SEQUENCE LISTING

<110> Daiichi Sankyo Company, Limited

<120> ANTI-TROP2 ANTIBODY-DRUG CONJUGATE

<130> PD20-9007WO

<150> JP2013-267548
<151> 2013-12-25

<160> 44

<170> PatentIn version 3.5

<210> 1
<211> 363
<212> DNA
<213> Mus musculus

<400> 1
cagatccagt tggtgcagtc tggacctgag ctgaagaagc ctggagagac agtcaggatc 60

tcctgcaagg cttctgggta taccttcaca actgctggaa tgcagtgggt gcaaaagatg 120

ccaggaaagg gtttgaagtg gattggctgg ataaacaccc actctggagt gccaaaatat 180

gcagaagact tcaagggacg gtttgccttc tctttggaaa cctctgccag cactgcatat 240

ttacagataa gcaacctcaa aaatgaggac acgactacgt atttctgtgc gagatcgggg 300

ttcggtagta gctactggta cttcgatgtc tggggcgcag ggaccgcggt caccgtctcc 360

tca 363

<210> 2
<211> 121
<212> PRT
<213> Mus musculus

<400> 2

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

Thr Val Arg Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Thr Ala
20 25 30

Gly Met Gln Trp Val Gln Lys Met Pro Gly Lys Gly Leu Lys Trp Ile
35 40 45

```
Gly Trp Ile Asn Thr His Ser Gly Val Pro Lys Tyr Ala Glu Asp Phe
    50                  55                  60

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

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

Ala Arg Ser Gly Phe Gly Ser Ser Tyr Trp Tyr Phe Asp Val Trp Gly
            100                 105                 110

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

<210> 3
<211> 327
<212> DNA
<213> Mus musculus

<400> 3
gacattgtga tgacccagtc tcacaaattc atgtccacat cagtaggaga cagggtcagc 60

atcacctgca aggccagtca ggatgtgagt actgctgtag cctggtatca acagaaacca 120

ggacaatctc ctaaactgct gatttactcg gcatcctacc gctacactgg agtccctgat 180

cgcttcactg gcagtggatc tgggacggct ttcactttca ccatcagcag tgtgcaggct 240

gaagacctgg cagtttatta ctgtcagcaa cattatatta ctccgctcac gttcggtgct 300

gggaccaagc tggagctgaa acgggct 327

<210> 4
<211> 109
<212> PRT
<213> Mus musculus

<400> 4

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

Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp Val Ser Thr Ala
```

```
            20                  25                  30

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

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

Ser Gly Ser Gly Thr Ala Phe Thr Phe Thr Ile Ser Ser Val Gln Ala
65                  70                  75                  80

Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln His Tyr Ile Thr Pro Leu
                85                  90                  95

Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg Ala
            100                 105
```

