Protein CO-TCR
beta-P2A-TCR alpha

<400> 8

```
Met Gly Ser Trp Thr Leu Cys Cys Val Ser Leu Cys Ile Leu Val Ala
 1               5                  10                  15
Lys His Thr Asp Ala Gly Val Ile Gln Ser Pro Arg His Glu Val Thr
            20                  25                  30
Glu Met Gly Gln Glu Val Thr Leu Arg Cys Lys Pro Ile Ser Gly His
        35                  40                  45
Asp Tyr Leu Phe Trp Tyr Arg Gln Thr Met Met Arg Gly Leu Glu Leu
    50                  55                  60
Leu Ile Tyr Phe Asn Asn Asn Val Pro Ile Asp Asp Ser Gly Met Pro
65                  70                  75                  80
Glu Asp Arg Phe Ser Ala Lys Met Pro Asn Ala Ser Phe Ser Thr Leu
                85                  90                  95
Lys Ile Gln Pro Ser Glu Pro Arg Asp Ser Ala Val Tyr Phe Cys Ala
            100                 105                 110
Ser Ser Phe Thr Ser Gly Ser Tyr Glu Gln Tyr Phe Gly Pro Gly Thr
        115                 120                 125
Arg Leu Thr Val Thr Glu Asp Leu Lys Asn Val Phe Pro Pro Glu Val
    130                 135                 140
Ala Val Phe Glu Pro Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala
145                 150                 155                 160
Thr Leu Val Cys Leu Ala Thr Gly Phe Tyr Pro Asp His Val Glu Leu
                165                 170                 175
Ser Trp Trp Val Asn Gly Lys Glu Val His Ser Gly Val Cys Thr Asp
            180                 185                 190
Pro Gln Pro Leu Lys Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys
        195                 200                 205
Leu Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg
```

```
    210                 215                 220
Asn His Phe Arg Cys Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp
225                 230                 235                 240
Glu Trp Thr Gln Asp Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala
                245                 250                 255
Glu Ala Trp Gly Arg Ala Asp Cys Gly Phe Thr Ser Glu Ser Tyr Gln
            260                 265                 270
Gln Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys
        275                 280                 285
Ala Thr Leu Tyr Ala Val Leu Val Ser Ala Leu Val Leu Met Ala Met
    290                 295                 300
Val Lys Arg Lys Asp Ser Arg Gly Gly Ser Gly Ala Thr Asn Phe Ser
305                 310                 315                 320
Leu Leu Lys Gln Ala Gly Asp Val Glu Glu Asn Pro Gly Pro Met Trp
                325                 330                 335
Gly Ala Phe Leu Leu Tyr Val Ser Met Lys Met Gly Gly Thr Ala Gly
            340                 345                 350
Gln Ser Leu Glu Gln Pro Ser Glu Val Thr Ala Val Glu Gly Ala Ile
        355                 360                 365
Val Gln Ile Asn Cys Thr Tyr Gln Thr Ser Gly Phe Tyr Gly Leu Ser
    370                 375                 380
Trp Tyr Gln Gln His Asp Gly Gly Ala Pro Thr Phe Leu Ser Tyr Asn
385                 390                 395                 400
Ala Leu Asp Gly Leu Glu Glu Thr Gly Arg Phe Ser Ser Phe Leu Ser
                405                 410                 415
Arg Ser Asp Ser Tyr Gly Tyr Leu Leu Leu Gln Glu Leu Gln Met Lys
            420                 425                 430
Asp Ser Ala Ser Tyr Phe Cys Ala Val Asn Asp Ala Ser Lys Ile Ile
        435                 440                 445
Phe Gly Ser Gly Thr Arg Leu Ser Ile Arg Pro Asn Ile Gln Asn Pro
    450                 455                 460
Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser Ser Asp Lys Ser
465                 470                 475                 480
Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn Val Ser Gln Ser
                485                 490                 495
Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Cys Val Leu Asp Met Arg
            500                 505                 510
Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp Ser Asn Lys Ser
        515                 520                 525
Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile Ile Pro Glu Asp
    530                 535                 540
Thr Phe Phe Pro Ser Pro Glu Ser Ser Cys Asp Val Lys Leu Val Glu
545                 550                 555                 560
Lys Ser Phe Glu Thr Asp Thr Asn Leu Asn Phe Gln Asn Leu Ser Val
                565                 570                 575
Ile Gly Phe Arg Ile Leu Leu Leu Lys Val Ala Gly Phe Asn Leu Leu
            580                 585                 590
Met Thr Leu Arg Leu Trp Ser Ser
        595                 600
```

<210> 9
<211> 939
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B - WT-TCR beta

<400> 9
atggactcct ggaccttctg ctgtgtgtcc ctttgcatcc tggtagcgaa gcatacagat 60
gctggagtta tccagtcacc ccgccatgag gtgacagaga tgggacaaga agtgactctg 120
agatgtaaac caatttcagg ccacaactcc cttttctggt acagacagac catgatgcgg 180
ggactggagt tgctcattta ctttaacaac aacgttccga tagatgattc agggatgccc 240
gaggatcgat tctcagctaa gatgcctaat gcatcattct ccactctgaa gatccagccc 300
tcagaaccca gggactcagc tgtgtacttc tgtgccagca gttcgcctga caggctgggc 360
gagcagtact tcgggccggg caccaggctc acggtcacag aggacctgaa aaacgtgttc 420
ccacccgagg tcgctgtgtt tgagccatca gaagcagaga tctcccacac ccaaaaggcc 480
acactggtgt gcctggccac aggcttctac cccgaccacg tggagctgag ctggtgggtg 540
aatgggaagg aggtgcacag tggggtcagc acagacccgc agcccctcaa ggagcagccc 600
gccctcaatg actccagata ctgcctgagc agccgcctga gggtctcggc caccttctgg 660
cagaaccccc gcaaccactt ccgctgtcaa gtccagttct acgggctctc ggagaatgac 720
gagtggaccc aggatagggc caaacctgtc acccagatcg tcagcgccga ggcctggggt 780
agagcagact gtggcttcac ctccgagtct taccagcaag gggtcctgtc tgccaccatc 840
ctctatgaga tcttgctagg gaaggccacc ttgtatgccg tgctggtcag tgccctcgtg 900
ctgatggcca tggtcaagag aaaggattcc agaggctag 939

<210> 10
<211> 939
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B - CO-TCRbeta

<400> 10
atggatagct ggaccttctg ttgcgtgagc ctgtgtatcc tggtggccaa acacacagat 60
gctggagtga ttcagagccc tagacatgag gtgaccgaaa tgggacagga ggtgacactg 120
agatgtaagc ccatttctgg ccacaacagc ctgttctggt acagacagac catgatgagg 180
ggactggaac tgctgatcta cttcaacaac aacgtgccca tcgacgatag cggcatgcct 240
gaggacagat ttagcgccaa gatgcctaat gccagctttt ctaccctgaa gatccagccc 300
tctgagccca gagattctgc cgtgtacttt tgtgccagct cttctcctga tagactggga 360
gagcagtact ttggccctgg cacaagactg acagtgacag aggacctgaa gaacgtgttc 420
cccccagagg tggccgtgtt cgagcctagc gaggccgaga tcagccacac ccagaaagcc 480
accctcgtgt gcctggccac cggcttttac cccgaccacg tggaactgtc ttggtgggtc 540
aacggcaaag aggtgcacag cggcgtctgc accgaccccc agcccctgaa agagcagccc 600
gccctgaacg acagccggta ctgtctgagc agcagactga gagtgtccgc caccttctgg 660
cagaaccccc ggaaccactt cagatgccag gtgcagttct acggcctgag cgagaacgac 720
gagtggaccc aggaccgggc caagcccgtg acccagatcg tgtctgctga ggcctggggc 780
agagccgatt gcggcttcac cagcgagagc taccagcagg gcgtgctgag cgccaccatc 840
ctgtacgaga tcctgctggg caaggccacc ctgtacgccg tgctggtgtc cgccctggtg 900

ctgatggcca tggtcaagcg gaaggacagc cggggctga 939

<210> 11
<211> 819
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B - WT-TCR alpha

<400> 11
atgatgaaat ccttgagagt tttactggtg atcctgtggc ttcagttaag ctgggtttgg 60
agccaacaga aggaggtgga gcaggatcct ggaccactca gtgttccaga gggagccatt 120
gtttctctca actgcactta cagcaacagt gcttttcaat acttcatgtg gtacagacag 180
tattccagaa aaggccctga gttgctgatg tacacatact ccagtggtaa caaagaagat 240
ggaaggttta cagcacaggt cgataaatcc agcaagtata tctccttgtt catcagagac 300
tcacagccca gtgattcagc cacctacctc tgtgcaggag ggggaaacac acctcttgtc 360
tttggaaagg gcacaagact ttctgtgatt gcaaatatcc agaaccctga ccctgccgtg 420
taccagctga gagactctaa atccagtgac aagtctgtct gcctattcac cgattttgat 480
tctcaaacaa atgtgtcaca aagtaaggat tctgatgtgt atatcacaga caaaactgtg 540
ctagacatga ggtctatgga cttcaagagc aacagtgctg tggcctggag caacaaatct 600
gactttgcat gtgcaaacgc cttcaacaac agcattattc cagaagacac cttcttcccc 660
agcccagaaa gttcctgtga tgtcaagctg gtcgagaaaa gctttgaaac agatacgaac 720
ctaaactttc aaaacctgtc agtgattggg ttccgaatcc tcctcctgaa agtggccggg 780
tttaatctgc tcatgacgct gcggctgtgg tccagctga 819

<210> 12
<211> 819
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B - CO-TCR alpha

<400> 12
atgatgaaga gcctgcgagt cctcctggtg attctgtggt tacagctgtc ttgggtgtgg 60
tctcagcaga aagaagtgga gcaggatcct ggacctctgt ctgtgcctga aggagctatt 120
gtgagcctga attgcaccta cagcaatagc gccttccagt acttcatgtg gtaccggcag 180
tacagcagaa agggccctga actgctgatg tacacctact ctagcggcaa taaggaagat 240
ggccggttta cagctcaggt ggacaagagc agcaagtaca tcagcctgtt catcagggat 300
tctcagccta gcgattctgc cacctacctg tgtgctggag gcggaaatac acctctggtt 360
tttggaaaag gcaccagact gtctgtgatc gccaacatcc agaaccccga ccctgctgtg 420
taccagctgc gggacagcaa gagcagcgac aagagcgtgt gcctgttcac cgacttcgac 480
agccagacca acgtgtccca gagcaaggac agcgacgtgt acatcaccga taagtgcgtg 540
ctggacatgc ggagcatgga cttcaagagc aacagcgccg tggcctggtc caacaagagc 600
gacttcgcct gcgccaacgc cttcaacaac agcattatcc ccgaggacac attcttccca 660
agccccgaga gcagctgcga cgtgaagctg gtggaaaaga gcttcgagac agacaccaac 720
ctgaacttcc agaacctcag cgtgatcggc ttccggatcc tgctgctgaa ggtggccggc 780
ttcaacctgc tgatgaccct gcggctgtgg tccagctga 819

<210> 13
<211> 1838
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B - CO-TCR beta-P2A-
TCR alpha

<400> 13
ggcgcgccac catggatagc tggaccttct gttgcgtgag cctgtgtatc ctggtggcca 60
aacacacaga tgctggagtg attcagagcc ctagacatga ggtgaccgaa atgggacagg 120
aggtgacact gagatgtaag cccatttctg gccacaacag cctgttctgg tacagacaga 180
ccatgatgag gggactggaa ctgctgatct acttcaacaa caacgtgccc atcgacgata 240
gcggcatgcc tgaggacaga tttagcgcca agatgcctaa tgccagcttt tctaccctga 300
agatccagcc ctctgagccc agagattctg ccgtgtactt ttgtgccagc tcttctcctg 360
atagactggg agagcagtac tttggccctg gcacaagact gacagtgaca gaggacctga 420
agaacgtgtt ccccccagag gtggccgtgt tcgagcctag cgaggccgag atcagccaca 480
cccagaaagc caccctcgtg tgcctggcca ccggctttta ccccgaccac gtggaactgt 540
cttggtgggt caacggcaaa gaggtgcaca gcggcgtctg caccgacccc cagcccctga 600
aagagcagcc cgccctgaac gacagccggt actgtctgag cagcagactg agagtgtccg 660
ccaccttctg gcagaacccc cggaaccact tcagatgcca ggtgcagttc tacggcctga 720
gcgagaacga cgagtggacc caggaccggg ccaagcccgt gacccagatc gtgtctgctg 780
aggcctgggg cagagccgat tgcggcttca ccagcgagag ctaccagcag ggcgtgctga 840
gcgccaccat cctgtacgag atcctgctgg gcaaggccac cctgtacgcc gtgctggtgt 900
ccgccctggt gctgatggcc atggtcaagc ggaaggacag ccggggcggt tccggagcca 960
cgaacttctc tctgttaaag caagcaggag acgtggaaga aaaccccggt cccatgatga 1020
agagcctgcg agtcctcctg gtgattctgt ggttacagct gtcttgggtg tggtctcagc 1080
agaaagaagt ggagcaggat cctggacctc tgtctgtgcc tgaaggagct attgtgagcc 1140
tgaattgcac ctacagcaat agcgccttcc agtacttcat gtggtaccgg cagtacagca 1200
gaaagggccc tgaactgctg atgtacacct actctagcgg caataaggaa gatggccggt 1260
ttacagctca ggtggacaag agcagcaagt acatcagcct gttcatcagg gattctcagc 1320
ctagcgattc tgccacctac ctgtgtgctg gaggcggaaa tacacctctg gtttttggaa 1380
aaggcaccag actgtctgtg atcgccaaca tccagaaccc cgaccctgct gtgtaccagc 1440
tgcgggacag caagagcagc gacaagagcg tgtgcctgtt caccgacttc gacagccaga 1500
ccaacgtgtc ccagagcaag gacagcgacg tgtacatcac cgataagtgc gtgctggaca 1560
tgcggagcat ggacttcaag agcaacagcg ccgtggcctg gtccaacaag agcgacttcg 1620
cctgcgccaa cgccttcaac aacagcatta tccccgagga cacattcttc ccaagccccg 1680
agagcagctg cgacgtgaag ctggtggaaa agagcttcga gacagacacc aacctgaact 1740
tccagaacct cagcgtgatc ggcttccgga tcctgctgct gaaggtggcc ggcttcaacc 1800
tgctgatgac cctgcggctg tggtccagct gagtcgac 1838

