

Sequence Listing

<110> Carsgen therapeutics, limited

<120> FULLY HUMAN ANTI-MESOTHELIN ANTIBODIES AND IMMUNE EFFECTOR CELLS
TARGETING MESOTHELIN

<130> P2016-1262

<150> CN201510519214.4

<151> 2015-08-21

<160> 75

<170> PatentIn version 3.3

<210> 1

<211> 1068

<212> DNA

<213> Homo Sapiens

<400> 1

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aagggccgcg agatagacga gagcctcatc ttctacaaga agtgggagct ggaagcctgc      180
gtggatgcgg ccctgctggc caccagatg gaccgcgtga acgcatccc cttcacctac      240
gagcagctgg acgtcctaaa gcataaactg gatgagctct acccacaagg ttaccccgag      300
tctgtgatcc agcacctggg ctacctcttc ctcaagatga gccctgagga cattcgcaag      360
tggaatgtga cgtccctgga gaccctgaag gctttgcttg aagtcaacaa agggcacgaa      420
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aaagacaccc tagacaccct gaccgccttc taccctgggt acctgtgctc cctcagcccc      540
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ctggtcctag acctcagcat gcaagaggcc ctctcgggga cgccctgcct cctaggacct     1020
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<210> 2

<211> 356

<212> PRT

<213> Homo Sapiens

Sequence Listing

<400> 2

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1 5 10 15

Ala Ala Pro Leu Ala Asp Tyr Lys Asp Asp Asp Asp Lys Glu Val Glu
20 25 30

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

Leu Ile Phe Tyr Lys Lys Trp Glu Leu Glu Ala Cys Val Asp Ala Ala
50 55 60

Leu Leu Ala Thr Gln Met Asp Arg Val Asn Ala Ile Pro Phe Thr Tyr
65 70 75 80

Glu Gln Leu Asp Val Leu Lys His Lys Leu Asp Glu Leu Tyr Pro Gln
85 90 95

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

Met Ser Pro Glu Asp Ile Arg Lys Trp Asn Val Thr Ser Leu Glu Thr
115 120 125

Leu Lys Ala Leu Leu Glu Val Asn Lys Gly His Glu Met Ser Pro Gln
130 135 140

Val Ala Thr Leu Ile Asp Arg Phe Val Lys Gly Arg Gly Gln Leu Asp
145 150 155 160

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

Ser Leu Ser Pro Glu Glu Leu Ser Ser Val Pro Pro Ser Ser Ile Trp
180 185 190

Ala Val Arg Pro Gln Asp Leu Asp Thr Cys Asp Pro Arg Gln Leu Asp
195 200 205

Val Leu Tyr Pro Lys Ala Arg Leu Ala Phe Gln Asn Met Asn Gly Ser
210 215 220

Glu Tyr Phe Val Lys Ile Gln Ser Phe Leu Gly Gly Ala Pro Thr Glu
225 230 235 240

Sequence Listing

Asp Leu Lys Ala Leu Ser Gln Gln Asn Val Ser Met Asp Leu Ala Thr
245 250 255

Phe Met Lys Leu Arg Thr Asp Ala Val Leu Pro Leu Thr Val Ala Glu
260 265 270

Val Gln Lys Leu Leu Gly Pro His Val Glu Gly Leu Lys Ala Glu Glu
275 280 285

Arg His Arg Pro Val Arg Asp Trp Ile Leu Arg Gln Arg Gln Asp Asp
290 295 300

Leu Asp Thr Leu Gly Leu Gly Leu Gln Gly Gly Ile Pro Asn Gly Tyr
305 310 315 320

Leu Val Leu Asp Leu Ser Met Gln Glu Ala Leu Ser Gly Thr Pro Cys
325 330 335

Leu Leu Gly Pro Gly Pro Val Leu Thr Val Leu Ala Leu Leu Leu Ala
340 345 350

Ser Thr Leu Ala
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<210> 3
<211> 47
<212> DNA
<213> Artificial sequence

<220>
<221> misc_feature
<223> primer

<400> 3
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<210> 4
<211> 48
<212> DNA
<213> Artificial sequence