<210> 5
<211> 449
<212> DNA
<213> Homo sapiens

<400> 5
gcctccggac tctagagcca ccatggtgct gcagacccag gtgttcatct ccctgctgct 60

gtggatctcc ggcgcgtacg gcgatatcgt gatgattaaa cgtacggtgg ccgccccctc 120

cgtgttcatc ttcccccccct ccgacgagca gctgaagtcc ggcaccgcct ccgtggtgtg 180

cctgctgaat aacttctacc ccagagaggc caaggtgcag tggaaggtgg acaacgccct 240

gcagtccggg aactcccagg agagcgtgac cgagcaggac agcaaggaca gcacctacag 300

cctgagcagc accctgaccc tgagcaaagc cgactacgag aagcacaagg tgtacgcctg 360

cgaggtgacc caccagggcc tgagctcccc cgtcaccaag agcttcaaca gggggggagtg 420

ttaggggccc gtttaaacgg gggaggcta 449

<210> 6
<211> 1132
<212> DNA
<213> Homo sapiens

<400> 6
gcctccggac tctagagcca ccatgaaaca cctgtggttc ttcctcctgc tggtggcagc 60

tcccagatgg gtgctgagcc aggtgcaatt gtgcaggcgg ttagctcagc ctccaccaag 120

ggcccaagcg tcttccccct ggcaccctcc tccaagagca cctctggcgg cacagccgcc 180

ctgggctgcc tggtcaagga ctacttcccc gaacccgtga ccgtgagctg gaactcaggc 240

gccctgacca gcggcgtgca caccttcccc gctgtcctgc agtcctcagg actctactcc 300

ctcagcagcg tggtgaccgt gccctccagc agcttgggca cccagaccta catctgcaac 360

gtgaatcaca agcccagcaa caccaaggtg gacaagagag ttgagcccaa atcttgtgac 420

aaaactcaca catgcccacc ctgcccagca cctgaactcc tgggggggacc ctcagtcttc 480

ctcttccccc caaaacccaa ggacaccctc atgatctccc ggacccctga ggtcacatgc 540

gtggtggtgg acgtgagcca cgaagaccct gaggtcaagt tcaactggta cgtggacggc 600

gtggaggtgc ataatgccaa gacaaagccc cgggaggagc agtacaacag cacgtaccgg 660

gtggtcagcg tcctcaccgt cctgcaccag gactggctga atggcaagga gtacaagtgc 720

aaggtctcca acaaagccct cccagccccc atcgagaaaa ccatctccaa agccaaaggc 780

cagccccggg aaccacaggt gtacaccctg cccccatccc gggaggagat gaccaagaac 840

caggtcagcc tgacctgcct ggtcaaaggc ttctatccca gcgacatcgc cgtggagtgg 900

gagagcaatg gccagcccga gaacaactac aagaccaccc ctcccgtgct ggactccgac 960

ggctccttct tcctctacag caagctcacc gtggacaaga gcaggtggca gcagggcaac 1020

gtcttctcat gctccgtgat gcatgaggct ctgcacaacc actacaccca gaagagcctc 1080

tccctgtctc ccggcaaatg agatatcggg cccgtttaaa cgggggaggc ta 1132

<210> 7
<211> 1410
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of heavy chain of chimeric murine-human TINA1 antibody

<400> 7
atgaaacacc tgtggttctt cctcctgctg gtggcagctc ccagatgggt gctgagccag 60

atccagttgg tgcagtctgg acctgagctg aagaagcctg gagagacagt caggatctcc 120

tgcaaggctt ctgggtatac cttcacaact gctggaatgc agtgggtgca aaagatgcca 180

ggaaagggtt tgaagtggat tggctggata aacacccact ctggagtgcc aaaatatgca 240

gaagacttca agggacggtt tgccttctct ttggaaacct ctgccagcac tgcatattta 300

cagataagca acctcaaaaa tgaggacacg actacgtatt tctgtgcgag atcggggttc 360

ggtagtagct actggtactt cgatgtctgg ggcgcaggga ccgcggtcac cgtcagctca 420

gcctccacca agggcccaag cgtcttcccc ctggcaccct cctccaagag cacctctggc 480

ggcacagccg ccctgggctg cctggtcaag gactacttcc ccgaacccgt gaccgtgagc 540

tggaactcag gcgccctgac cagcggcgtg cacaccttcc ccgctgtcct gcagtcctca 600

ggactctact ccctcagcag cgtggtgacc gtgccctcca gcagcttggg cacccagacc 660

tacatctgca acgtgaatca caagcccagc aacaccaagg tggacaagag agttgagccc 720

aaatcttgtg acaaaactca cacatgccca ccctgcccag cacctgaact cctgggggga 780

ccctcagtct tcctcttccc cccaaaaccc aaggacaccc tcatgatctc ccggacccct 840

gaggtcacat gcgtggtggt ggacgtgagc cacgaagacc ctgaggtcaa gttcaactgg 900

tacgtggacg gcgtggaggt gcataatgcc aagacaaagc cccgggagga gcagtacaac 960

agcacgtacc gggtggtcag cgtcctcacc gtcctgcacc aggactggct gaatggcaag 1020

gagtacaagt gcaaggtctc caacaaagcc ctcccagccc ccatcgagaa aaccatctcc 1080

aaagccaaag gccagccccg ggaaccacag gtgtacaccc tgcccccatc ccgggaggag 1140

atgaccaaga accaggtcag cctgacctgc ctggtcaaag gcttctatcc cagcgacatc 1200

gccgtggagt gggagagcaa tggccagccc gagaacaact acaagaccac ccctcccgtg 1260

ctggactccg acggctcctt cttcctctac agcaagctca ccgtggacaa gagcaggtgg 1320

cagcagggca acgtcttctc atgctccgtg atgcatgagg ctctgcacaa ccactacacc 1380

cagaagagcc tctccctgtc tcccggcaaa 1410

<210> 8
<211> 470
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of heavy chain of chimeric murine-human TINA1 antibody

<400> 8

```
Met Lys His Leu Trp Phe Phe Leu Leu Leu Val Ala Ala Pro Arg Trp
1               5                  10                  15

Val Leu Ser Gln Ile Gln Leu Val Gln Ser Gly Pro Glu Leu Lys Lys
            20                  25                  30

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

Thr Thr Ala Gly Met Gln Trp Val Gln Lys Met Pro Gly Lys Gly Leu
    50                  55                  60

Lys Trp Ile Gly Trp Ile Asn Thr His Ser Gly Val Pro Lys Tyr Ala
65                  70                  75                  80

Glu Asp Phe Lys Gly Arg Phe Ala Phe Ser Leu Glu Thr Ser Ala Ser
                85                  90                  95

Thr Ala Tyr Leu Gln Ile Ser Asn Leu Lys Asn Glu Asp Thr Thr Thr
            100                 105                 110

Tyr Phe Cys Ala Arg Ser Gly Phe Gly Ser Ser Tyr Trp Tyr Phe Asp
        115                 120                 125

Val Trp Gly Ala Gly Thr Ala Val Thr Val Ser Ser Ala Ser Thr Lys
    130                 135                 140

Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly
145                 150                 155                 160

Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro
                165                 170                 175

Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr
            180                 185                 190

Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val
        195                 200                 205
```

```
Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn
    210                 215                 220

Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Pro
225                 230                 235                 240

Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu
                245                 250                 255

Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
            260                 265                 270

Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
        275                 280                 285

Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
    290                 295                 300

Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn
305                 310                 315                 320

Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp
                325                 330                 335

Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro
            340                 345                 350

Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu
        355                 360                 365

Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn
    370                 375                 380

Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
385                 390                 395                 400

Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
                405                 410                 415
```

Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
420 425 430

Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
435 440 445

Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
450 455 460

Ser Leu Ser Pro Gly Lys
465 470

<210> 9
<211> 702
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of light chain of chimeric murine-human TINA1 antibody

<400> 9
atggtgctgc agacccaggt gttcatctcc ctgctgctgt ggatctccgg cgcgtacggc 60

gacattgtga tgacccagtc tcacaaattc atgtccacat cagtaggaga cagggtcagc 120

atcacctgca aggccagtca ggatgtgagt actgctgtag cctggtatca acagaaacca 180

ggacaatctc ctaaactgct gatttactcg gcatcctacc gctacactgg agtccctgat 240

cgcttcactg gcagtggatc tgggacggct ttcactttca ccatcagcag tgtgcaggct 300

gaagacctgg cagtttatta ctgtcagcaa cattatatta ctccgctcac gttcggtgct 360

gggaccaagc tggagctgaa acgggctgtg gccgcccccc ccgtgttcat cttccccccc 420

tccgacgagc agctgaagtc cggcaccgcc tccgtggtgt gcctgctgaa taacttctac 480

cccagagagg ccaaggtgca gtggaaggtg gacaacgccc tgcagtccgg gaactcccag 540

gagagcgtga ccgagcagga cagcaaggac agcacctaca gcctgagcag caccctgacc 600

ctgagcaaag ccgactacga gaagcacaag gtgtacgcct gcgaggtgac ccaccagggc 660

ctgagctccc ccgtcaccaa gagcttcaac aggggggagt gt 702

<210> 10
<211> 234

<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of light chain of chimeric murine-human TINA1 antibody

<400> 10

Met Val Leu Gln Thr Gln Val Phe Ile Ser Leu Leu Leu Trp Ile Ser
1 5 10 15

Gly Ala Tyr Gly Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser
20 25 30

Thr Ser Val Gly Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp
35 40 45

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

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

Arg Phe Thr Gly Ser Gly Ser Gly Thr Ala Phe Thr Phe Thr Ile Ser
85 90 95

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

Ile Thr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg
115 120 125

Ala Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln
130 135 140

Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr
145 150 155 160

Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser
165 170 175

```
Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr
            180                 185                 190


Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys
        195                 200                 205


His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro
    210                 215                 220


Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
225                 230
```

<210> 11
<211> 1410
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of heavy chain of humanized TINA1 antibody, type H1

<400> 11

```
atgaaacacc tgtggttctt cctcctgctg gtggcagctc ccagatgggt gctgagccag       60

gtgcagctgg tgcagtctgg cgccgaagtg aagaaaccag gcgccagcgt gaaggtgtcc      120

tgcaaggcca gcggctacac ctttaccacc gccggcatgc agtgggtgcg ccaggctcct      180

ggacagggcc tggaatggat gggctggatc aacacccaca gcggcgtgcc caaatacgcc      240

gaggacttca agggcagagt gaccatcagc gccgacacca gcacctccac agcctacctg      300

cagctgagca gcctgaagtc cgaggacacc gccgtgtact actgcgccag aagcggcttc      360

ggcagcagct actggtactt cgacgtgtgg ggccagggca ccctcgtgac cgtcagctca      420

gcctccacca agggcccaag cgtcttcccc ctggcaccct cctccaagag cacctctggc      480

ggcacagccg ccctgggctg cctggtcaag gactacttcc ccgaacccgt gaccgtgagc      540

tggaactcag gcgccctgac cagcggcgtg cacaccttcc ccgctgtcct gcagtcctca      600

ggactctact ccctcagcag cgtggtgacc gtgccctcca gcagcttggg cacccagacc      660

tacatctgca acgtgaatca caagcccagc aacaccaagg tggacaagag agttgagccc      720

aaatcttgtg acaaaactca cacatgccca ccctgcccag cacctgaact cctgggggga      780

ccctcagtct tcctcttccc cccaaaaccc aaggacaccc tcatgatctc ccggacccct      840
```

gaggtcacat gcgtggtggt ggacgtgagc cacgaagacc ctgaggtcaa gttcaactgg 900

tacgtggacg gcgtggaggt gcataatgcc aagacaaagc cccgggagga gcagtacaac 960

agcacgtacc gggtggtcag cgtcctcacc gtcctgcacc aggactggct gaatggcaag 1020

gagtacaagt gcaaggtctc caacaaagcc ctcccagccc ccatcgagaa aaccatctcc 1080

aaagccaaag gccagccccg ggaaccacag gtgtacaccc tgcccccatc ccgggaggag 1140

atgaccaaga accaggtcag cctgacctgc ctggtcaaag gcttctatcc cagcgacatc 1200

gccgtggagt gggagagcaa tggccagccc gagaacaact acaagaccac ccctcccgtg 1260

ctggactccg acggctcctt cttcctctac agcaagctca ccgtggacaa gagcaggtgg 1320

cagcagggca acgtcttctc atgctccgtg atgcatgagg ctctgcacaa ccactacacc 1380

cagaagagcc tctccctgtc tcccggcaaa 1410

<210> 12
<211> 470
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of heavy chain of humanized TINA1 antibody, type H1