<210> 14
<211> 312
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B - Protein TCR beta -
with signal peptide

<400> 14
Met Asp Ser Trp Thr Phe Cys Cys Val Ser Leu Cys Ile Leu Val Ala
 1   5   10   15
Lys His Thr Asp Ala Gly Val Ile Gln Ser Pro Arg His Glu Val Thr
            20   25   30
Glu Met Gly Gln Glu Val Thr Leu Arg Cys Lys Pro Ile Ser Gly His
        35   40   45
Asn Ser Leu Phe Trp Tyr Arg Gln Thr Met Met Arg Gly Leu Glu Leu
    50   55   60
Leu Ile Tyr Phe Asn Asn Asn Val Pro Ile Asp Asp Ser Gly Met Pro
65   70   75   80
Glu Asp Arg Phe Ser Ala Lys Met Pro Asn Ala Ser Phe Ser Thr Leu
                85   90   95
Lys Ile Gln Pro Ser Glu Pro Arg Asp Ser Ala Val Tyr Phe Cys Ala
            100   105   110
Ser Ser Ser Pro Asp Arg Leu Gly Glu Gln Tyr Phe Gly Pro Gly Thr
        115   120   125
Arg Leu Thr Val Thr Glu Asp Leu Lys Asn Val Phe Pro Pro Glu Val
    130   135   140
Ala Val Phe Glu Pro Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala
145   150   155   160
Thr Leu Val Cys Leu Ala Thr Gly Phe Tyr Pro Asp His Val Glu Leu
                165   170   175
Ser Trp Trp Val Asn Gly Lys Glu Val His Ser Gly Val Cys Thr Asp
            180   185   190
Pro Gln Pro Leu Lys Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys
        195   200   205
Leu Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg
    210   215   220
Asn His Phe Arg Cys Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp
225   230   235   240
Glu Trp Thr Gln Asp Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala
                245   250   255
Glu Ala Trp Gly Arg Ala Asp Cys Gly Phe Thr Ser Glu Ser Tyr Gln
            260   265   270
Gln Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys
        275   280   285
Ala Thr Leu Tyr Ala Val Leu Val Ser Ala Leu Val Leu Met Ala Met
    290   295   300
Val Lys Arg Lys Asp Ser Arg Gly
305   310

<210> 15
<211> 272
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B - Protein TCR alpha

- with signal peptide

<400> 15
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 Asp Pro Gly Pro
            20   25   30
Leu Ser Val Pro Glu Gly Ala Ile Val Ser Leu Asn Cys Thr Tyr Ser
        35   40   45
Asn Ser Ala Phe Gln Tyr Phe Met Trp Tyr Arg Gln Tyr Ser Arg Lys
    50   55   60
Gly Pro Glu Leu Leu Met Tyr Thr Tyr Ser Ser Gly Asn Lys Glu Asp
65   70   75   80
Gly Arg Phe Thr Ala Gln Val Asp Lys Ser Ser Lys Tyr Ile Ser Leu
                85   90   95
Phe Ile Arg Asp Ser Gln Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala
            100   105   110
Gly Gly Gly Asn Thr Pro Leu Val Phe Gly Lys Gly Thr Arg Leu Ser
        115   120   125
Val Ile Ala Asn Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg
    130   135   140
Asp Ser Lys Ser Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp
145   150   155   160
Ser Gln Thr Asn Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr
                165   170   175
Asp Lys Cys Val Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser
            180   185   190
Ala Val Ala Trp Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe
        195   200   205
Asn Asn Ser Ile Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser
    210   215   220
Ser Cys Asp Val Lys Leu Val Glu Lys Ser Phe Glu Thr Asp Thr Asn
225   230   235   240
Leu Asn Phe Gln Asn Leu Ser Val Ile Gly Phe Arg Ile Leu Leu Leu
                245   250   255
Lys Val Ala Gly Phe Asn Leu Leu Met Thr Leu Arg Leu Trp Ser Ser
            260   265   270

<210> 16
<211> 606
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B - Protein TCR
beta-P2A-TCR alpha

<400> 16
Met Asp Ser Trp Thr Phe Cys Cys Val Ser Leu Cys Ile Leu Val Ala
 1   5   10   15

```
Lys His Thr Asp Ala Gly Val Ile Gln Ser Pro Arg His Glu Val Thr
            20                  25                  30
Glu Met Gly Gln Glu Val Thr Leu Arg Cys Lys Pro Ile Ser Gly His
        35                  40                  45
Asn Ser Leu Phe Trp Tyr Arg Gln Thr Met Met Arg Gly Leu Glu Leu
    50                  55                  60
Leu Ile Tyr Phe Asn Asn Asn Val Pro Ile Asp Asp Ser Gly Met Pro
65                  70                  75                  80
Glu Asp Arg Phe Ser Ala Lys Met Pro Asn Ala Ser Phe Ser Thr Leu
                85                  90                  95
Lys Ile Gln Pro Ser Glu Pro Arg Asp Ser Ala Val Tyr Phe Cys Ala
            100                 105                 110
Ser Ser Ser Pro Asp Arg Leu Gly Glu Gln Tyr Phe Gly Pro Gly Thr
        115                 120                 125
Arg Leu Thr Val Thr Glu Asp Leu Lys Asn Val Phe Pro Pro Glu Val
    130                 135                 140
Ala Val Phe Glu Pro Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala
145                 150                 155                 160
Thr Leu Val Cys Leu Ala Thr Gly Phe Tyr Pro Asp His Val Glu Leu
                165                 170                 175
Ser Trp Trp Val Asn Gly Lys Glu Val His Ser Gly Val Cys Thr Asp
            180                 185                 190
Pro Gln Pro Leu Lys Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys
        195                 200                 205
Leu Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg
    210                 215                 220
Asn His Phe Arg Cys Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp
225                 230                 235                 240
Glu Trp Thr Gln Asp Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala
                245                 250                 255
Glu Ala Trp Gly Arg Ala Asp Cys Gly Phe Thr Ser Glu Ser Tyr Gln
            260                 265                 270
Gln Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys
        275                 280                 285
Ala Thr Leu Tyr Ala Val Leu Val Ser Ala Leu Val Leu Met Ala Met
    290                 295                 300
Val Lys Arg Lys Asp Ser Arg Gly Gly Ser Gly Ala Thr Asn Phe Ser
305                 310                 315                 320
Leu Leu Lys Gln Ala Gly Asp Val Glu Glu Asn Pro Gly Pro Met Met
                325                 330                 335
Lys Ser Leu Arg Val Leu Leu Val Ile Leu Trp Leu Gln Leu Ser Trp
            340                 345                 350
Val Trp Ser Gln Gln Lys Glu Val Glu Gln Asp Pro Gly Pro Leu Ser
        355                 360                 365
Val Pro Glu Gly Ala Ile Val Ser Leu Asn Cys Thr Tyr Ser Asn Ser
    370                 375                 380
Ala Phe Gln Tyr Phe Met Trp Tyr Arg Gln Tyr Ser Arg Lys Gly Pro
385                 390                 395                 400
Glu Leu Leu Met Tyr Thr Tyr Ser Ser Gly Asn Lys Glu Asp Gly Arg
                405                 410                 415
```

```
Phe Thr Ala Gln Val Asp Lys Ser Ser Lys Tyr Ile Ser Leu Phe Ile
            420                 425                 430
Arg Asp Ser Gln Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Gly Gly
        435                 440                 445
Gly Asn Thr Pro Leu Val Phe Gly Lys Gly Thr Arg Leu Ser Val Ile
    450                 455                 460
Ala Asn Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser
465                 470                 475                 480
Lys Ser Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln
                485                 490                 495
Thr Asn Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys
            500                 505                 510
Cys Val Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val
        515                 520                 525
Ala Trp Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn
    530                 535                 540
Ser Ile Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser Cys
545                 550                 555                 560
Asp Val Lys Leu Val Glu Lys Ser Phe Glu Thr Asp Thr Asn Leu Asn
                565                 570                 575
Phe Gln Asn Leu Ser Val Ile Gly Phe Arg Ile Leu Leu Leu Lys Val
            580                 585                 590
Ala Gly Phe Asn Leu Leu Met Thr Leu Arg Leu Trp Ser Ser
        595                 600                 605
```

<210> 17
<211> 930
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A WT-TCR beta

<400> 17
```
atgggctgca ggctgctctg ctgtgcggtt ctctgtctcc tgggagcagt tcccatagac      60
actgaagtta cccagacacc aaaacacctg gtcatgggaa tgacaaataa gaagtctttg     120
aaatgtgaac aacatatggg gcacagggct atgtattggt acaagcagaa agctaagaag     180
ccaccggagc tcatgtttgt ctacagctat gagaaactct ctataaatga aagtgtgcca     240
agtcgcttct cacctgaatg ccccaacagc tctctcttaa accttcacct acacgccctg     300
cagccagaag actcagccct gtatctctgc gccagcagcc acgggtccct gaacactgaa     360
gctttctttg gacaaggcac cagactcaca gttgtagagg acctgaacaa ggtgttccca     420
cccgaggtcg ctgtgtttga gccatcagaa gcagagatct cccacaccca aaaggccaca     480
ctggtgtgcc tggccacagg cttcttcccc gaccacgtgg agctgagctg gtgggtgaat     540
gggaaggagg tgcacagtgg ggtcagcacg gacccgcagc ccctcaagga gcagcccgcc     600
ctcaatgact ccagatactg cctgagcagc cgcctgaggg tctcggccac cttctggcag     660
aacccccgca accacttccg ctgtcaagtc cagttctacg ggctctcgga gaatgacgag     720
tggacccagg atagggccaa acccgtcacc cagatcgtca gcgccgaggc ctggggtaga     780
gcagactgtg gctttacctc ggtgtcctac cagcaagggg tcctgtctgc caccatcctc     840
tatgagatcc tgctagggaa ggccaccctg tatgctgtgc tggtcagcgc ccttgtgttg     900
atggccatgg tcaagagaaa ggatttctga                                      930
```

<210> 18
<211> 930
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A CO-TCR beta

<400> 18
atgggctgta gactgctgtg ttgtgctgtg ctttgtctgc ttggagctgt gcctatcgat 60
acagaggtga cccagacacc taagcatctg gtgatgggca tgaccaacaa gaagagcctg 120
aagtgtgaac agcacatggg ccatagggcc atgtactggt acaagcagaa ggccaagaaa 180
cctcctgagc tgatgttcgt gtacagctac gagaagctga gcatcaacga gagcgtgccc 240
agcagatttt ctcctgagtg ccctaatagc tctctgctga atctgcacct gcatgctctg 300
cagcctgagg attctgctct gtacctgtgt gcttcttctc acggatctct gaatacagag 360
gccttcttcg gccagggcac aagactgaca gtggttgagg atctgaacaa ggtgttcccc 420
ccagaggtgg ccgtgttcga gccttctgag gccgagatct cccacaccca gaaagccacc 480
ctcgtgtgcc tggccaccgg ctttttcccc gaccacgtgg aactgtcttg gtgggtcaac 540
ggcaaagagg tgcactccgg cgtgtgcacc gatccccagc ctctgaaaga acagcccgcc 600
ctgaacgaca gccggtactg cctgagcagc agactgagag tgtccgccac cttctggcag 660
aacccccgga accacttcag atgccaggtg cagttctacg gcctgagcga gaacgacgag 720
tggacccagg acagagccaa gcccgtgaca cagatcgtgt ctgccgaagc ctggggcaga 780
gccgattgcg gctttacctc cgtgtcctat cagcagggcg tgctgagcgc cacaatcctg 840
tacgagatcc tgctgggcaa ggccaccctg tacgccgtgc tggtgtctgc cctggtgctg 900
atggccatgg tcaagcggaa ggacttctga 930

<210> 19
<211> 831
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A WT-TCR alpha

<400> 19
atgaagacat ttgctggatt ttcgttcctg tttttgtggc tgcagctgga ctgtatgagt 60
agaggagagg atgtggagca gagtcttttc ctgagtgtcc gagagggaga cagctccgtt 120
ataaactgca cttacacaga cagctcctcc acctacttat actggtataa gcaagaacct 180
ggagcaggtc tccagttgct gacgtatatt ttttcaaata tggacatgaa acaagaccaa 240
agactcactg ttctattgaa taaaaaggat aaacatctgt ctctgcgcat tgcagacacc 300
cagactgggg actcagctat ctacttctgt gcagagaccc cggggtatgg tggtgctaca 360
aacaagctca tctttggaac tggcactctg cttgctgtcc agccaaatat ccagaaccct 420
gaccctgccg tgtaccagct gagagactct aaatccagtg acaagtctgt ctgcctattc 480
accgattttg attctcaaac aaatgtgtca caaagtaagg attctgatgt gtatatcaca 540
gacaaaactg tgctagacat gaggtctatg gacttcaaga gcaacagtgc tgtggcctgg 600
agcaacaaat ctgactttgc atgtgcaaac gccttcaaca acagcattat tccagaagac 660
accttcttcc ccagcccaga aagttcctgt gatgtcaagc tggtcgagaa aagctttgaa 720
acagatacga acctaaactt tcaaaacctg tcagtgattg ggttccgaat cctcctcctg 780
aaagtggccg ggtttaatct gctcatgacg ctgcggctgt ggtccagctg a 831