<220>
<221> misc_feature
<223> primer

<400> 4
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<210> 5
<211> 762
<212> DNA

Sequence Listing

<213> Homo Sapiens

<400> 5

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cagtcccat cgagaggcct tgagtggctg ggaaggacat actacaggtc caagtggttt      180
aatgattatg cagtatctgt gaaaggtcga ataaccatca actcagacac atccaagaac      240
cagttctccc tgcagttgaa ctctgtgact cccgaggaca cggctgtgta ttattgtgca      300
agaagtaata gttactacta ctacgctatg gacgtctggg gccaaggcac cctggtcacc      360
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accttgcgca gtggcatcaa tgttggtatc tacaggatat actggtacca acagaggcca      540
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ggagtcccca gtcgcttctc tggatccaaa gatgcttcgg ccaatgcagg gattttactc      660
atctctgggc tccagtctga agatgaggct gactattact gcatgatttg gcacagcggc      720
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<210> 6

<211> 254

<212> PRT

<213> Homo Sapiens

<220>

<221> MISC_FEATURE

<223> primer

<400> 6

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

```
Thr Leu Ser Leu Thr Cys Ala Ile Ser Gly Asp Thr Val Ser Ser Asp
              20              25              30
```

```
Ser Ala Ala Trp Asn Trp Ile Arg Gln Ser Pro Ser Arg Gly Leu Glu
              35              40              45
```

```
Trp Leu Gly Arg Thr Tyr Tyr Arg Ser Lys Trp Phe Asn Asp Tyr Ala
              50              55              60
```

```
Val Ser Val Lys Gly Arg Ile Thr Ile Asn Ser Asp Thr Ser Lys Asn
65              70              75              80
```

```
Gln Phe Ser Leu Gln Leu Asn Ser Val Thr Pro Glu Asp Thr Ala Val
```

Sequence Listing

85

90

95

Tyr Tyr Cys Ala Arg Ser Asn Ser Tyr Tyr Tyr Tyr Ala Met Asp Val
100 105 110

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Gly Gly Gly Gly Ser
115 120 125

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

Pro Ser Ser Leu Ser Ala Ser Pro Gly Ala Ser Ala Ser Leu Thr Cys
145 150 155 160

Thr Leu Arg Ser Gly Ile Asn Val Gly Ile Tyr Arg Ile Tyr Trp Tyr
165 170 175

Gln Gln Arg Pro Gly Ser Pro Pro Gln Ile Leu Leu Thr Tyr Lys Ser
180 185 190

Asp Ser Asp Lys Tyr Gln Gly Ser Gly Val Pro Ser Arg Phe Ser Gly
195 200 205

Ser Lys Asp Ala Ser Ala Asn Ala Gly Ile Leu Leu Ile Ser Gly Leu
210 215 220

Gln Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Met Ile Trp His Ser Gly
225 230 235 240

Gly Trp Val Phe Gly Gly Gly Thr Lys Val Thr Val Leu Gly
245 250

<210> 7

<211> 741

<212> DNA

<213> Homo Sapiens

<400> 7

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cctggacaag ggcttgagtg gatgggaata atcaacccta gtggtggttag cacaagctac 180

gcacagaagt tccagggcag agtcaccatg accagggaca cgtccacgag cacagtctac 240

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agtgggacta cggtggtaaa tcatgatgct tttgatatct gggggaaagg gaccacggtc 360

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Sequence Listing

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atccagttga cccagtctcc atcctccctg tctgctctg taggagacag agtcaccatc 480
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aaacctccta aactcctgat ctatgatgcc tccaatttgc agagtggggg cccatcaagg 600
ttcagcggca gtggatctgg gacagatttc actctcacca tcagccgcct gcagcctgaa 660
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accaagctgg agatcaaacg t 741

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<210> 8
<211> 247
<212> PRT
<213> Homo Sapiens
<400> 8