<400> 12

Met Lys His Leu Trp Phe Phe Leu Leu Leu Val Ala Ala Pro Arg Trp
1 5 10 15

Val Leu Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Thr Ala Gly Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
50 55 60

Glu Trp Met Gly Trp Ile Asn Thr His Ser Gly Val Pro Lys Tyr Ala
65 70 75 80

```
Glu Asp Phe Lys Gly Arg Val Thr Ile Ser Ala Asp Thr Ser Thr Ser
                85                  90                  95

Thr Ala Tyr Leu Gln Leu Ser Ser Leu Lys Ser Glu Asp Thr Ala Val
            100                 105                 110

Tyr Tyr Cys Ala Arg Ser Gly Phe Gly Ser Ser Tyr Trp Tyr Phe Asp
        115                 120                 125

Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys
    130                 135                 140

Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly
145                 150                 155                 160

Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro
                165                 170                 175

Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr
            180                 185                 190

Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val
        195                 200                 205

Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn
    210                 215                 220

Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Pro
225                 230                 235                 240

Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu
                245                 250                 255

Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
            260                 265                 270

Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
        275                 280                 285

Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
```

```
    290                 295                 300

Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn
305                 310                 315                 320

Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp
                325                 330                 335

Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro
            340                 345                 350

Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu
        355                 360                 365

Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn
    370                 375                 380

Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
385                 390                 395                 400

Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
                405                 410                 415

Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
            420                 425                 430

Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
        435                 440                 445

Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
    450                 455                 460

Ser Leu Ser Pro Gly Lys
465                 470


<210>  13
<211>  1410
<212>  DNA
<213>  Artificial Sequence

<220>
```

<223> nucleotide sequence of heavy chain of humanized TINA1 antibody, type H2

<400> 13

atgaaacacc tgtggttctt cctcctgctg gtggcagctc ccagatgggt gctgagccag 60

gtgcagctgg tgcagtctgg cgccgaagtg aagaaaccag gcgccagcgt gaaggtgtcc 120

tgcaaggcca gcggctacac ctttaccacc gccggcatgc agtgggtgcg ccaggctcct 180

ggacagggcc tggaatggat gggctggatc aacacccaca gcggcgtgcc caaatacgcc 240

gaggacttca agggcagagt gaccatcagc ctggacacca gcacctccac cgcctacctg 300

cagctgagca gcctgaagtc cgaggacacc gccgtgtact actgcgccag aagcggcttc 360

ggcagcagct actggtactt cgacgtgtgg ggccagggca ccctcgtgac cgtcagctca 420

gcctccacca agggcccaag cgtcttcccc ctggcaccct cctccaagag cacctctggc 480

ggcacagccg ccctgggctg cctggtcaag gactacttcc ccgaacccgt gaccgtgagc 540

tggaactcag gcgccctgac cagcggcgtg cacaccttcc ccgctgtcct gcagtcctca 600

ggactctact ccctcagcag cgtggtgacc gtgccctcca gcagcttggg cacccagacc 660

tacatctgca acgtgaatca caagcccagc aacaccaagg tggacaagag agttgagccc 720

aaatcttgtg acaaaactca cacatgccca ccctgcccag cacctgaact cctgggggga 780

ccctcagtct tcctcttccc cccaaaaccc aaggacaccc tcatgatctc ccggacccct 840

gaggtcacat gcgtggtggt ggacgtgagc cacgaagacc ctgaggtcaa gttcaactgg 900

tacgtggacg gcgtggaggt gcataatgcc aagacaaagc cccgggagga gcagtacaac 960

agcacgtacc gggtggtcag cgtcctcacc gtcctgcacc aggactggct gaatggcaag 1020

gagtacaagt gcaaggtctc caacaaagcc ctcccagccc ccatcgagaa aaccatctcc 1080

aaagccaaag gccagccccg ggaaccacag gtgtacaccc tgcccccatc ccgggaggag 1140

atgaccaaga accaggtcag cctgacctgc ctggtcaaag gcttctatcc cagcgacatc 1200

gccgtggagt gggagagcaa tggccagccc gagaacaact acaagaccac ccctcccgtg 1260

ctggactccg acggctcctt cttcctctac agcaagctca ccgtggacaa gagcaggtgg 1320

cagcagggca acgtcttctc atgctccgtg atgcatgagg ctctgcacaa ccactacacc 1380

cagaagagcc tctccctgtc tcccggcaaa 1410

<210> 14
<211> 470
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of heavy chain of humanized TINA1 antibody, type H2

<400> 14

Met Lys His Leu Trp Phe Phe Leu Leu Leu Val Ala Ala Pro Arg Trp
1 5 10 15

Val Leu Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Thr Ala Gly Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
50 55 60

Glu Trp Met Gly Trp Ile Asn Thr His Ser Gly Val Pro Lys Tyr Ala
65 70 75 80

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

Thr Ala Tyr Leu Gln Leu Ser Ser Leu Lys Ser Glu Asp Thr Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Ser Gly Phe Gly Ser Ser Tyr Trp Tyr Phe Asp
115 120 125

Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys
130 135 140

Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly
145 150 155 160

Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro
165 170 175

```
Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr
            180                 185                 190

Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val
        195                 200                 205

Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn
    210                 215                 220

Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Pro
225                 230                 235                 240

Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu
                245                 250                 255

Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
            260                 265                 270

Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
        275                 280                 285

Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
    290                 295                 300

Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn
305                 310                 315                 320

Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp
                325                 330                 335

Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro
            340                 345                 350

Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu
        355                 360                 365

Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn
    370                 375                 380
```

```
Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
385                 390                 395                 400


Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
                405                 410                 415


Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
            420                 425                 430


Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
        435                 440                 445


Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
    450                 455                 460


Ser Leu Ser Pro Gly Lys
465                 470
```

<210> 15
<211> 1410
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of heavy chain of humanized TINA1 antibody, type H3

<400> 15

```
atgaaacacc tgtggttctt cctcctgctg gtggcagctc ccagatgggt gctgagccag       60

atccagctgg tgcagtctgg cgccgaagtg aagaaacccg gcgagagcgt gaaggtgtcc      120

tgcaaggcca gcggctacac ctttaccacc gccggcatgc agtgggtgca gcagatgcct      180

ggcaagggcc tggaatggat gggctggatc aacacccaca gcggcgtgcc caaatacgcc      240

gaggacttca agggcagagt gaccttcagc ctggacacca gcacctccac cgcctacctg      300

cagctgagca gcctgaagtc cgaggacacc gccgtgtact actgcgccag aagcggcttc      360

ggcagcagct actggtactt cgacgtgtgg ggccagggca ccctcgtgac cgtcagctca      420

gcctccacca agggcccaag cgtcttcccc ctggcaccct cctccaagag cacctctggc      480

ggcacagccg ccctgggctg cctggtcaag gactacttcc ccgaacccgt gaccgtgagc      540
```

tggaactcag gcgccctgac cagcggcgtg cacaccttcc ccgctgtcct gcagtcctca 600

ggactctact ccctcagcag cgtggtgacc gtgccctcca gcagcttggg cacccagacc 660

tacatctgca acgtgaatca caagcccagc aacaccaagg tggacaagag agttgagccc 720

aaatcttgtg acaaaactca cacatgccca ccctgcccag cacctgaact cctgggggga 780

ccctcagtct tcctcttccc cccaaaaccc aaggacaccc tcatgatctc ccggacccct 840

gaggtcacat gcgtggtggt ggacgtgagc cacgaagacc ctgaggtcaa gttcaactgg 900

tacgtggacg gcgtggaggt gcataatgcc aagacaaagc cccgggagga gcagtacaac 960

agcacgtacc gggtggtcag cgtcctcacc gtcctgcacc aggactggct gaatggcaag 1020

gagtacaagt gcaaggtctc caacaaagcc ctcccagccc ccatcgagaa aaccatctcc 1080

aaagccaaag gccagccccg ggaaccacag gtgtacaccc tgccccatc ccgggaggag 1140

atgaccaaga accaggtcag cctgacctgc ctggtcaaag gcttctatcc cagcgacatc 1200

gccgtggagt gggagagcaa tggccagccc gagaacaact acaagaccac ccctcccgtg 1260

ctggactccg acggctcctt cttcctctac agcaagctca ccgtggacaa gagcaggtgg 1320

cagcagggca acgtcttctc atgctccgtg atgcatgagg ctctgcacaa ccactacacc 1380

cagaagagcc tctccctgtc tcccggcaaa 1410

<210> 16
<211> 470
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of heavy chain of humanized TINA1 antibody, type H3

<400> 16

Met Lys His Leu Trp Phe Phe Leu Leu Leu Val Ala Ala Pro Arg Trp
1 5 10 15

Val Leu Ser Gln Ile Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
20 25 30

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

```
Thr Thr Ala Gly Met Gln Trp Val Gln Gln Met Pro Gly Lys Gly Leu
    50                  55                  60

Glu Trp Met Gly Trp Ile Asn Thr His Ser Gly Val Pro Lys Tyr Ala
65                  70                  75                  80

Glu Asp Phe Lys Gly Arg Val Thr Phe Ser Leu Asp Thr Ser Thr Ser
                85                  90                  95

Thr Ala Tyr Leu Gln Leu Ser Ser Leu Lys Ser Glu Asp Thr Ala Val
            100                 105                 110

Tyr Tyr Cys Ala Arg Ser Gly Phe Gly Ser Ser Tyr Trp Tyr Phe Asp
        115                 120                 125

Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys
    130                 135                 140

Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly
145                 150                 155                 160

Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro
                165                 170                 175

Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr
            180                 185                 190

Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val
        195                 200                 205

Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn
    210                 215                 220

Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Pro
225                 230                 235                 240

Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu
                245                 250                 255
```

```
Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
            260                 265                 270

Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
        275                 280                 285

Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
    290                 295                 300

Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn
305                 310                 315                 320

Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp
                325                 330                 335

Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro
            340                 345                 350

Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu
        355                 360                 365

Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn
    370                 375                 380

Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
385                 390                 395                 400

Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
                405                 410                 415

Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
            420                 425                 430

Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
        435                 440                 445

Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
    450                 455                 460

Ser Leu Ser Pro Gly Lys
```