<210> 20
<211> 831
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A CO-TCR alpha

<400> 20
atgaagacct ttgccggctt cagcttcctg tttctgtggc tgcagctgga ttgtatgagc 60
agaggcgaag atgtggaaca gagcctgttc ctgagcgtta gagagggcga tagctctgtg 120
atcaattgca cctacaccga tagcagcagc acctacctgt actggtacaa gcaggagcct 180
ggagctggat tacagctgct gacatacatc ttcagcaaca tggacatgaa gcaggaccag 240
aggctgaccg tgctgctgaa caagaaggac aagcacctgt ctctgagaat tgccgataca 300
cagacaggcg atagcgccat ctacttctgt gccgagacac ctggctatgg aggagctacc 360
aataagctga ttttcggcac aggcacactg ttagctgtgc agcccaacat ccagaatccc 420
gatcctgctg tgtaccagct gcgggacagc aagagcagcg acaagagcgt gtgcctgttc 480
accgacttcg acagccagac caacgtgtcc cagagcaagg acagcgacgt gtacatcacc 540
gataagtgcg tgctggacat gcggagcatg gacttcaaga gcaacagcgc cgtggcctgg 600
tccaacaaga gcgacttcgc ctgcgccaac gccttcaaca acagcattat ccccgaggac 660
acattcttcc caagccccga gagcagctgc gacgtgaagc tggtggaaaa gagcttcgag 720
acagacacca acctgaactt ccagaacctc agcgtgatcg gcttccggat cctgctgctg 780
aaggtggccg gcttcaacct gctgatgacc ctgcggctgt ggtccagctg a 831

<210> 21
<211> 1841
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A CO-TCR beta-P2A-TCR
alpha

<400> 21
ggcgcgccac catgggctgt agactgctgt gttgtgctgt gctttgtctg cttggagctg 60
tgcctatcga tacagaggtg acccagacac ctaagcatct ggtgatgggc atgaccaaca 120
agaagagcct gaagtgtgaa cagcacatgg gccatagggc catgtactgg tacaagcaga 180
aggccaagaa acctcctgag ctgatgttcg tgtacagcta cgagaagctg agcatcaacg 240
agagcgtgcc cagcagattt tctcctgagt gccctaatag ctctctgctg aatctgcacc 300
tgcatgctct gcagcctgag gattctgctc tgtacctgtg tgcttcttct cacggatctc 360
tgaatacaga ggccttcttc ggccagggca caagactgac agtggttgag gatctgaaca 420
aggtgttccc cccagaggtg gccgtgttcg agccttctga ggccgagatc tcccacaccc 480
agaaagccac cctcgtgtgc ctggccaccg gctttttccc cgaccacgtg gaactgtctt 540
ggtgggtcaa cggcaaagag gtgcactccg gcgtgtgcac cgatccccag cctctgaaag 600
aacagcccgc cctgaacgac agccggtact gcctgagcag cagactgaga gtgtccgcca 660
ccttctggca gaacccccgg aaccacttca gatgccaggt gcagttctac ggcctgagcg 720
agaacgacga gtggacccag gacagagcca agcccgtgac acagatcgtg tctgccgaag 780
cctggggcag agccgattgc ggctttacct ccgtgtccta tcagcagggc gtgctgagcg 840
ccacaatcct gtacgagatc ctgctgggca aggccaccct gtacgccgtg ctggtgtctg 900

```
ccctggtgct gatggccatg gtcaagcgga aggacttcgg ttccggagcc acgaacttct     960
ctctgttaaa gcaagcagga gacgtggaag aaaaccccgg tcccatgaag acctttgccg    1020
gcttcagctt cctgtttctg tggctgcagc tggattgtat gagcagaggc gaagatgtgg    1080
aacagagcct gttcctgagc gttagagagg gcgatagctc tgtgatcaat tgcacctaca    1140
ccgatagcag cagcacctac ctgtactggt acaagcagga gcctggagct ggattacagc    1200
tgctgacata catcttcagc aacatggaca tgaagcagga ccagaggctg accgtgctgc    1260
tgaacaagaa ggacaagcac ctgtctctga gaattgccga tacacagaca ggcgatagcg    1320
ccatctactt ctgtgccgag acacctggct atggaggagc taccaataag ctgattttcg    1380
gcacaggcac actgttagct gtgcagccca acatccagaa tcccgatcct gctgtgtacc    1440
agctgcggga cagcaagagc agcgacaaga gcgtgtgcct gttcaccgac ttcgacagcc    1500
agaccaacgt gtcccagagc aaggacagcg acgtgtacat caccgataag tgcgtgctgg    1560
acatgcggag catggacttc aagagcaaca gcgccgtggc ctggtccaac aagagcgact    1620
tcgcctgcgc caacgccttc aacaacagca ttatccccga ggacacattc ttcccaagcc    1680
ccgagagcag ctgcgacgtg aagctggtgg aaaagagctt cgagacagac accaacctga    1740
acttccagaa cctcagcgtg atcggcttcc ggatcctgct gctgaaggtg gccggcttca    1800
acctgctgat gaccctgcgg ctgtggtcca gctgagtcga c                        1841

<210> 22
<211> 309
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A Protein CO-TCR beta
      - with signal peptide

<400> 22
Met Gly Cys Arg Leu Leu Cys Cys Ala Val Leu Cys Leu Leu Gly Ala
 1               5                  10                  15
Val Pro Ile Asp Thr Glu Val Thr Gln Thr Pro Lys His Leu Val Met
            20                  25                  30
Gly Met Thr Asn Lys Lys Ser Leu Lys Cys Glu Gln His Met Gly His
        35                  40                  45
Arg Ala Met Tyr Trp Tyr Lys Gln Lys Ala Lys Lys Pro Pro Glu Leu
    50                  55                  60
Met Phe Val Tyr Ser Tyr Glu Lys Leu Ser Ile Asn Glu Ser Val Pro
65                  70                  75                  80
Ser Arg Phe Ser Pro Glu Cys Pro Asn Ser Ser Leu Leu Asn Leu His
                85                  90                  95
Leu His Ala Leu Gln Pro Glu Asp Ser Ala Leu Tyr Leu Cys Ala Ser
            100                 105                 110
Ser His Gly Ser Leu Asn Thr Glu Ala Phe Phe Gly Gln Gly Thr Arg
        115                 120                 125
Leu Thr Val Val Glu Asp Leu Asn Lys Val Phe Pro Pro Glu Val Ala
    130                 135                 140
Val Phe Glu Pro Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala Thr
145                 150                 155                 160
Leu Val Cys Leu Ala Thr Gly Phe Phe Pro Asp His Val Glu Leu Ser
                165                 170                 175
Trp Trp Val Asn Gly Lys Glu Val His Ser Gly Val Cys Thr Asp Pro
```

```
            180                 185                 190
Gln Pro Leu Lys Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys Leu
        195                 200                 205
Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg Asn
    210                 215                 220
His Phe Arg Cys Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp Glu
225                 230                 235                 240
Trp Thr Gln Asp Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala Glu
                245                 250                 255
Ala Trp Gly Arg Ala Asp Cys Gly Phe Thr Ser Val Ser Tyr Gln Gln
            260                 265                 270
Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys Ala
        275                 280                 285
Thr Leu Tyr Ala Val Leu Val Ser Ala Leu Val Leu Met Ala Met Val
    290                 295                 300
Lys Arg Lys Asp Phe
305

<210> 23
<211> 276
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A Protein CO-TCR
      alpha - with signal peptide

<400> 23
Met Lys Thr Phe Ala Gly Phe Ser Phe Leu Phe Leu Trp Leu Gln Leu
 1               5                  10                  15
Asp Cys Met Ser Arg Gly Glu Asp Val Glu Gln Ser Leu Phe Leu Ser
            20                  25                  30
Val Arg Glu Gly Asp Ser Ser Val Ile Asn Cys Thr Tyr Thr Asp Ser
        35                  40                  45
Ser Ser Thr Tyr Leu Tyr Trp Tyr Lys Gln Glu Pro Gly Ala Gly Leu
    50                  55                  60
Gln Leu Leu Thr Tyr Ile Phe Ser Asn Met Asp Met Lys Gln Asp Gln
65                  70                  75                  80
Arg Leu Thr Val Leu Leu Asn Lys Lys Asp Lys His Leu Ser Leu Arg
                85                  90                  95
Ile Ala Asp Thr Gln Thr Gly Asp Ser Ala Ile Tyr Phe Cys Ala Glu
            100                 105                 110
Thr Pro Gly Tyr Gly Gly Ala Thr Asn Lys Leu Ile Phe Gly Thr Gly
        115                 120                 125
Thr Leu Leu Ala Val Gln Pro Asn Ile Gln Asn Pro Asp Pro Ala Val
    130                 135                 140
Tyr Gln Leu Arg Asp Ser Lys Ser Ser Asp Lys Ser Val Cys Leu Phe
145                 150                 155                 160
Thr Asp Phe Asp Ser Gln Thr Asn Val Ser Gln Ser Lys Asp Ser Asp
                165                 170                 175
```

```
Val Tyr Ile Thr Asp Lys Cys Val Leu Asp Met Arg Ser Met Asp Phe
            180                 185                 190
Lys Ser Asn Ser Ala Val Ala Trp Ser Asn Lys Ser Asp Phe Ala Cys
        195                 200                 205
Ala Asn Ala Phe Asn Asn Ser Ile Ile Pro Glu Asp Thr Phe Phe Pro
    210                 215                 220
Ser Pro Glu Ser Ser Cys Asp Val Lys Leu Val Glu Lys Ser Phe Glu
225                 230                 235                 240
Thr Asp Thr Asn Leu Asn Phe Gln Asn Leu Ser Val Ile Gly Phe Arg
                245                 250                 255
Ile Leu Leu Leu Lys Val Ala Gly Phe Asn Leu Leu Met Thr Leu Arg
            260                 265                 270
Leu Trp Ser Ser
        275

<210> 24
<211> 607
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A Protein
      Vbeta-P2A-Valpha

<400> 24
Met Gly Cys Arg Leu Leu Cys Cys Ala Val Leu Cys Leu Leu Gly Ala
 1               5                  10                  15
Val Pro Ile Asp Thr Glu Val Thr Gln Thr Pro Lys His Leu Val Met
            20                  25                  30
Gly Met Thr Asn Lys Lys Ser Leu Lys Cys Glu Gln His Met Gly His
        35                  40                  45
Arg Ala Met Tyr Trp Tyr Lys Gln Lys Ala Lys Lys Pro Pro Glu Leu
    50                  55                  60
Met Phe Val Tyr Ser Tyr Glu Lys Leu Ser Ile Asn Glu Ser Val Pro
65                  70                  75                  80
Ser Arg Phe Ser Pro Glu Cys Pro Asn Ser Ser Leu Leu Asn Leu His
                85                  90                  95
Leu His Ala Leu Gln Pro Glu Asp Ser Ala Leu Tyr Leu Cys Ala Ser
            100                 105                 110
Ser His Gly Ser Leu Asn Thr Glu Ala Phe Phe Gly Gln Gly Thr Arg
        115                 120                 125
Leu Thr Val Val Glu Asp Leu Asn Lys Val Phe Pro Pro Glu Val Ala
    130                 135                 140
Val Phe Glu Pro Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala Thr
145                 150                 155                 160
Leu Val Cys Leu Ala Thr Gly Phe Phe Pro Asp His Val Glu Leu Ser
                165                 170                 175
Trp Trp Val Asn Gly Lys Glu Val His Ser Gly Val Cys Thr Asp Pro
            180                 185                 190
Gln Pro Leu Lys Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys Leu
```

```
        195                 200                 205
Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg Asn
    210                 215                 220
His Phe Arg Cys Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp Glu
225                 230                 235                 240
Trp Thr Gln Asp Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala Glu
                245                 250                 255
Ala Trp Gly Arg Ala Asp Cys Gly Phe Thr Ser Val Ser Tyr Gln Gln
            260                 265                 270
Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys Ala
        275                 280                 285
Thr Leu Tyr Ala Val Leu Val Ser Ala Leu Val Leu Met Ala Met Val
    290                 295                 300
Lys Arg Lys Asp Phe Gly Ser Gly Ala Thr Asn Phe Ser Leu Leu Lys
305                 310                 315                 320
Gln Ala Gly Asp Val Glu Glu Asn Pro Gly Pro Met Lys Thr Phe Ala
                325                 330                 335
Gly Phe Ser Phe Leu Phe Leu Trp Leu Gln Leu Asp Cys Met Ser Arg
            340                 345                 350
Gly Glu Asp Val Glu Gln Ser Leu Phe Leu Ser Val Arg Glu Gly Asp
        355                 360                 365
Ser Ser Val Ile Asn Cys Thr Tyr Thr Asp Ser Ser Ser Thr Tyr Leu
    370                 375                 380
Tyr Trp Tyr Lys Gln Glu Pro Gly Ala Gly Leu Gln Leu Leu Thr Tyr
385                 390                 395                 400
Ile Phe Ser Asn Met Asp Met Lys Gln Asp Gln Arg Leu Thr Val Leu
                405                 410                 415
Leu Asn Lys Lys Asp Lys His Leu Ser Leu Arg Ile Ala Asp Thr Gln
            420                 425                 430
Thr Gly Asp Ser Ala Ile Tyr Phe Cys Ala Glu Thr Pro Gly Tyr Gly
        435                 440                 445
Gly Ala Thr Asn Lys Leu Ile Phe Gly Thr Gly Thr Leu Leu Ala Val
    450                 455                 460
Gln Pro Asn Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp
465                 470                 475                 480
Ser Lys Ser Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser
                485                 490                 495
Gln Thr Asn Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp
            500                 505                 510
Lys Cys Val Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala
        515                 520                 525
Val Ala Trp Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn
    530                 535                 540
Asn Ser Ile Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
545                 550                 555                 560
Cys Asp Val Lys Leu Val Glu Lys Ser Phe Glu Thr Asp Thr Asn Leu
                565                 570                 575
Asn Phe Gln Asn Leu Ser Val Ile Gly Phe Arg Ile Leu Leu Leu Lys
            580                 585                 590
Val Ala Gly Phe Asn Leu Leu Met Thr Leu Arg Leu Trp Ser Ser
```