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1 5 10 15

```

```

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

```

```

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

```

```

Gly Ile Ile Asn Pro Ser Gly Gly Ser Thr Ser Tyr Ala Gln Lys Phe
50 55 60

```

```

Gln Gly Arg Val Thr Met Thr Arg Asp Thr Ser Thr Ser Thr Val Tyr
65 70 75 80

```

```

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

```

```

Ala Ser Ser Arg Ser Gly Thr Thr Val Val Asn His Asp Ala Phe Asp
100 105 110

```

```

Ile Trp Gly Lys Gly Thr Thr Val Thr Val Ser Ser Gly Gly Gly Gly
115 120 125

```

```

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Asp Ile Gln Leu Thr
130 135 140

```

```

Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile
145 150 155 160

```

```

Thr Cys Arg Ala Ser Gln Val Ile Ser Arg Ala Leu Ala Trp Tyr Gln
165 170 175

```

Sequence Listing

Gln Thr Pro Gly Lys Pro Pro Lys Leu Leu Ile Tyr Asp Ala Ser Asn
180 185 190

Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr
195 200 205

Asp Phe Thr Leu Thr Ile Ser Arg Leu Gln Pro Glu Asp Phe Ala Thr
210 215 220

Tyr Tyr Cys Gln Gln Phe Asn Ser Tyr Pro Leu Thr Phe Gly Gly Gly
225 230 235 240

Thr Lys Leu Glu Ile Lys Arg
245

<210> 9
<211> 30
<212> DNA
<213> Artificial sequence

<220>
<221> misc_feature
<223> primer

<400> 9
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<210> 10
<211> 27
<212> DNA
<213> Artificial sequence

<220>
<221> misc_feature
<223> primer

<400> 10
ttgtcggatc cacctaggac ggtgacc 27

<210> 11
<211> 28
<212> DNA
<213> Artificial sequence

<220>
<221> misc_feature
<223> primer

<400> 11
acagtgcctag cacagatgca gctagtgc 28

Sequence Listing

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Sequence Listing

<221> misc_feature
 <223> primer

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<210> 17
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<220>
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 <400> 17
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<210> 18
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 <400> 18
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<210> 19
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<220>
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 <400> 19
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<210> 20
 <211> 43
 <212> DNA
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<220>
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 <223> primer

 <400> 20
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Sequence Listing

<210> 21
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 <212> DNA
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 <223> primer

<400> 21
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<210> 22
 <211> 24
 <212> DNA
 <213> Artificial sequence

<220>
 <221> misc_feature
 <223> primer

<400> 22
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<210> 23
 <211> 24
 <212> DNA
 <213> Artificial sequence

<220>
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 <223> primer

<400> 23
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<210> 24
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<400> 24
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<210> 25
 <211> 22
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 <213> Artificial sequence

<220>

Sequence Listing

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<221> misc_feature