465 470

<210> 17
<211> 702
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of light chain of humanized TINA1 antibody, type L1

<400> 17
atggtgctgc agacccaggt gttcatctcc ctgctgctgt ggatctccgg cgcgtacggc 60

gacatccaga tgacccagag ccctagcagc ctgagcgcca gcgtgggcga cagagtgacc 120

atcacatgca aggccagcca ggacgtgtcc acagccgtgg cctggtatca gcagaagcct 180

ggcaaggccc ccaagctgct gatctacagc gccagctacc ggtacaccgg cgtgcccagc 240

agattttctg gcagcggctc cggcaccgac ttcaccctga caatcagcag cctgcagccc 300

gaggacttcg ccgtgtacta ctgccagcag cactacatca ccccccctgac ctttggccag 360

ggcaccaagc tggaaatcaa gcgtacggtg gccgcccccct ccgtgttcat cttcccccccc 420

tccgacgagc agctgaagtc cggcaccgcc tccgtggtgt gcctgctgaa taacttctac 480

cccagagagg ccaaggtgca gtggaaggtg gacaacgccc tgcagtccgg gaactcccag 540

gagagcgtga ccgagcagga cagcaaggac agcacctaca gcctgagcag caccctgacc 600

ctgagcaaag ccgactacga gaagcacaag gtgtacgcct gcgaggtgac ccaccagggc 660

ctgagctccc ccgtcaccaa gagcttcaac agggggggagt gt 702

<210> 18
<211> 234
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of light chain of humanized TINA1 antibody, type L1

<400> 18

Met Val Leu Gln Thr Gln Val Phe Ile Ser Leu Leu Leu Trp Ile Ser
1 5 10 15

```
Gly Ala Tyr Gly Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser
            20                  25                  30

Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp
        35                  40                  45

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

Lys Leu Leu Ile Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Ser
65                  70                  75                  80

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

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

Ile Thr Pro Leu Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg
        115                 120                 125

Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln
    130                 135                 140

Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr
145                 150                 155                 160

Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser
                165                 170                 175

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

Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys
        195                 200                 205

His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro
    210                 215                 220

Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
```

225 230

<210> 19
<211> 702
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of light chain of humanized TINA1 antibody, type L2

<400> 19
atggtgctgc agacccaggt gttcatctcc ctgctgctgt ggatctccgg cgcgtacggc 60

gacatcgtga tgacccagag ccctagcagc ctgagcgcca gcgtgggcga cagagtgacc 120

atcacatgca aggccagcca ggacgtgtcc acagccgtgg cctggtatca gcagaagcct 180

ggcaaggccc ccaagctgct gatctacagc gccagctacc ggtacaccgg cgtgcccagc 240

agattttctg gcagcggctc cggcaccgac ttcaccctga caatcagcag cctgcagccc 300

gaggacttcg ccgtgtacta ctgccagcag cactacatca ccccccctgac ctttggccag 360

ggcaccaagc tggaaatcaa gcgtacggtg gccgcccccct ccgtgttcat cttcccccccc 420

tccgacgagc agctgaagtc cggcaccgcc tccgtggtgt gcctgctgaa taacttctac 480

cccagagagg ccaaggtgca gtggaaggtg gacaacgccc tgcagtccgg gaactcccag 540

gagagcgtga ccgagcagga cagcaaggac agcacctaca gcctgagcag caccctgacc 600

ctgagcaaag ccgactacga gaagcacaag gtgtacgcct gcgaggtgac ccaccagggc 660

ctgagctccc ccgtcaccaa gagcttcaac agggggggagt gt 702

<210> 20
<211> 234
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of light chain of humanized TINA1 antibody, type L2

<400> 20

Met Val Leu Gln Thr Gln Val Phe Ile Ser Leu Leu Leu Trp Ile Ser
1 5 10 15

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

Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp
        35                  40                  45

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

Lys Leu Leu Ile Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Ser
65                  70                  75                  80

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

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

Ile Thr Pro Leu Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg
        115                 120                 125

Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln
    130                 135                 140

Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr
145                 150                 155                 160

Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser
                165                 170                 175

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

Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys
        195                 200                 205

His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro
    210                 215                 220

Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
```

225 230

<210> 21
<211> 702
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of light chain of humanized TINA1 antibody, type L3

<400> 21
atggtgctgc agacccaggt gttcatctcc ctgctgctgt ggatctccgg cgcgtacggc 60

gacatcgtga tgacccagag ccctagcagc ctgagcgcca gcgtgggcga cagagtgacc 120

atcacatgca aggccagcca ggacgtgtcc acagccgtgg cctggtatca gcagaagccc 180

ggcaagcagc ccaagctgct gatctacagc gccagctacc ggtacaccgg cgtgcccagc 240

agattttctg gcagcggctc cggcaccgac ttcaccctga caatcagcag cctgcagccc 300

gaggacttcg ccgtgtacta ctgccagcag cactacatca ccccccctgac ctttggccag 360

ggcaccaagc tggaaatcaa gcgtacggtg gccgcccccct ccgtgttcat cttcccccccc 420

tccgacgagc agctgaagtc cggcaccgcc tccgtggtgt gcctgctgaa taacttctac 480

cccagagagg ccaaggtgca gtggaaggtg gacaacgccc tgcagtccgg gaactcccag 540

gagagcgtga ccgagcagga cagcaaggac agcacctaca gcctgagcag caccctgacc 600

ctgagcaaag ccgactacga gaagcacaag gtgtacgcct gcgaggtgac ccaccagggc 660

ctgagctccc ccgtcaccaa gagcttcaac agggggggagt gt 702

<210> 22
<211> 234
<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of light chain of humanized TINA1 antibody, type L3

<400> 22

Met Val Leu Gln Thr Gln Val Phe Ile Ser Leu Leu Leu Trp Ile Ser
1 5 10 15

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

Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp
        35                  40                  45

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

Lys Leu Leu Ile Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Ser
65                  70                  75                  80

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

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

Ile Thr Pro Leu Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg
        115                 120                 125

Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln
    130                 135                 140

Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr
145                 150                 155                 160

Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser
                165                 170                 175

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

Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys
        195                 200                 205

His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro
    210                 215                 220

Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
```