595 600 605

<210> 25
<211> 939
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B CO-TCR beta

<400> 25
atgggacctg gactgttatg ttgggttctg ctgtgtctgc ttggagctgg atctgtggaa 60
acaggcgtta cacagtcccc tacacacctg atcaagacaa gaggacagca ggtgaccctg 120
agatgttcta gccagtctgg ccacaataca gtgagctggt atcagcaggc tttaggacag 180
ggaccccagt tcatcttcca gtactaccgg gaggaagaga atggcagagg caattttcca 240
cccagattta gcggcctgca gttccccaat tacagcagcg agctgaacgt gaatgccctt 300
gaactggacg attctgctct gtacctgtgt gccagctctt ttgctggcgg aagaagcgat 360
acccagtatt ttggacctgg aaccagactg acagtgctgg aggacctgaa gaacgtgttc 420
cccccagagg tggccgtgtt cgagcctagc gaggccgaga tcagccacac ccagaaagcc 480
accctcgtgt gcctggccac cggcttttac cccgaccacg tggaactgtc ttggtgggtc 540
aacggcaaag aggtgcacag cggcgtctgc accgaccccc agcccctgaa agagcagccc 600
gccctgaacg acagccggta ctgtctgagc agcagactga gagtgtccgc caccttctgg 660
cagaaccccc ggaaccactt cagatgccag gtgcagttct acggcctgag cgagaacgac 720
gagtggaccc aggaccgggc caagcccgtg acccagatcg tgtctgctga ggcctggggc 780
agagccgatt gcggcttcac cagcgagagc taccagcagg gcgtgctgag cgccaccatc 840
ctgtacgaga tcctgctggg caaggccacc ctgtacgccg tgctggtgtc cgccctggtg 900
ctgatggcca tggtcaagcg gaaggacagc cggggctga 939

<210> 26
<211> 831
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B CO-TCR alpha

<400> 26
atggagacac tgctgggact actgattctg tggctgcaac tgcaatgggt gagcagcaaa 60
caggaggtta cccagattcc tgctgctctg tctgttcctg aaggcgagaa tctggtgctg 120
aactgcagct tcacagatag cgccatctac aacctgcagt ggttcagaca ggatcctgga 180
aaaggcctga caagcctgct gctgattcag agctctcaga gagagcagac atctggaaga 240
ctgaatgcta gcctggacaa gtctagcggc agaagcaccc tgtatattgc cgcctctcaa 300
cctggagatt ctgccacata cctgtgtgct gttaggctgc tgtttgccca aggaggaagc 360
gagaaactgg tgtttggaaa gggcacaaag ctgaccgtga atccctacat ccagaaccct 420
gatcctgccg tgtaccagct gcgggacagc aagagcagcg acaagagcgt gtgcctgttc 480
accgacttcg acagccagac caacgtgtcc cagagcaagg acagcgacgt gtacatcacc 540
gataagtgcg tgctggacat gcggagcatg gacttcaaga gcaacagcgc cgtggcctgg 600
tccaacaaga gcgacttcgc ctgcgccaac gccttcaaca acagcattat ccccgaggac 660
acattcttcc caagccccga gagcagctgc gacgtgaagc tggtggaaaa gagcttcgag 720
acagacacca acctgaactt ccagaacctc agcgtgatcg gcttccggat cctgctgctg 780

aaggtggccg gcttcaacct gctgatgacc ctgcggctgt ggtccagctg a 831

<210> 27
<211> 1843
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B -TCR beta-P2A-TCR alpha

<400> 27
caccatggga cctggactgt tatgttgggt tctgctgtgt ctgcttggag ctggatctgt 60
ggaaacaggc gttacacagt cccctacaca cctgatcaag acaagaggac agcaggtgac 120
cctgagatgt tctagccagt ctggccacaa tacagtgagc tggtatcagc aggctttagg 180
acagggaccc cagttcatct tccagtacta ccgggaggaa gagaatggca gaggcaattt 240
tccacccaga tttagcggcc tgcagttccc caattacagc agcgagctga acgtgaatgc 300
ccttgaactg gacgattctg ctctgtacct gtgtgccagc tcttttgctg gcggaagaag 360
cgatacccag tattttggac ctggaaccag actgacagtg ctggaggacc tgaagaacgt 420
gttcccccca gaggtggccg tgttcgagcc tagcgaggcc gagatcagcc acacccagaa 480
agccaccctc gtgtgcctgg ccaccggctt ttaccccgac cacgtggaac tgtcttggtg 540
ggtcaacggc aaagaggtgc acagcggcgt ctgcaccgac ccccagcccc tgaaagagca 600
gcccgccctg aacgacagcc ggtactgtct gagcagcaga ctgagagtgt ccgccacctt 660
ctggcagaac ccccggaacc acttcagatg ccaggtgcag ttctacggcc tgagcgagaa 720
cgacgagtgg acccaggacc gggccaagcc cgtgacccag atcgtgtctg ctgaggcctg 780
gggcagagcc gattgcggct tcaccagcga gagctaccag cagggcgtgc tgagcgccac 840
catcctgtac gagatcctgc tgggcaaggc caccctgtac gccgtgctgg tgtccgccct 900
ggtgctgatg gccatggtca agcggaagga cagccggggc ggttccggag ccacgaactt 960
ctctctgtta aagcaagcag gagacgtgga agaaaacccc ggtcccatgg agacactgct 1020
gggactactg attctgtggc tgcaactgca atgggtgagc agcaaacagg aggttaccca 1080
gattcctgct gctctgtctg ttcctgaagg cgagaatctg gtgctgaact gcagcttcac 1140
agatagcgcc atctacaacc tgcagtggtt cagacaggat cctggaaaag gcctgacaag 1200
cctgctgctg attcagagct ctcagagaga gcagacatct ggaagactga atgctagcct 1260
ggacaagtct agcggcagaa gcaccctgta tattgccgcc tctcaacctg gagattctgc 1320
cacatacctg tgtgctgtta ggctgctgtt tgcccaagga ggaagcgaga aactggtgtt 1380
tggaaagggc acaaagctga ccgtgaatcc ctacatccag aaccctgatc ctgccgtgta 1440
ccagctgcgg gacagcaaga gcagcgacaa gagcgtgtgc ctgttcaccg acttcgacag 1500
ccagaccaac gtgtcccaga gcaaggacag cgacgtgtac atcaccgata agtgcgtgct 1560
ggacatgcgg agcatggact tcaagagcaa cagcgccgtg gcctggtcca acaagagcga 1620
cttcgcctgc gccaacgcct tcaacaacag cattatcccc gaggacacat tcttcccaag 1680
ccccgagagc agctgcgacg tgaagctggt ggaaaagagc ttcgagacag acaccaacct 1740
gaacttccag aacctcagcg tgatcggctt ccggatcctg ctgctgaagg tggccggctt 1800
caacctgctg atgaccctgc ggctgtggtc cagctgagtc gac 1843

<210> 28
<211> 312
<212> PRT
<213> Artificial Sequence

<220>

<223> Synthetic sequence Meso530-11B Protein CO-TCR beta
- with signal peptide

<400> 28
Met Gly Pro Gly Leu Leu Cys Trp Val Leu Leu Cys Leu Leu Gly Ala
 1   5   10   15
Gly Ser Val Glu Thr Gly Val Thr Gln Ser Pro Thr His Leu Ile Lys
            20   25   30
Thr Arg Gly Gln Gln Val Thr Leu Arg Cys Ser Ser Gln Ser Gly His
        35   40   45
Asn Thr Val Ser Trp Tyr Gln Gln Ala Leu Gly Gln Gly Pro Gln Phe
    50   55   60
Ile Phe Gln Tyr Tyr Arg Glu Glu Glu Asn Gly Arg Gly Asn Phe Pro
65   70   75   80
Pro Arg Phe Ser Gly Leu Gln Phe Pro Asn Tyr Ser Ser Glu Leu Asn
                85   90   95
Val Asn Ala Leu Glu Leu Asp Asp Ser Ala Leu Tyr Leu Cys Ala Ser
            100   105   110
Ser Phe Ala Gly Gly Arg Ser Asp Thr Gln Tyr Phe Gly Pro Gly Thr
        115   120   125
Arg Leu Thr Val Leu Glu Asp Leu Lys Asn Val Phe Pro Pro Glu Val
    130   135   140
Ala Val Phe Glu Pro Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala
145   150   155   160
Thr Leu Val Cys Leu Ala Thr Gly Phe Tyr Pro Asp His Val Glu Leu
                165   170   175
Ser Trp Trp Val Asn Gly Lys Glu Val His Ser Gly Val Cys Thr Asp
            180   185   190
Pro Gln Pro Leu Lys Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys
        195   200   205
Leu Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg
    210   215   220
Asn His Phe Arg Cys Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp
225   230   235   240
Glu Trp Thr Gln Asp Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala
                245   250   255
Glu Ala Trp Gly Arg Ala Asp Cys Gly Phe Thr Ser Glu Ser Tyr Gln
            260   265   270
Gln Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys
        275   280   285
Ala Thr Leu Tyr Ala Val Leu Val Ser Ala Leu Val Leu Met Ala Met
    290   295   300
Val Lys Arg Lys Asp Ser Arg Gly
305   310

<210> 29
<211> 276
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B Protein CO-TCR
alpha - with signal peptide

<400> 29
Met Glu Thr Leu Leu Gly Leu Leu Ile Leu Trp Leu Gln Leu Gln Trp
 1   5   10   15
Val Ser Ser Lys Gln Glu Val Thr Gln Ile Pro Ala Ala Leu Ser Val
            20   25   30
Pro Glu Gly Glu Asn Leu Val Leu Asn Cys Ser Phe Thr Asp Ser Ala
        35   40   45
Ile Tyr Asn Leu Gln Trp Phe Arg Gln Asp Pro Gly Lys Gly Leu Thr
    50   55   60
Ser Leu Leu Leu Ile Gln Ser Ser Gln Arg Glu Gln Thr Ser Gly Arg
65   70   75   80
Leu Asn Ala Ser Leu Asp Lys Ser Ser Gly Arg Ser Thr Leu Tyr Ile
                85   90   95
Ala Ala Ser Gln Pro Gly Asp Ser Ala Thr Tyr Leu Cys Ala Val Arg
            100   105   110
Leu Leu Phe Ala Gln Gly Gly Ser Glu Lys Leu Val Phe Gly Lys Gly
        115   120   125
Thr Lys Leu Thr Val Asn Pro Tyr Ile Gln Asn Pro Asp Pro Ala Val
    130   135   140
Tyr Gln Leu Arg Asp Ser Lys Ser Ser Asp Lys Ser Val Cys Leu Phe
145   150   155   160
Thr Asp Phe Asp Ser Gln Thr Asn Val Ser Gln Ser Lys Asp Ser Asp
                165   170   175
Val Tyr Ile Thr Asp Lys Cys Val Leu Asp Met Arg Ser Met Asp Phe
            180   185   190
Lys Ser Asn Ser Ala Val Ala Trp Ser Asn Lys Ser Asp Phe Ala Cys
        195   200   205
Ala Asn Ala Phe Asn Asn Ser Ile Ile Pro Glu Asp Thr Phe Phe Pro
    210   215   220
Ser Pro Glu Ser Ser Cys Asp Val Lys Leu Val Glu Lys Ser Phe Glu
225   230   235   240
Thr Asp Thr Asn Leu Asn Phe Gln Asn Leu Ser Val Ile Gly Phe Arg
                245   250   255
Ile Leu Leu Leu Lys Val Ala Gly Phe Asn Leu Leu Met Thr Leu Arg
            260   265   270
Leu Trp Ser Ser
        275

<210> 30
<211> 610
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B Protein CO-TCR
beta-P2A-TCR alpha