<223> primer

<400> 25
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<210> 26
<211> 56
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<213> Artificial sequence

<220>
<221> misc_feature
<223> primer

<400> 26
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<210> 27
<211> 56
<212> DNA
<213> Artificial sequence

<220>
<221> misc_feature
<223> primer

<400> 27
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<210> 28
<211> 35
<212> DNA
<213> Artificial sequence

<220>
<221> misc_feature
<223> primer

<400> 28
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<210> 29
<211> 56
<212> DNA
<213> Artificial sequence

<220>
<221> misc_feature
<223> primer

<400> 29
ctcctgccgc tggccttgct gctccacgcc gccaggccgc agatgcagct agtgca        56

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Sequence Listing

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

<220>
<221> misc_feature
<223> primer

<400> 30
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<210> 31
<211> 1566
<212> DNA
<213> Artificial sequence

<220>
<221> misc_feature
<223> P1A6E-|ÄZ polynucleotide

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ggagggggtcg gcaattgaac cgggtgcctag agaaggtggc gcgggggtaaa ctgggaaagt 240
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atcgagaggc cttgagtggc tgggaaggac atactacagg tccaagtggg ttaatgatta 660
tgcagtatct gtgaaaggct gaataacat caactcagac acatccaaga accagttctc 720
cctgcagttg aactctgtga ctcccaggga cacggctgtg tattattgtg caagaagtaa 780
tagttactac tactacgcta tggacgtctg gggccaaggc accctgggtc cgtctcagag 840
tggtggaggc gggtcaggcg gaggtgggtc tggcgggtggc ggatcgcagg ctgtgctgac 900
tcagccgtct tccctctctg catctcctgg agcatcagcc agtctcacct gcaccttgcg 960
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tccccagatt ctctgactt acaaatacaga ctacagataag taccagggct ctggagtccc 1080
cagtcgcttc tctggatcca aagatgcttc ggccaatgca gggattttac tcatctctgg 1140

Sequence Listing

gctccagtct gaagatgagg ctgactatta ctgcatgatt tggcacagcg gcggttgggt	1200
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aacaccggcg cccaccatcg cgtcgcagcc cctgtccctg cgcccagagg cgtgccggcc	1320
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gttcagcagg agcgcagacg cccccgcgta ggtcgacctc gaggggaattc cgataatcaa	1500
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acgcta	1566

<210> 32
 <211> 1869
 <212> DNA
 <213> Artificial sequence

<220>
 <221> misc_feature
 <223> P1A6E-Z polynucleotide

<400> 32	
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ggctccggtg cccgtcagtg ggcagagcgc acatcgccca cagtccccga gaagttgggg	180
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gatgtcgtgt actggctccg cctttttccc gaggggtgggg gagaaccgta tataagtgca	300
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atcgagaggc cttgagtggc tgggaaggac atactacagg tccaagtggg ttaatgatta	660
tgcagtatct gtgaaaggtc gaataaccat caactcagac acatccaaga accagttctc	720
cctgcagttg aactctgtga ctcccaggga cacggctgtg tattattgtg caagaagtaa	780
tagttactac tactacgcta tggacgtctg gggccaaggc accctgggtca ccgtctcgag	840
tgggtggaggc ggttcaggcg gaggtgggtc tggcgggtggc ggatcgcagg ctgtgctgac	900
tcagccgtct tccctctctg catctcctgg agcatcagcc agtctcacct gcaccttgcg	960
cagtggcatc aatgtttggt tctacaggat atactggtac caacagaggc cagggagtcc	1020
tccccagatt ctctgactt acaaatcaga ctcagataag taccagggct ctggagtccc	1080

Sequence Listing

cagtcgcttc tctggatcca aagatgcttc ggccaatgca gggattttac tcatctctgg	1140