225 230

<210> 23
<211> 5
<212> PRT
<213> Mus musculus

<400> 23

Thr Ala Gly Met Gln
1 5

<210> 24
<211> 17
<212> PRT
<213> Mus musculus

<400> 24

Trp Ile Asn Thr His Ser Gly Val Pro Lys Tyr Ala Glu Asp Phe Lys
1 5 10 15

Gly

<210> 25
<211> 12
<212> PRT
<213> Mus musculus

<400> 25

Ser Gly Phe Gly Ser Ser Tyr Trp Tyr Phe Asp Val
1 5 10

<210> 26
<211> 11
<212> PRT
<213> Mus musculus

<400> 26

Lys Ala Ser Gln Asp Val Ser Thr Ala Val Ala
1 5 10

<210> 27
<211> 7

<212> PRT
<213> Mus musculus

<400> 27

Ser Ala Ser Tyr Arg Tyr Thr
1 5

<210> 28
<211> 9
<212> PRT
<213> Mus musculus

<400> 28

Gln Gln His Tyr Ile Thr Pro Leu Thr
1 5

<210> 29
<211> 1410
<212> DNA
<213> Homo sapiens

<400> 29
atgaaacacc tgtggttctt cctcctgctg gtggcagctc ccagatgggt gctgagccag 60

gtgcagctgc agcagagcgg cagcgagctg aagaagcctg gcgccagcgt caaggtgtcc 120

tgcaaggcca gcggctacac cttcaccaac tacggcatga actgggtgaa gcaggcccca 180

ggccagggcc tgaagtggat gggctggatc aacacctaca ccggcgagcc cacctacacc 240

gacgacttca agggccggtt cgccttcagc ctggacacca gcgtgagcac cgcctacctg 300

cagatcagca gcctgaaggc cgacgatacc gccgtgtact tctgcgccag aggcggcttc 360

ggcagcagct actggtactt cgacgtgtgg ggccagggca gcctggtgac cgtgagctca 420

gcctccacca agggcccaag cgtcttcccc ctggcaccct cctccaagag cacctctggc 480

ggcacagccg ccctgggctg cctggtcaag gactacttcc ccgaacccgt gaccgtgagc 540

tggaactcag gcgccctgac cagcggcgtg cacaccttcc ccgctgtcct gcagtcctca 600

ggactctact ccctcagcag cgtggtgacc gtgccctcca gcagcttggg cacccagacc 660

tacatctgca acgtgaatca caagcccagc aacaccaagg tggacaagag agttgagccc 720

aaatcttgtg acaaaactca cacatgccca ccctgcccag cacctgaact cctgggggga 780

ccctcagtct tcctcttccc cccaaaaccc aaggacaccc tcatgatctc ccggacccct 840

gaggtcacat gcgtggtggt ggacgtgagc cacgaagacc ctgaggtcaa gttcaactgg 900

tacgtggacg gcgtggaggt gcataatgcc aagacaaagc cccgggagga gcagtacaac 960

agcacgtacc gggtggtcag cgtcctcacc gtcctgcacc aggactggct gaatggcaag 1020

gagtacaagt gcaaggtctc caacaaagcc ctcccagccc ccatcgagaa aaccatctcc 1080

aaagccaaag gccagccccg ggaaccacag gtgtacaccc tgccccatc ccgggaggag 1140

atgaccaaga accaggtcag cctgacctgc ctggtcaaag gcttctatcc cagcgacatc 1200

gccgtggagt gggagagcaa tggccagccc gagaacaact acaagaccac ccctcccgtg 1260

ctggactccg acggctcctt cttcctctac agcaagctca ccgtggacaa gagcaggtgg 1320

cagcagggca acgtcttctc atgctccgtg atgcatgagg ctctgcacaa ccactacacc 1380

cagaagagcc tctccctgtc tcccggcaaa 1410

<210> 30
<211> 470
<212> PRT
<213> Homo sapiens

<400> 30

Met Lys His Leu Trp Phe Phe Leu Leu Leu Val Ala Ala Pro Arg Trp
1 5 10 15

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

Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr Asn Tyr Gly Met Asn Trp Val Lys Gln Ala Pro Gly Gln Gly Leu
50 55 60