<400> 30
Met Gly Pro Gly Leu Leu Cys Trp Val Leu Leu Cys Leu Leu Gly Ala
 1   5   10   15
Gly Ser Val Glu Thr Gly Val Thr Gln Ser Pro Thr His Leu Ile Lys
            20   25   30
Thr Arg Gly Gln Gln Val Thr Leu Arg Cys Ser Ser Gln Ser Gly His
        35   40   45
Asn Thr Val Ser Trp Tyr Gln Gln Ala Leu Gly Gln Gly Pro Gln Phe
    50   55   60
Ile Phe Gln Tyr Tyr Arg Glu Glu Glu Asn Gly Arg Gly Asn Phe Pro
65   70   75   80
Pro Arg Phe Ser Gly Leu Gln Phe Pro Asn Tyr Ser Ser Glu Leu Asn
                85   90   95
Val Asn Ala Leu Glu Leu Asp Asp Ser Ala Leu Tyr Leu Cys Ala Ser
            100   105   110
Ser Phe Ala Gly Gly Arg Ser Asp Thr Gln Tyr Phe Gly Pro Gly Thr
        115   120   125
Arg Leu Thr Val Leu Glu Asp Leu Lys Asn Val Phe Pro Pro Glu Val
    130   135   140
Ala Val Phe Glu Pro Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala
145   150   155   160
Thr Leu Val Cys Leu Ala Thr Gly Phe Tyr Pro Asp His Val Glu Leu
                165   170   175
Ser Trp Trp Val Asn Gly Lys Glu Val His Ser Gly Val Cys Thr Asp
            180   185   190
Pro Gln Pro Leu Lys Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys
        195   200   205
Leu Ser Ser Arg Leu Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg
    210   215   220
Asn His Phe Arg Cys Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp
225   230   235   240
Glu Trp Thr Gln Asp Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala
                245   250   255
Glu Ala Trp Gly Arg Ala Asp Cys Gly Phe Thr Ser Glu Ser Tyr Gln
            260   265   270
Gln Gly Val Leu Ser Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys
        275   280   285
Ala Thr Leu Tyr Ala Val Leu Val Ser Ala Leu Val Leu Met Ala Met
    290   295   300
Val Lys Arg Lys Asp Ser Arg Gly Gly Ser Gly Ala Thr Asn Phe Ser
305   310   315   320
Leu Leu Lys Gln Ala Gly Asp Val Glu Glu Asn Pro Gly Pro Met Glu
                325   330   335
Thr Leu Leu Gly Leu Leu Ile Leu Trp Leu Gln Leu Gln Trp Val Ser
            340   345   350
Ser Lys Gln Glu Val Thr Gln Ile Pro Ala Ala Leu Ser Val Pro Glu
        355   360   365
Gly Glu Asn Leu Val Leu Asn Cys Ser Phe Thr Asp Ser Ala Ile Tyr
    370   375   380

```
Asn Leu Gln Trp Phe Arg Gln Asp Pro Gly Lys Gly Leu Thr Ser Leu
385                 390                 395                 400
Leu Leu Ile Gln Ser Ser Gln Arg Glu Gln Thr Ser Gly Arg Leu Asn
                405                 410                 415
Ala Ser Leu Asp Lys Ser Ser Gly Arg Ser Thr Leu Tyr Ile Ala Ala
            420                 425                 430
Ser Gln Pro Gly Asp Ser Ala Thr Tyr Leu Cys Ala Val Arg Leu Leu
        435                 440                 445
Phe Ala Gln Gly Gly Ser Glu Lys Leu Val Phe Gly Lys Gly Thr Lys
    450                 455                 460
Leu Thr Val Asn Pro Tyr Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln
465                 470                 475                 480
Leu Arg Asp Ser Lys Ser Ser Asp Lys Ser Val Cys Leu Phe Thr Asp
                485                 490                 495
Phe Asp Ser Gln Thr Asn Val Ser Gln Ser Lys Asp Ser Asp Val Tyr
            500                 505                 510
Ile Thr Asp Lys Cys Val Leu Asp Met Arg Ser Met Asp Phe Lys Ser
        515                 520                 525
Asn Ser Ala Val Ala Trp Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn
    530                 535                 540
Ala Phe Asn Asn Ser Ile Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro
545                 550                 555                 560
Glu Ser Ser Cys Asp Val Lys Leu Val Glu Lys Ser Phe Glu Thr Asp
                565                 570                 575
Thr Asn Leu Asn Phe Gln Asn Leu Ser Val Ile Gly Phe Arg Ile Leu
            580                 585                 590
Leu Leu Lys Val Ala Gly Phe Asn Leu Leu Met Thr Leu Arg Leu Trp
        595                 600                 605
Ser Ser
    610
```

<210> 31
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Msln20-28

<400> 31
```
Ser Leu Leu Phe Leu Leu Phe Ser Leu
 1               5
```

<210> 32
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Msln530-538

<400> 32
Val Leu Pro Leu Thr Val Ala Glu Val
 1   5

<210> 33
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B CDR3 alpha

<400> 33
Cys Ala Val Asn Asp Ala Ser Lys Ile Ile Phe
 1   5   10

<210> 34
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B CDR3 beta

<400> 34
Cys Ala Ser Ser Phe Thr Ser Gly Ser Tyr Glu Gln Tyr Phe
 1   5   10

<210> 35
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B CDR3 alpha

<400> 35
Cys Ala Gly Gly Gly Asn Thr Pro Leu Val Phe
 1   5   10

<210> 36
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B CDR3 beta

<400> 36

Cys Ala Ser Ser Ser Pro Asp Arg Leu Gly Glu Gln Tyr Phe
 1   5   10

<210> 37
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A CDR3 alpha

<400> 37
Cys Ala Glu Thr Pro Gly Tyr Gly Gly Ala Thr Asn Lys Leu Ile Phe
 1   5   10   15

<210> 38
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A CDR3 beta

<400> 38
Cys Ala Ser Ser His Gly Ser Leu Asn Thr Glu Ala Phe Phe
 1   5   10

<210> 39
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B CDR3 alpha

<400> 39
Cys Ala Val Arg Leu Leu Phe Ala Gln Gly Gly Ser Glu Lys Leu Val
 1   5   10   15
Phe

<210> 40
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B CDR3 beta

<400> 40

Cys Ala Ser Ser Phe Ala Gly Gly Arg Ser Asp Thr Gln Tyr Phe
 1   5   10   15

<210> 41
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Porcine teschovirus
      self-cleaving peptide P2A-1

<400> 41
ggaagtggag ctacgaattt ttctttatta aaacaagcag gagatgttga ggagaatccc 60
ggtcca 66

<210> 42
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Porcine teschovirus
      self-cleaving peptide P2A-2

<400> 42
agcggcgcca ccaacttcag cctgctgaaa caggccggcg acgtggaaga gaaccctggc 60
cct 63

<210> 43
<211> 65
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Porcine teschovirus
      self-cleaving peptide P2A-3

<400> 43
gaagcggcgc cacaaatttc agcctgctga agcaggccgg cgacgtggaa gagaaccctg 60
gccct 65

<210> 44
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Porcine teschovirus
      self-cleaving peptide P2A-4

<400> 44
ggctccggcg ccaccaactt ttcactgctg aaacaggctg gggatgtgga agaaaatccc 60
ggccca 66

<210> 45
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Porcine teschovirus
self-cleaving peptide P2A-5

<400> 45
ggcagcggcg ccaccaactt tagcctgctg aaacaggctg gcgacgtgga agagaacccc 60
ggacct 66

<210> 46
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Porcine teschovirus
self-cleaving peptide P2A-6

<400> 46
ggctctggcg ccaccaactt tagcctgctg aaacaggctg gcgacgtgga agagaacccc 60
ggacct 66

<210> 47
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Thoseaasigna virus 2A T2A

<400> 47
ggaagcggag agggcagagg aagtctgcta acatgcggtg acgtcgagga gaatcctgga 60
cct 63

<210> 48
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Equine rhinitis A virus E2A

<400> 48
ggaagcggac agtgtactaa ttatgctctc ttgaaattgg ctggagatgt tgagagcaac 60
cctggacct 69

<210> 49
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Foot-and-Mouth disease virus 2
F2A

<400> 49
ggaagcggag tgaaacagac tttgaatttt gaccttctca agttggcggg agacgtggag 60
tccaaccctg gacct 75

<210> 50
<211> 630
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence human MSLN, isoform 1

<400> 50
Met Ala Leu Pro Thr Ala Arg Pro Leu Leu Gly Ser Cys Gly Thr Pro
1 5 10 15
Ala Leu Gly Ser Leu Leu Phe Leu Leu Phe Ser Leu Gly Trp Val Gln
20 25 30
Pro Ser Arg Thr Leu Ala Gly Glu Thr Gly Gln Glu Ala Ala Pro Leu
35 40 45
Asp Gly Val Leu Ala Asn Pro Pro Asn Ile Ser Ser Leu Ser Pro Arg
50 55 60
Gln Leu Leu Gly Phe Pro Cys Ala Glu Val Ser Gly Leu Ser Thr Glu
65 70 75 80
Arg Val Arg Glu Leu Ala Val Ala Leu Ala Gln Lys Asn Val Lys Leu
85 90 95
Ser Thr Glu Gln Leu Arg Cys Leu Ala His Arg Leu Ser Glu Pro Pro
100 105 110
Glu Asp Leu Asp Ala Leu Pro Leu Asp Leu Leu Leu Phe Leu Asn Pro
115 120 125
Asp Ala Phe Ser Gly Pro Gln Ala Cys Thr Arg Phe Phe Ser Arg Ile
130 135 140
Thr Lys Ala Asn Val Asp Leu Leu Pro Arg Gly Ala Pro Glu Arg Gln
145 150 155 160
Arg Leu Leu Pro Ala Ala Leu Ala Cys Trp Gly Val Arg Gly Ser Leu
165 170 175
Leu Ser Glu Ala Asp Val Arg Ala Leu Gly Gly Leu Ala Cys Asp Leu

```
            180                 185                 190
Pro Gly Arg Phe Val Ala Glu Ser Ala Glu Val Leu Leu Pro Arg Leu
        195                 200                 205
Val Ser Cys Pro Gly Pro Leu Asp Gln Asp Gln Gln Glu Ala Ala Arg
    210                 215                 220
Ala Ala Leu Gln Gly Gly Gly Pro Pro Tyr Gly Pro Pro Ser Thr Trp
225                 230                 235                 240
Ser Val Ser Thr Met Asp Ala Leu Arg Gly Leu Leu Pro Val Leu Gly
                245                 250                 255
Gln Pro Ile Ile Arg Ser Ile Pro Gln Gly Ile Val Ala Ala Trp Arg
            260                 265                 270
Gln Arg Ser Ser Arg Asp Pro Ser Trp Arg Gln Pro Glu Arg Thr Ile
        275                 280                 285
Leu Arg Pro Arg Phe Arg Arg Glu Val Glu Lys Thr Ala Cys Pro Ser
    290                 295                 300
Gly Lys Lys Ala Arg Glu Ile Asp Glu Ser Leu Ile Phe Tyr Lys Lys
305                 310                 315                 320
Trp Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala Thr Gln Met
                325                 330                 335
Asp Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu Gln Leu Asp Val Leu
            340                 345                 350
Lys His Lys Leu Asp Glu Leu Tyr Pro Gln Gly Tyr Pro Glu Ser Val
        355                 360                 365
Ile Gln His Leu Gly Tyr Leu Phe Leu Lys Met Ser Pro Glu Asp Ile
    370                 375                 380
Arg Lys Trp Asn Val Thr Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu
385                 390                 395                 400
Val Asn Lys Gly His Glu Met Ser Pro Gln Ala Pro Arg Arg Pro Leu
                405                 410                 415
Pro Gln Val Ala Thr Leu Ile Asp Arg Phe Val Lys Gly Arg Gly Gln
            420                 425                 430
Leu Asp Lys Asp Thr Leu Asp Thr Leu Thr Ala Phe Tyr Pro Gly Tyr
        435                 440                 445
Leu Cys Ser Leu Ser Pro Glu Glu Leu Ser Ser Val Pro Pro Ser Ser
    450                 455                 460
Ile Trp Ala Val Arg Pro Gln Asp Leu Asp Thr Cys Asp Pro Arg Gln
465                 470                 475                 480
Leu Asp Val Leu Tyr Pro Lys Ala Arg Leu Ala Phe Gln Asn Met Asn
                485                 490                 495
Gly Ser Glu Tyr Phe Val Lys Ile Gln Ser Phe Leu Gly Gly Ala Pro
            500                 505                 510
Thr Glu Asp Leu Lys Ala Leu Ser Gln Gln Asn Val Ser Met Asp Leu
        515                 520                 525
Ala Thr Phe Met Lys Leu Arg Thr Asp Ala Val Leu Pro Leu Thr Val
    530                 535                 540
Ala Glu Val Gln Lys Leu Leu Gly Pro His Val Glu Gly Leu Lys Ala
545                 550                 555                 560
Glu Glu Arg His Arg Pro Val Arg Asp Trp Ile Leu Arg Gln Arg Gln
                565                 570                 575
Asp Asp Leu Asp Thr Leu Gly Leu Gly Leu Gln Gly Gly Ile Pro Asn
```

```
            580                 585                 590
Gly Tyr Leu Val Leu Asp Leu Ser Met Gln Glu Ala Leu Ser Gly Thr
        595                 600                 605
Pro Cys Leu Leu Gly Pro Gly Pro Val Leu Thr Val Leu Ala Leu Leu
    610                 615                 620
Leu Ala Ser Thr Leu Ala
625                 630
```

<210> 51
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Msln20-28 Ala variant 1

<400> 51
Ala Leu Leu Phe Leu Leu Phe Ser Leu
 1   5

<210> 52
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Msln20-28 Ala variant 2

<400> 52
Ser Ala Leu Phe Leu Leu Phe Ser Leu
 1   5

<210> 53
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Msln20-28 Ala variant 3

<400> 53
Ser Leu Ala Phe Leu Leu Phe Ser Leu
 1   5

<210> 54
<211> 9
<212> PRT
<213> Artificial Sequence

<220>

<223> Synthetic sequence Msln20-28 Ala variant 4

<400> 54
Ser Leu Leu Ala Leu Leu Phe Ser Leu
 1   5

<210> 55
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Msln20-28 Ala variant 5

<400> 55
Ser Leu Leu Phe Ala Leu Phe Ser Leu
 1   5

<210> 56
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Msln20-28 Ala variant 6