gctccagtct gaagatgagg ctgactatta ctgcatgatt tggcacagcg gcggttgggt	1200
gttcggcgga gggaccaagg tcaccgtcct aggtaccacg acgccagcgc cgcgaccacc	1260
aacaccggcg cccaccatcg cgtcgcagcc cctgtccctg cgcagagagg cgtgccggcc	1320
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gttcagcagg agcgcagacg ccccgcgta ccagcagggc cagaaccagc tctataacga	1500
gctcaatcta ggacgaagag aggagtacga tgttttggac aagagacgtg gccgggaccc	1560
tgagatgggg ggaaagccgc agagaaggaa gaaccctcag gaaggcctgt acaatgaact	1620
gcagaaagat aagatggcgg aggcctacag tgagattggg atgaaaggcg agcgccggag	1680
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cgcccttcac atgcaggccc tgccccctcg ctaggtcgac ctcgagggaa ttccgataat	1800
caacctctgg attacaaaat ttgtgaaaga ttgactggta ttcttaacta tgttgctcct	1860
tttacgcta	1869

<210> 33
 <211> 2001
 <212> DNA
 <213> Artificial sequence

<220>
 <221> misc_feature
 <223> P1A6E-BBZ polynucleotide

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ggctccggtg cccgtcagtg ggcagagcgc acatcgccca cagtccccga gaagttgggg	180
ggaggggtcg gcaattgaac cgggtgcctag agaaggtggc gcggggtaaa ctgggaaagt	240
gatgtcgtgt actgggtccg cctttttccc gaggggtggg gagaaaccgta tataagtga	300
gtagtcgccg tgaacgttct ttttcgcaac gggtttgccg ccagaacaca ggtgtcgtga	360
cgcggatcca ggcctaagct tacgcgtcct agcgtaccg gtcgccacca tggccttacc	420
agtgaccgcc ttgctcctgc cgctggcctt gctgctccac gccgccaggc cgcaggtaca	480
gctggaacag tcaggtctag gactggtgaa gccctcgag accctctctc tcacctgtgc	540
catctccggg gacactgtct ctagcgacag tgctgcttgg aactggatca ggcagtcccc	600
atcgagaggc cttgagtggc tgggaaggac atactacagg tccaagtggg ttaatgatta	660

Sequence Listing

tgcagtatct gtgaaaggtc gaataacccat caactcagac acatccaaga accagttctc	720
cctgcagttg aactctgtga ctcccaggga cacggctgtg tattattgtg caagaagtaa	780
tagttactac tactacgcta tggacgtctg gggccaaggc accctgggtca ccgtctcgag	840
tggtggaggc gggtcaggcg gaggtgggtc tggcgggtggc ggatcgcagg ctgtgctgac	900
tcagccgtct tccctctctg catctcctgg agcatcagcc agtctcacct gcaccttgcg	960
cagtggcatc aatgttggtg tctacaggat atactggtac caacagaggc cagggagtcc	1020
tccccagatt ctctgactt aaaaatcaga ctacagataag taccagggct ctggagtccc	1080
cagtcgcttc tctggatcca aagatgcttc ggccaatgca gggattttac tcatctctgg	1140
gctccagtct gaagatgagg ctgactatta ctgcatgatt tggcacagcg gcggttgggt	1200
gttcggcggg gggaccaagg tcaccgtcct aggtaccacg acgccagcgc cgcgaccacc	1260
aacaccggcg cccaccatcg cgtcgcagcc cctgtccctg cggccagagg cgtgccggcc	1320
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ggcgccttgg gccgggactt gtgggggtcct tctcctgtca ctgggttatca ccctttactg	1440
caaacggggc agaaagaaac tcctgtatat attcaaaca ccatttatga gaccagtaca	1500
aactactcaa gaggaagatg gctgtagctg ccgatttcca gaagaagaag aaggaggatg	1560
tgaactgaga gtgaagttca gcaggagcgc agacgcccc gcgtacaagc agggccagaa	1620
ccagctctat aacgagctca atctaggacg aagagaggag tacgatgttt tggacaagag	1680
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cgagcgccgg aggggcaagg ggcacgatgg cttttaccag ggtctcagta cagccaccaa	1860
ggacacctac gacgcccttc acatgcaggc cctgccccct cgctaggtcg acctcgaggg	1920
aattccgata atcaacctct ggattacaaa atttgtgaaa gattgactgg tattcttaac	1980
tatgttgctc cttttacgct a	2001

<210> 34
 <211> 2010
 <212> DNA
 <213> Artificial sequence

<220>
 <221> misc_feature
 <223> P1A6E-28Z polynucleotide

<400> 34	
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caaattacaa aaattcaaaa ttttccgatc acgagactag cctcgagaag cttgatcgat	120
ggctccggtg cccgtcagtg ggcagagcgc acatcgccca cagtccccga gaagttgggg	180

Sequence Listing

ggaggggtcg gcaattgaac cgggtgcctag agaaggtggc gcggggtaaa ctgggaaagt	240