Lys Trp Met Gly Trp Ile Asn Thr Tyr Thr Gly Glu Pro Thr Tyr Thr
65 70 75 80

Asp Asp Phe Lys Gly Arg Phe Ala Phe Ser Leu Asp Thr Ser Val Ser
85 90 95

```
Thr Ala Tyr Leu Gln Ile Ser Ser Leu Lys Ala Asp Asp Thr Ala Val
            100                 105                 110

Tyr Phe Cys Ala Arg Gly Gly Phe Gly Ser Ser Tyr Trp Tyr Phe Asp
        115                 120                 125

Val Trp Gly Gln Gly Ser Leu Val Thr Val Ser Ser Ala Ser Thr Lys
    130                 135                 140

Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly
145                 150                 155                 160

Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro
                165                 170                 175

Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr
            180                 185                 190

Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val
        195                 200                 205

Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn
    210                 215                 220

Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Pro
225                 230                 235                 240

Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu
                245                 250                 255

Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
            260                 265                 270

Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp
        275                 280                 285

Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly
    290                 295                 300

Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn
```

305 310 315 320

Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp
325 330 335

Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro
340 345 350

Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu
355 360 365

Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn
370 375 380

Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile
385 390 395 400

Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr
405 410 415

Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys
420 425 430

Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys
435 440 445

Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu
450 455 460

Ser Leu Ser Pro Gly Lys
465 470

<210> 31
<211> 702
<212> DNA
<213> Homo sapiens

<400> 31
atggtgctgc agacccaggt gttcatctcc ctgctgctgt ggatctccgg cgcgtacggc 60

gatatccagc tgacccagag ccccagcagc ctgagcgcca gcgtgggcga cagagtgtcc 120

atcacatgca aggccagcca ggacgtgtcc attgccgtgg cctggtatca gcagaagccc 180

ggcaaggccc ccaagctgct gatctacagc gccagctacc ggtacaccgg cgtgcccgac 240

agattcagcg gcagcggctc cggcaccgac ttcaccctga ccatcagcag cctgcagccc 300

gaggacttcg ccgtgtacta ctgccagcag cactacatca ccccccctgac cttcggagcc 360

ggcaccaagg tggaaatcaa gcgtacggtg gccgcccccct ccgtgttcat cttccccccc 420

tccgacgagc agctgaagtc cggcaccgcc tccgtggtgt gcctgctgaa taacttctac 480

cccagagagg ccaaggtgca gtggaaggtg gacaacgccc tgcagtccgg gaactcccag 540

gagagcgtga ccgagcagga cagcaaggac agcacctaca gcctgagcag caccctgacc 600

ctgagcaaag ccgactacga gaagcacaag gtgtacgcct gcgaggtgac ccaccagggc 660

ctgagctccc ccgtcaccaa gagcttcaac agggggggagt gt 702

<210> 32
<211> 234
<212> PRT
<213> Homo sapiens

<400> 32

Met Val Leu Gln Thr Gln Val Phe Ile Ser Leu Leu Leu Trp Ile Ser
1 5 10 15

Gly Ala Tyr Gly Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser
20 25 30

Ala Ser Val Gly Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp
35 40 45

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

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

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

Ser Leu Gln Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln His Tyr

100 105 110

Ile Thr Pro Leu Thr Phe Gly Ala Gly Thr Lys Val Glu Ile Lys Arg
115 120 125

Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln
130 135 140

Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr
145 150 155 160

Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser
165 170 175

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

Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys
195 200 205

His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro
210 215 220

Val Thr Lys Ser Phe Asn Arg Gly Glu Cys
225 230

<210> 33
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of primer mG2aVR2

<400> 33
agagttccag gtcaaggtca ctggctcagg 30

<210> 34
<211> 30
<212> DNA
<213> Artificial Sequence

<220>

<223> nucleotide sequence of primer mKVR2

<400> 34
agtccaactg ttcaggacgc cattttgtcg 30

<210> 35
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of primer 3.3-F1

<400> 35
tataccgtcg acctctagct agagcttggc 30

<210> 36
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of primer 3.3-R1

<400> 36
gctatggcag ggcctgccgc cccgacgttg 30

<210> 37
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of primer TINA1H-F

<400> 37
ccagatgggt gctgagccag atccagttgg tgcagtctgg acctgag 47

<210> 38
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of primer TINA1H-R

<400> 38
cttggtggag gctgagctga cggtgaccgc ggtccctgcg ccccagac 48

<210> 39
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of primer TINA1L-F

<400> 39
atctccggcg cgtacggcga cattgtgatg acccagtctc acaaattc 48

<210> 40
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of primer TINA1L-R

<400> 40
ggaggggcg gccacagccc gtttcagctc cagcttggtc ccagc 45

<210> 41
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of primer EG-Inf-F

<400> 41
agctcccaga tgggtgctga gc 22

<210> 42
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of primer EG1-Inf-R

<400> 42
gggcccttgg tggaggctga gc 22

<210> 43
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of primer CM-LKF

<400> 43
ctgtggatct ccggcgcgta cggc 24

<210> 44
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of primer KCL-Inf-R

<400> 44
ggaggggcg gccaccgtac g 21