<400> 56
Ser Leu Leu Phe Leu Ala Phe Ser Leu
 1   5

<210> 57
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Msln20-28 Ala variant 7

<400> 57
Ser Leu Leu Phe Leu Leu Ala Ser Leu
 1   5

<210> 58
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Msln20-28 Ala variant 8

<400> 58
Ser Leu Leu Phe Leu Leu Phe Ala Leu
 1   5

<210> 59
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Msln20-28 Ala variant 9

<400> 59
Ser Leu Leu Phe Leu Leu Phe Ser Ala
 1   5

<210> 60
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Msln20-28 TCR epitope consensus
      sequence

<220>
<221> VARIANT
<222> 1,2,7,8,9
<223> Xaa = any amino acid, optionally alanine

<400> 60
Xaa Xaa Leu Phe Leu Leu Xaa Xaa Xaa
 1   5

<210> 61
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Msln530-538 TCR epitope
      consensus sequence 1

<220>
<221> VARIANT
<222> 3,5,6,9
<223> Xaa = any amino acid, optionally alanine

<400> 61

Val Leu Xaa Leu Xaa Xaa Ala Glu Xaa
 1   5

<210> 62
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Msln530-538 TCR epitope
      consensus sequence 2

<220>
<221> VARIANT
<222> 1,5,9
<223> Xaa = any amino acid, optionally alanine

<400> 62
Xaa Leu Pro Leu Xaa Val Ala Glu Xaa
 1   5

<210> 63
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence EHF peptide

<400> 63
Val Leu Leu Leu Ser Leu Ala Glu Ile
 1   5

<210> 64
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence YN010 peptide

<400> 64
Val Leu Ala Leu Trp Glu Ala Glu Val
 1   5

<210> 65
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence MLEC peptide

<400> 65
Val Leu Val Leu Lys Phe Ala Glu Val
 1   5

<210> 66
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence CHPF2 peptide

<400> 66
Val Leu Pro Leu Leu Val Ala Glu Ala
 1   5

<210> 67
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence ULK1 peptide

<400> 67
Val Leu Tyr Leu Lys Val Ala Glu Leu
 1   5

<210> 68
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequenceOR2J2 peptide

<400> 68
Val Leu Ala Leu Gly Ile Ala Glu Cys
 1   5

<210> 69
<211> 9
<212> PRT
<213> Artificial Sequence

<220>

<223> Synthetic sequence DNHD1 peptide

<400> 69
Val Leu Glu Leu Leu Leu Ala Glu Leu
 1   5

<210> 70
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence AL1L1 peptide

<400> 70
Val Leu Glu Leu Thr Glu Ala Glu Leu
 1   5

<210> 71
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence GALP peptide

<400> 71
Val Leu Leu Leu Ser Leu Ala Glu Thr
 1   5

<210> 72
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence OR2J1 peptide

<400> 72
Val Leu Ala Leu Gly Thr Ala Glu Cys
 1   5

<210> 73
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence ADPRH peptide

<400> 73
Val Met His Leu Ala Thr Ala Glu Ala
 1   5

<210> 74
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence CHPF2 peptide

<400> 74
Val Leu Pro Leu Ile Val Ala Glu Ala
 1   5

<210> 75
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence LRCH3 peptide

<400> 75
Asp Leu Pro Leu Arg Val Ala Glu Ile
 1   5

<210> 76
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence IN80B peptide

<400> 76
Met Leu Pro Leu Pro Val Ala Glu Gly
 1   5

<210> 77
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence CEAM3 peptide

<400> 77
Ser Met Pro Leu Ser Val Ala Glu Gly

1 5

<210> 78
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B CDR1 beta

<400> 78
Ser Gly His Asp Tyr
1 5

<210> 79
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B, Meso20-16B CDR2 beta

<400> 79
Phe Asn Asn Asn Val Pro
1 5

<210> 80
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B CDR1 alpha

<400> 80
Thr Ser Gly Phe Tyr Gly
1 5

<210> 81
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B CDR2 alpha v1

<400> 81
Asn Ala Leu Asp Gly
1 5

<210> 82
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequenceMeso20-16B CDR1 beta

<400> 82
Ser Gly His Asn Ser
 1   5

<210> 83
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B / Meso20-3B /
      Meso530 -11A / Meso530 -11B CDR1 beta consensus

<220>
<221> VARIANT
<222> 1
<223> Xaa = M, S, or T

<220>
<221> VARIANT
<222> 4
<223> Xaa = D, E, N, Q, R or K

<220>
<221> VARIANT
<222> 5
<223> Xaa = Y, S, A, V, I, L, or T

<400> 83
Xaa Gly His Xaa Xaa
 1   5

<210> 84
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B / Meso20-3B /
      Meso530 CDR2 beta consensus

<220>
<221> VARIANT
<222> 4
<223> Xaa = D or N

<220>
<221> VARIANT
<222> 5
<223> Xaa = Y, S, or T

<400> 84
Ser Gly His Xaa Xaa
 1   5

<210> 85
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B CDR1 alpha

<400> 85
Asn Ser Ala Phe Gln Tyr
 1   5

<210> 86
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B CDR2 alpha v1

<400> 86
Thr Tyr Ser Ser Gly
 1   5

<210> 87
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A CDR1 beta

<400> 87
Met Gly His Arg Ala
 1   5

<210> 88
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A CDR2 beta

<400> 88
Tyr Ser Tyr Glu Lys Leu
 1   5

<210> 89
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A CDR1 alpha

<400> 89
Ser Ser Ser Thr Tyr Leu
 1   5

<210> 90
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A CDR2 alpha

<400> 90
Ile Phe Ser Asn Met Asp Met
 1   5

<210> 91
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B CDR1 beta

<400> 91
Ser Gly His Asn Thr
 1   5

<210> 92
<211> 6

<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B CDR2 beta

<400> 92
Tyr Tyr Arg Glu Glu Glu
 1   5

<210> 93
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B CDR1 alpha

<400> 93
Asp Ser Ala Ile Tyr Asn
 1   5

<210> 94
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B CDR2 alpha

<400> 94
Ile Gln Ser Ser Gln Arg Glu
 1   5

<210> 95
<211> 114
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B V beta (mature)

<400> 95
Asp Ala Gly Val Ile Gln Ser Pro Arg His Glu Val Thr Glu Met Gly
 1   5   10   15
Gln Glu Val Thr Leu Arg Cys Lys Pro Ile Ser Gly His Asp Tyr Leu
            20   25   30
Phe Trp Tyr Arg Gln Thr Met Met Arg Gly Leu Glu Leu Leu Ile Tyr
        35   40   45
Phe Asn Asn Asn Val Pro Ile Asp Asp Ser Gly Met Pro Glu Asp Arg

```
    50                  55                  60
Phe Ser Ala Lys Met Pro Asn Ala Ser Phe Ser Thr Leu Lys Ile Gln
65                  70                  75                  80
Pro Ser Glu Pro Arg Asp Ser Ala Val Tyr Phe Cys Ala Ser Ser Phe
                85                  90                  95
Thr Ser Gly Ser Tyr Glu Gln Tyr Phe Gly Pro Gly Thr Arg Leu Thr
            100                 105                 110
Val Thr
```

<210> 96
<211> 108
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B V alpha (mature)

<400> 96

```
Gly Gln Ser Leu Glu Gln Pro Ser Glu Val Thr Ala Val Glu Gly Ala
 1               5                  10                  15
Ile Val Gln Ile Asn Cys Thr Tyr Gln Thr Ser Gly Phe Tyr Gly Leu
            20                  25                  30
Ser Trp Tyr Gln Gln His Asp Gly Gly Ala Pro Thr Phe Leu Ser Tyr
        35                  40                  45
Asn Ala Leu Asp Gly Leu Glu Glu Thr Gly Arg Phe Ser Ser Phe Leu
    50                  55                  60
Ser Arg Ser Asp Ser Tyr Gly Tyr Leu Leu Leu Gln Glu Leu Gln Met
65                  70                  75                  80
Lys Asp Ser Ala Ser Tyr Phe Cys Ala Val Asn Asp Ala Ser Lys Ile
                85                  90                  95
Ile Phe Gly Ser Gly Thr Arg Leu Ser Ile Arg Pro
            100                 105
```

<210> 97
<211> 114
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B V beta (mature)

<400> 97

```
Asp Ala Gly Val Ile Gln Ser Pro Arg His Glu Val Thr Glu Met Gly
 1               5                  10                  15
Gln Glu Val Thr Leu Arg Cys Lys Pro Ile Ser Gly His Asn Ser Leu
            20                  25                  30
Phe Trp Tyr Arg Gln Thr Met Met Arg Gly Leu Glu Leu Leu Ile Tyr
        35                  40                  45
Phe Asn Asn Asn Val Pro Ile Asp Asp Ser Gly Met Pro Glu Asp Arg
```

```
    50                  55                  60
Phe Ser Ala Lys Met Pro Asn Ala Ser Phe Ser Thr Leu Lys Ile Gln
65                  70                  75                  80
Pro Ser Glu Pro Arg Asp Ser Ala Val Tyr Phe Cys Ala Ser Ser Ser
                85                  90                  95
Pro Asp Arg Leu Gly Glu Gln Tyr Phe Gly Pro Gly Thr Arg Leu Thr
            100                 105                 110
Val Thr
```

<210> 98
<211> 109
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B V alpha (mature)

<400> 98

```
Gln Lys Glu Val Glu Gln Asp Pro Gly Pro Leu Ser Val Pro Glu Gly
 1               5                  10                  15
Ala Ile Val Ser Leu Asn Cys Thr Tyr Ser Asn Ser Ala Phe Gln Tyr
            20                  25                  30
Phe Met Trp Tyr Arg Gln Tyr Ser Arg Lys Gly Pro Glu Leu Leu Met
        35                  40                  45
Tyr Thr Tyr Ser Ser Gly Asn Lys Glu Asp Gly Arg Phe Thr Ala Gln
    50                  55                  60
Val Asp Lys Ser Ser Lys Tyr Ile Ser Leu Phe Ile Arg Asp Ser Gln
65                  70                  75                  80
Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Gly Gly Gly Asn Thr Pro
                85                  90                  95
Leu Val Phe Gly Lys Gly Thr Arg Leu Ser Val Ile Ala
            100                 105
```

<210> 99
<211> 113
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A V beta (mature)

<400> 99

```
Asp Thr Glu Val Thr Gln Thr Pro Lys His Leu Val Met Gly Met Thr
 1               5                  10                  15
Asn Lys Lys Ser Leu Lys Cys Glu Gln His Met Gly His Arg Ala Met
            20                  25                  30
Tyr Trp Tyr Lys Gln Lys Ala Lys Lys Pro Pro Glu Leu Met Phe Val
        35                  40                  45
Tyr Ser Tyr Glu Lys Leu Ser Ile Asn Glu Ser Val Pro Ser Arg Phe
```

```
    50                  55                  60
Ser Pro Glu Cys Pro Asn Ser Ser Leu Leu Asn Leu His Leu His Ala
65                  70                  75                  80
Leu Gln Pro Glu Asp Ser Ala Leu Tyr Leu Cys Ala Ser Ser His Gly
                85                  90                  95
Ser Leu Asn Thr Glu Ala Phe Phe Gly Gln Gly Thr Arg Leu Thr Val
            100                 105                 110
Val


<210> 100
<211> 114
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A V alpha (mature)

<400> 100
Gly Glu Asp Val Glu Gln Ser Leu Phe Leu Ser Val Arg Glu Gly Asp
 1               5                  10                  15
Ser Ser Val Ile Asn Cys Thr Tyr Thr Asp Ser Ser Ser Thr Tyr Leu
            20                  25                  30
Tyr Trp Tyr Lys Gln Glu Pro Gly Ala Gly Leu Gln Leu Leu Thr Tyr
        35                  40                  45
Ile Phe Ser Asn Met Asp Met Lys Gln Asp Gln Arg Leu Thr Val Leu
    50                  55                  60
Leu Asn Lys Lys Asp Lys His Leu Ser Leu Arg Ile Ala Asp Thr Gln
65                  70                  75                  80
Thr Gly Asp Ser Ala Ile Tyr Phe Cys Ala Glu Thr Pro Gly Tyr Gly
                85                  90                  95
Gly Ala Thr Asn Lys Leu Ile Phe Gly Thr Gly Thr Leu Leu Ala Val
            100                 105                 110
Gln Pro


<210> 101
<211> 114
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B V beta (mature)

<400> 101
Glu Thr Gly Val Thr Gln Ser Pro Thr His Leu Ile Lys Thr Arg Gly
 1               5                  10                  15
Gln Gln Val Thr Leu Arg Cys Ser Ser Gln Ser Gly His Asn Thr Val
            20                  25                  30
Ser Trp Tyr Gln Gln Ala Leu Gly Gln Gly Pro Gln Phe Ile Phe Gln
```

```
        35                  40                  45
Tyr Tyr Arg Glu Glu Glu Asn Gly Arg Gly Asn Phe Pro Pro Arg Phe
    50                  55                  60
Ser Gly Leu Gln Phe Pro Asn Tyr Ser Ser Glu Leu Asn Val Asn Ala
65                  70                  75                  80
Leu Glu Leu Asp Asp Ser Ala Leu Tyr Leu Cys Ala Ser Ser Phe Ala
                85                  90                  95
Gly Gly Arg Ser Asp Thr Gln Tyr Phe Gly Pro Gly Thr Arg Leu Thr
            100                 105                 110
Val Leu


<210> 102
<211> 116
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B V alpha (mature)

<400> 102
Lys Gln Glu Val Thr Gln Ile Pro Ala Ala Leu Ser Val Pro Glu Gly
 1               5                  10                  15
Glu Asn Leu Val Leu Asn Cys Ser Phe Thr Asp Ser Ala Ile Tyr Asn
            20                  25                  30
Leu Gln Trp Phe Arg Gln Asp Pro Gly Lys Gly Leu Thr Ser Leu Leu
        35                  40                  45
Leu Ile Gln Ser Ser Gln Arg Glu Gln Thr Ser Gly Arg Leu Asn Ala
    50                  55                  60
Ser Leu Asp Lys Ser Ser Gly Arg Ser Thr Leu Tyr Ile Ala Ala Ser
65                  70                  75                  80
Gln Pro Gly Asp Ser Ala Thr Tyr Leu Cys Ala Val Arg Leu Leu Phe
                85                  90                  95
Ala Gln Gly Gly Ser Glu Lys Leu Val Phe Gly Lys Gly Thr Lys Leu
            100                 105                 110
Thr Val Asn Pro
        115

<210> 103
<211> 293
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B TCR beta (mature)

<400> 103
Asp Ala Gly Val Ile Gln Ser Pro Arg His Glu Val Thr Glu Met Gly
 1               5                  10                  15
Gln Glu Val Thr Leu Arg Cys Lys Pro Ile Ser Gly His Asp Tyr Leu
```

```
            20                  25                  30
Phe Trp Tyr Arg Gln Thr Met Met Arg Gly Leu Glu Leu Leu Ile Tyr
        35                  40                  45
Phe Asn Asn Asn Val Pro Ile Asp Asp Ser Gly Met Pro Glu Asp Arg
    50                  55                  60
Phe Ser Ala Lys Met Pro Asn Ala Ser Phe Ser Thr Leu Lys Ile Gln
65                  70                  75                  80
Pro Ser Glu Pro Arg Asp Ser Ala Val Tyr Phe Cys Ala Ser Ser Phe
                85                  90                  95
Thr Ser Gly Ser Tyr Glu Gln Tyr Phe Gly Pro Gly Thr Arg Leu Thr
            100                 105                 110
Val Thr Glu Asp Leu Lys Asn Val Phe Pro Pro Glu Val Ala Val Phe
        115                 120                 125
Glu Pro Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala Thr Leu Val
    130                 135                 140
Cys Leu Ala Thr Gly Phe Tyr Pro Asp His Val Glu Leu Ser Trp Trp
145                 150                 155                 160
Val Asn Gly Lys Glu Val His Ser Gly Val Cys Thr Asp Pro Gln Pro
                165                 170                 175
Leu Lys Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys Leu Ser Ser
            180                 185                 190
Arg Leu Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg Asn His Phe
        195                 200                 205
Arg Cys Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp Glu Trp Thr
    210                 215                 220
Gln Asp Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala Glu Ala Trp
225                 230                 235                 240
Gly Arg Ala Asp Cys Gly Phe Thr Ser Glu Ser Tyr Gln Gln Gly Val
                245                 250                 255
Leu Ser Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys Ala Thr Leu
            260                 265                 270
Tyr Ala Val Leu Val Ser Ala Leu Val Leu Met Ala Met Val Lys Arg
        275                 280                 285
Lys Asp Ser Arg Gly
    290

<210> 104
<211> 249
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-3B TCR alpha (mature) -
      Cys mod

<400> 104
Gly Gln Ser Leu Glu Gln Pro Ser Glu Val Thr Ala Val Glu Gly Ala
 1               5                  10                  15
Ile Val Gln Ile Asn Cys Thr Tyr Gln Thr Ser Gly Phe Tyr Gly Leu
            20                  25                  30
```

```
Ser Trp Tyr Gln Gln His Asp Gly Gly Ala Pro Thr Phe Leu Ser Tyr
        35                  40                  45
Asn Ala Leu Asp Gly Leu Glu Glu Thr Gly Arg Phe Ser Ser Phe Leu
    50                  55                  60
Ser Arg Ser Asp Ser Tyr Gly Tyr Leu Leu Leu Gln Glu Leu Gln Met
65                  70                  75                  80
Lys Asp Ser Ala Ser Tyr Phe Cys Ala Val Asn Asp Ala Ser Lys Ile
                85                  90                  95
Ile Phe Gly Ser Gly Thr Arg Leu Ser Ile Arg Pro Asn Ile Gln Asn
            100                 105                 110
Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser Ser Asp Lys
        115                 120                 125
Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn Val Ser Gln
    130                 135                 140
Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Cys Val Leu Asp Met
145                 150                 155                 160
Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp Ser Asn Lys
                165                 170                 175
Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile Ile Pro Glu
            180                 185                 190
Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser Cys Asp Val Lys Leu Val
        195                 200                 205
Glu Lys Ser Phe Glu Thr Asp Thr Asn Leu Asn Phe Gln Asn Leu Ser
    210                 215                 220
Val Ile Gly Phe Arg Ile Leu Leu Leu Lys Val Ala Gly Phe Asn Leu
225                 230                 235                 240
Leu Met Thr Leu Arg Leu Trp Ser Ser
                245

<210> 105
<211> 293
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B TCR beta (mature) -
      Cys mod

<400> 105
Asp Ala Gly Val Ile Gln Ser Pro Arg His Glu Val Thr Glu Met Gly
 1               5                  10                  15
Gln Glu Val Thr Leu Arg Cys Lys Pro Ile Ser Gly His Asn Ser Leu
            20                  25                  30
Phe Trp Tyr Arg Gln Thr Met Met Arg Gly Leu Glu Leu Leu Ile Tyr
        35                  40                  45
Phe Asn Asn Asn Val Pro Ile Asp Asp Ser Gly Met Pro Glu Asp Arg
    50                  55                  60
Phe Ser Ala Lys Met Pro Asn Ala Ser Phe Ser Thr Leu Lys Ile Gln
65                  70                  75                  80
Pro Ser Glu Pro Arg Asp Ser Ala Val Tyr Phe Cys Ala Ser Ser Ser
```

```
                85                  90                  95
Pro Asp Arg Leu Gly Glu Gln Tyr Phe Gly Pro Gly Thr Arg Leu Thr
            100                 105                 110
Val Thr Glu Asp Leu Lys Asn Val Phe Pro Pro Glu Val Ala Val Phe
        115                 120                 125
Glu Pro Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala Thr Leu Val
    130                 135                 140
Cys Leu Ala Thr Gly Phe Tyr Pro Asp His Val Glu Leu Ser Trp Trp
145                 150                 155                 160
Val Asn Gly Lys Glu Val His Ser Gly Val Cys Thr Asp Pro Gln Pro
                165                 170                 175
Leu Lys Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys Leu Ser Ser
            180                 185                 190
Arg Leu Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg Asn His Phe
        195                 200                 205
Arg Cys Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp Glu Trp Thr
    210                 215                 220
Gln Asp Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala Glu Ala Trp
225                 230                 235                 240
Gly Arg Ala Asp Cys Gly Phe Thr Ser Glu Ser Tyr Gln Gln Gly Val
                245                 250                 255
Leu Ser Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys Ala Thr Leu
            260                 265                 270
Tyr Ala Val Leu Val Ser Ala Leu Val Leu Met Ala Met Val Lys Arg
        275                 280                 285
Lys Asp Ser Arg Gly
    290

<210> 106
<211> 250
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso20-16B TCR alpha (mature) -
      Cys mod

<400> 106
Gln Lys Glu Val Glu Gln Asp Pro Gly Pro Leu Ser Val Pro Glu Gly
 1               5                  10                  15
Ala Ile Val Ser Leu Asn Cys Thr Tyr Ser Asn Ser Ala Phe Gln Tyr
            20                  25                  30
Phe Met Trp Tyr Arg Gln Tyr Ser Arg Lys Gly Pro Glu Leu Leu Met
        35                  40                  45
Tyr Thr Tyr Ser Ser Gly Asn Lys Glu Asp Gly Arg Phe Thr Ala Gln
    50                  55                  60
Val Asp Lys Ser Ser Lys Tyr Ile Ser Leu Phe Ile Arg Asp Ser Gln
65                  70                  75                  80
Pro Ser Asp Ser Ala Thr Tyr Leu Cys Ala Gly Gly Gly Asn Thr Pro
                85                  90                  95
```

```
Leu Val Phe Gly Lys Gly Thr Arg Leu Ser Val Ile Ala Asn Ile Gln
            100                 105                 110
Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp Ser Lys Ser Ser Asp
        115                 120                 125
Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser Gln Thr Asn Val Ser
    130                 135                 140
Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp Lys Cys Val Leu Asp
145                 150                 155                 160
Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala Val Ala Trp Ser Asn
                165                 170                 175
Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn Asn Ser Ile Ile Pro
            180                 185                 190
Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser Cys Asp Val Lys Leu
        195                 200                 205
Val Glu Lys Ser Phe Glu Thr Asp Thr Asn Leu Asn Phe Gln Asn Leu
    210                 215                 220
Ser Val Ile Gly Phe Arg Ile Leu Leu Leu Lys Val Ala Gly Phe Asn
225                 230                 235                 240
Leu Leu Met Thr Leu Arg Leu Trp Ser Ser
                245                 250

<210> 107
<211> 290
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A TCR beta (mature) -
      Cys mod

<400> 107
Asp Thr Glu Val Thr Gln Thr Pro Lys His Leu Val Met Gly Met Thr
 1               5                  10                  15
Asn Lys Lys Ser Leu Lys Cys Glu Gln His Met Gly His Arg Ala Met
            20                  25                  30
Tyr Trp Tyr Lys Gln Lys Ala Lys Lys Pro Pro Glu Leu Met Phe Val
        35                  40                  45
Tyr Ser Tyr Glu Lys Leu Ser Ile Asn Glu Ser Val Pro Ser Arg Phe
    50                  55                  60
Ser Pro Glu Cys Pro Asn Ser Ser Leu Leu Asn Leu His Leu His Ala
65                  70                  75                  80
Leu Gln Pro Glu Asp Ser Ala Leu Tyr Leu Cys Ala Ser Ser His Gly
                85                  90                  95
Ser Leu Asn Thr Glu Ala Phe Phe Gly Gln Gly Thr Arg Leu Thr Val
            100                 105                 110
Val Glu Asp Leu Asn Lys Val Phe Pro Pro Glu Val Ala Val Phe Glu
        115                 120                 125
Pro Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala Thr Leu Val Cys
    130                 135                 140
Leu Ala Thr Gly Phe Phe Pro Asp His Val Glu Leu Ser Trp Trp Val
```

```
145                 150                 155                 160
Asn Gly Lys Glu Val His Ser Gly Val Cys Thr Asp Pro Gln Pro Leu
                165                 170                 175
Lys Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys Leu Ser Ser Arg
            180                 185                 190
Leu Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg Asn His Phe Arg
        195                 200                 205
Cys Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp Glu Trp Thr Gln
    210                 215                 220
Asp Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala Glu Ala Trp Gly
225                 230                 235                 240
Arg Ala Asp Cys Gly Phe Thr Ser Val Ser Tyr Gln Gln Gly Val Leu
                245                 250                 255
Ser Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys Ala Thr Leu Tyr
            260                 265                 270
Ala Val Leu Val Ser Ala Leu Val Leu Met Ala Met Val Lys Arg Lys
        275                 280                 285
Asp Phe
    290
```

<210> 108
<211> 255
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11A TCR alpha (mature)
- Cys mod

<400> 108

```
Gly Glu Asp Val Glu Gln Ser Leu Phe Leu Ser Val Arg Glu Gly Asp
 1               5                  10                  15
Ser Ser Val Ile Asn Cys Thr Tyr Thr Asp Ser Ser Ser Thr Tyr Leu
            20                  25                  30
Tyr Trp Tyr Lys Gln Glu Pro Gly Ala Gly Leu Gln Leu Leu Thr Tyr
        35                  40                  45
Ile Phe Ser Asn Met Asp Met Lys Gln Asp Gln Arg Leu Thr Val Leu
    50                  55                  60
Leu Asn Lys Lys Asp Lys His Leu Ser Leu Arg Ile Ala Asp Thr Gln
65                  70                  75                  80
Thr Gly Asp Ser Ala Ile Tyr Phe Cys Ala Glu Thr Pro Gly Tyr Gly
                85                  90                  95
Gly Ala Thr Asn Lys Leu Ile Phe Gly Thr Gly Thr Leu Leu Ala Val
            100                 105                 110
Gln Pro Asn Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu Arg Asp
        115                 120                 125
Ser Lys Ser Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe Asp Ser
    130                 135                 140
Gln Thr Asn Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile Thr Asp
145                 150                 155                 160
```

```
Lys Cys Val Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn Ser Ala
                165                 170                 175
Val Ala Trp Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala Phe Asn
            180                 185                 190
Asn Ser Ile Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu Ser Ser
        195                 200                 205
Cys Asp Val Lys Leu Val Glu Lys Ser Phe Glu Thr Asp Thr Asn Leu
    210                 215                 220
Asn Phe Gln Asn Leu Ser Val Ile Gly Phe Arg Ile Leu Leu Leu Lys
225                 230                 235                 240
Val Ala Gly Phe Asn Leu Leu Met Thr Leu Arg Leu Trp Ser Ser
                245                 250                 255

<210> 109
<211> 293
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B TCR beta (mature) -
      Cys mod

<400> 109
Glu Thr Gly Val Thr Gln Ser Pro Thr His Leu Ile Lys Thr Arg Gly
 1               5                  10                  15
Gln Gln Val Thr Leu Arg Cys Ser Ser Gln Ser Gly His Asn Thr Val
            20                  25                  30
Ser Trp Tyr Gln Gln Ala Leu Gly Gln Gly Pro Gln Phe Ile Phe Gln
        35                  40                  45
Tyr Tyr Arg Glu Glu Glu Asn Gly Arg Gly Asn Phe Pro Pro Arg Phe
    50                  55                  60
Ser Gly Leu Gln Phe Pro Asn Tyr Ser Ser Glu Leu Asn Val Asn Ala
65                  70                  75                  80
Leu Glu Leu Asp Asp Ser Ala Leu Tyr Leu Cys Ala Ser Ser Phe Ala
                85                  90                  95
Gly Gly Arg Ser Asp Thr Gln Tyr Phe Gly Pro Gly Thr Arg Leu Thr
            100                 105                 110
Val Leu Glu Asp Leu Lys Asn Val Phe Pro Pro Glu Val Ala Val Phe
        115                 120                 125
Glu Pro Ser Glu Ala Glu Ile Ser His Thr Gln Lys Ala Thr Leu Val
    130                 135                 140
Cys Leu Ala Thr Gly Phe Tyr Pro Asp His Val Glu Leu Ser Trp Trp
145                 150                 155                 160
Val Asn Gly Lys Glu Val His Ser Gly Val Cys Thr Asp Pro Gln Pro
                165                 170                 175
Leu Lys Glu Gln Pro Ala Leu Asn Asp Ser Arg Tyr Cys Leu Ser Ser
            180                 185                 190
Arg Leu Arg Val Ser Ala Thr Phe Trp Gln Asn Pro Arg Asn His Phe
        195                 200                 205
Arg Cys Gln Val Gln Phe Tyr Gly Leu Ser Glu Asn Asp Glu Trp Thr
```

```
    210                 215                 220
Gln Asp Arg Ala Lys Pro Val Thr Gln Ile Val Ser Ala Glu Ala Trp
225                 230                 235                 240
Gly Arg Ala Asp Cys Gly Phe Thr Ser Glu Ser Tyr Gln Gln Gly Val
                245                 250                 255
Leu Ser Ala Thr Ile Leu Tyr Glu Ile Leu Leu Gly Lys Ala Thr Leu
            260                 265                 270
Tyr Ala Val Leu Val Ser Ala Leu Val Leu Met Ala Met Val Lys Arg
        275                 280                 285
Lys Asp Ser Arg Gly
    290
```

<210> 110
<211> 257
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B TCR alpha (mature)
      - Cys mod

<400> 110

```
Lys Gln Glu Val Thr Gln Ile Pro Ala Ala Leu Ser Val Pro Glu Gly
 1               5                  10                  15
Glu Asn Leu Val Leu Asn Cys Ser Phe Thr Asp Ser Ala Ile Tyr Asn
            20                  25                  30
Leu Gln Trp Phe Arg Gln Asp Pro Gly Lys Gly Leu Thr Ser Leu Leu
        35                  40                  45
Leu Ile Gln Ser Ser Gln Arg Glu Gln Thr Ser Gly Arg Leu Asn Ala
    50                  55                  60
Ser Leu Asp Lys Ser Ser Gly Arg Ser Thr Leu Tyr Ile Ala Ala Ser
65                  70                  75                  80
Gln Pro Gly Asp Ser Ala Thr Tyr Leu Cys Ala Val Arg Leu Leu Phe
                85                  90                  95
Ala Gln Gly Gly Ser Glu Lys Leu Val Phe Gly Lys Gly Thr Lys Leu
            100                 105                 110
Thr Val Asn Pro Tyr Ile Gln Asn Pro Asp Pro Ala Val Tyr Gln Leu
        115                 120                 125
Arg Asp Ser Lys Ser Ser Asp Lys Ser Val Cys Leu Phe Thr Asp Phe
    130                 135                 140
Asp Ser Gln Thr Asn Val Ser Gln Ser Lys Asp Ser Asp Val Tyr Ile
145                 150                 155                 160
Thr Asp Lys Cys Val Leu Asp Met Arg Ser Met Asp Phe Lys Ser Asn
                165                 170                 175
Ser Ala Val Ala Trp Ser Asn Lys Ser Asp Phe Ala Cys Ala Asn Ala
            180                 185                 190
Phe Asn Asn Ser Ile Ile Pro Glu Asp Thr Phe Phe Pro Ser Pro Glu
        195                 200                 205
Ser Ser Cys Asp Val Lys Leu Val Glu Lys Ser Phe Glu Thr Asp Thr
    210                 215                 220
```

```
Asn Leu Asn Phe Gln Asn Leu Ser Val Ile Gly Phe Arg Ile Leu Leu
225                 230                 235                 240
Leu Lys Val Ala Gly Phe Asn Leu Leu Met Thr Leu Arg Leu Trp Ser
                245                 250                 255
Ser
```

<210> 111
<211> 831
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B WT TCR alpha

<400> 111
atggagaccc tcttgggcct gcttatcctt tggctgcagc tgcaatgggt gagcagcaaa 60
caggaggtga cgcagattcc tgcagctctg agtgtcccag aaggagaaaa cttggttctc 120
aactgcagtt tcactgatag cgctatttac aacctccagt ggtttaggca ggaccctggg 180
aaaggtctca catctctgtt gcttattcag tcaagtcaga gagagcaaac aagtggaaga 240
cttaatgcct cgctggataa atcatcagga cgtagtactt tatacattgc agcttctcag 300
cctggtgact cagccaccta cctctgtgct gtgaggctat tattcgctca gggcggatct 360
gaaaagctgg tctttggaaa gggaacgaaa ctgacagtaa acccatatat ccagaaccct 420
gaccctgccg tgtaccagct gagagactct aaatccagtg acaagtctgt ctgcctattc 480
accgattttg attctcaaac aaatgtgtca caaagtaagg attctgatgt gtatatcaca 540
gacaaaactg tgctagacat gaggtctatg gacttcaaga gcaacagtgc tgtggcctgg 600
agcaacaaat ctgactttgc atgtgcaaac gccttcaaca acagcattat tccagaagac 660
accttcttcc ccagcccaga aagttcctgt gatgtcaagc tggtcgagaa aagctttgaa 720
acagatacga acctaaactt tcaaaacctg tcagtgattg ggttccgaat cctcctcctg 780
aaagtggccg ggtttaatct gctcatgacg ctgcggctgt ggtccagctg a 831

<210> 112
<211> 939
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence Meso530-11B WT TCR beta

<400> 112
atgggccctg ggctcctctg ctgggtgctg ctttgtctcc tgggagcagg ctcagtggag 60
actggagtca cccaaagtcc cacacacctg atcaaaacga gaggacagca agtgactctg 120
agatgctctt ctcagtctgg gcacaacact gtgtcctggt accaacaggc cctgggtcag 180
gggccccagt ttatctttca gtattatagg gaggaagaga atggcagagg aaacttccct 240
cctagattct caggtctcca gttccctaat tatagctctg agctgaatgt gaacgccttg 300
gagctggacg actcggccct gtatctctgt gccagcagct tcgcgggggg gcgatcagat 360
acgcagtatt ttggcccagg cacccggctg acagtgctcg aggacctgaa aaacgtgttc 420
ccacccgagg tcgctgtgtt tgagccatca gaagcagaga tctcccacac ccaaaaggcc 480
acactggtgt gcctggccac aggcttctac cccgaccacg tggagctgag ctggtgggtg 540
aatgggaagg aggtgcacag tggggtcagc acagacccgc agcccctcaa ggagcagccc 600

gccctcaatg actccagata ctgcctgagc agccgcctga gggtctcggc caccttctgg 660
cagaaccccc gcaaccactt ccgctgtcaa gtccagttct acgggctctc ggagaatgac 720
gagtggaccc aggatagggc caaacctgtc acccagatcg tcagcgccga ggcctggggt 780
agagcagact gtggcttcac ctccgagtct taccagcaag gggtcctgtc tgccaccatc 840
ctctatgaga tcttgctagg gaaggccacc ttgtatgccg tgctggtcag tgccctcgtg 900
ctgatggcca tggtcaagag aaaggattcc agaggctag 939

<210> 113
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Porcine teschovirus
self-cleaving peptide P2A-1

<400> 113
Gly Ser Gly Ala Thr Asn Phe Ser Leu Leu Lys Gln Ala Gly Asp Val
1 5 10 15
Glu Glu Asn Pro Gly Pro
20

<210> 114
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Porcine teschovirus
self-cleaving peptide P2A-2

<400> 114
Ser Gly Ala Thr Asn Phe Ser Leu Leu Lys Gln Ala Gly Asp Val Glu
1 5 10 15
Glu Asn Pro Gly Pro
20

<210> 115
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Thoseaasigna virus 2A T2A

<400> 115
Gly Ser Gly Glu Gly Arg Gly Ser Leu Leu Thr Cys Gly Asp Val Glu
1 5 10 15
Glu Asn Pro Gly Pro
20

<210> 116
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Equine rhinitis A virus E2A

<400> 116
Gly Ser Gly Gln Cys Thr Asn Tyr Ala Leu Leu Lys Leu Ala Gly Asp
 1   5   10   15
Val Glu Ser Asn Pro Gly Pro
            20

<210> 117
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence Foot-and-Mouth disease virus 2
      F2A

<400> 117
Gly Ser Gly Val Lys Gln Thr Leu Asn Phe Asp Leu Leu Lys Leu Ala
 1   5   10   15
Gly Asp Val Glu Ser Asn Pro Gly Pro
            20   25

<210> 118
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence - Meso20-3B CDR2 alpha v2

<400> 118
Asn Ala Leu Asp Gly Leu
 1   5

<210> 119
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence - Meso20-16B CDR2 alpha v2

<400> 119
Thr Tyr Ser Ser Gly Asn
 1   5

<210> 120
<211> 1833
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic sequence - Meso530-11B
      CO-Beta-P2A-Alpha: (alternate optimization)

<400> 120
atgggacctg gattgctttg ttgggtgctg ctgtgtctgc tcggagccgg atctgtggaa   60
acaggcgtga cacagagccc cacacacctg atcaagacca gaggccagca agtgaccctg   120
agatgcagct ctcagagcgg ccacaatacc gtgtcctggt atcagcaggc cctcggacag   180
ggccctcagt tcatcttcca gtactacaga gaggaagaga acggcagagg caacttccca   240
cctagattca gcggcctgca gttccccaac tacagcagcg agctgaacgt gaacgccctg   300
gaactggatg acagcgccct gtacctgtgc gccagttctt ttgccggcgg aagaagcgac   360
acccagtact ttggacctgg caccagactg accgtgctgg aagatctgaa gaacgtgttc   420
ccacctgagg tggccgtgtt cgagccttct gaggccgaga tcagccacac acagaaagcc   480
acactcgtgt gtctggccac cggcttctat cccgatcacg tggaactgtc ttggtgggtc   540
aacggcaaag aggtgcacag cggcgtctgt accgatcctc agcctctgaa agagcagccc   600
gctctgaacg acagcagata ctgcctgagc agcagactga gagtgtccgc caccttctgg   660
cagaacccca gaaaccactt cagatgccag gtgcagttct acggcctgag cgagaacgat   720
gagtggaccc aggatagagc caagcctgtg actcagatcg tgtctgccga agcctggggc   780
agagccgatt gtggctttac cagcgagtct taccagcagg gcgtgctgtc tgccaccatc   840
ctgtatgaga tcctgctggg caaagccact ctgtacgccg tgctggtttc tgccctggtg   900
ctgatggcca tggtcaagcg gaaggatagc agaggcggaa gcggcgccac aaacttctca   960
ctgctgaaac aggccggcga cgtggaagag aatcccggac ctatggaaac actgctggga   1020
ctgctgatcc tgtggctgca gcttcagtgg gtgtccagca agcaagaagt gacccagatt   1080
cctgccgcac tgtctgtgcc tgagggcgag aatctggtcc tgaactgctc cttcaccgac   1140
agcgccatct acaacctgca gtggttcaga caggaccccg gcaagggact gacaagcctg   1200
ctgctgattc agagcagcca gagagagcag accagcggca gactgaatgc cagcctggat   1260
aagtcctccg gcagaagcac cctgtatatc gccgcttctc agcctggcga tagcgccaca   1320
tatctgtgtg ccgtgcggct gctgtttgcc caaggcggat ctgagaagct ggtgttcggc   1380
aagggcacca agctgacagt gaacccctac attcagaacc ccgatcctgc cgtgtaccag   1440
ctgagagaca gcaagagcag cgacaagagc gtgtgcctgt tcaccgactt cgacagccag   1500
accaacgtgt cccagagcaa ggacagcgac gtgtacatca ccgataagtg cgtgctggac   1560
atgcggagca tggacttcaa gagcaacagc gccgtggcct ggtccaacaa gagcgatttc   1620
gcctgcgcca acgccttcaa caacagcatt atccccgagg acacattctt cccaagtcct   1680
gagtccagct gcgacgtgaa actggtggaa aagagcttcg agacagacac caacctgaac   1740
ttccagaacc tgagcgtgat cggcttccgg atcctgctcc tgaaagtggc cggcttcaac   1800
ctgctgatga ccctgcgact gtggtccagc taa   1833

<210> 121
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence - Meganuclease sequence

<400> 121
Leu Ala Gly Leu Ile Asp Ala Asp Gly
 1   5

<210> 122
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence - Meganuclease sequence

<400> 122
Gly Ile Tyr Tyr Ile Gly
 1   5

<210> 123
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic sequence - Meganuclease sequence

<220>
<221> VARIANT
<222> 3
<223> Xaa = D or E

<220>
<221> VARIANT
<222> 4
<223> Xaa = any amino acid

<400> 123
Pro Asp Xaa Xaa Lys
 1   5