gatgtcgtgt actggctccg cctttttccc gaggggtgggg gagaaccgta tataagtgca	300
gtagtcgccg tgaacgttct ttttcgcaac gggtttgccg ccagaacaca ggtgtcgtga	360
cgcggatcca ggcctaagct tacgcgtcct agcgctaccg gtcgccacca tggccttacc	420
agtgaccgcc ttgctcctgc cgctggcctt gctgctccac gccgccaggc cgcagggtaca	480
gctggaacag tcagggtctag gactggtgaa gccctcgcag accctctctc tcacctgtgc	540
catctccggg gacactgtct ctagcgacag tgctgcttgg aactggatca ggcagtgccc	600
atcgagaggc cttgagtggc tgggaaggac atactacagg tccaagtggg ttaatgatta	660
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cctgcagttg aactctgtga ctcccaggga cacggctgtg tattattgtg caagaagtaa	780
tagttactac tactacgcta tggacgtctg gggccaaggc accctgggtca ccgtctcgag	840
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tcagccgtct tccctctctg catctcctgg agcatcagcc agtctcacct gcaccttgcg	960
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cagtcgcttc tctggatcca aagatgcttc ggccaatgca gggattttac tcatctctgg	1140
gctccagtct gaagatgagg ctgactatta ctgcatgatt tggcacagcg gcggttgggt	1200
gttcggcggg gggaccaagg tcaccgtcct aggtaccacg acgccagcgc cgcgaccacc	1260
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ggtggtggtt ggtggagtcc tggtttgcta tagcttgcta gtaacagtgg cttttattat	1440
tttctgggtg aggagtaaga ggagcaggct cctgcacagt gactacatga acatgactcc	1500
ccgccgcccc gggccaaccc gcaagcatta ccagccctat gccccaccac gcgacttcgc	1560
agcctatcgc tccagagtga agttcagcag gagcgcagac gccccgcgt accagcaggg	1620
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caagagacgt ggccgggacc ctgagatggg gggaaagccg cagagaagga agaaccctca	1740
ggaaggcctg tacaatgaac tgcagaaaga taagatggcg gaggcctaca gtgagattgg	1800
gatgaaaggc gagcgccgga ggggcaaggg gcacgatggc ctttaccagg gtctcagtac	1860
agccaccaag gacacctacg acgcccttca catgcaggcc ctgccccctc gctaggtcga	1920
cctcgaggga attccgataa tcaacctctg gattacaaaa tttgtgaaag attgactggg	1980
attcttaact atgttgctcc ttttacgcta	2010

Sequence Listing

<210> 35
 <211> 2136
 <212> DNA
 <213> Artificial sequence

<220>
 <221> misc_feature
 <223> P1A6E-28BBZ polynucleotide

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<400> 35
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caaattacaa aaattcaaaa ttttccgatc acgagactag cctcgagaag cttgatcgat      120
ggctccggtg cccgtcagtg ggagagcgc acatcgccca cagtccccga gaagttgggg      180
ggaggggtcg gcaattgaac cgggtgcctag agaaggtggc gcggggtaaa ctgggaaagt      240
gatgtcgtgt actggctccg cctttttccc gaggggtgggg gagaaccgta tataagtgca      300
gtagtcgccg tgaacgttct ttttcgcaac gggtttgccg ccagaacaca ggtgtcgtga      360
cgcggatcca ggcctaagct tacgcgtcct agcgctaccg gtcgccacca tggccttacc      420
agtgaccgcc ttgctcctgc cgctggcctt gctgctccac gccgccaggc cgcagggtaca      480
gctggaacag tcaggtctag gactggtgaa gccctcgcag accctctctc tcacctgtgc      540
catctccggg gacactgtct ctagcgacag tgctgcttgg aactggatca ggcagtcccc      600
atcgagaggc cttgagtggc tgggaaggac atactacagg tccaagtggg ttaatgatta      660
tgcagtatct gtgaaaggtc gaataacat caactcagac acatccaaga accagttctc      720
cctgcagttg aactctgtga ctcccagga cacggctgtg tattattgtg caagaagtaa      780
tagttactac tactacgcta tggacgtctg gggccaaggc accctgggtca ccgtctcgag      840
tggtggaggc gggtcaggcg gaggtggttc tggcgggtggc ggatcgagg ctgtgctgac      900
tcagccgtct tccctctctg catctcctgg agcatcagcc agtctcacct gcaccttgcg      960
cagtggcatc aatgtttgta tctacaggat atactggtac caacagaggc cagggagtcc     1020
tccccagatt ctctgactt aaaaatcaga ctacagataag taccagggtc ctggagtccc     1080
cagtcgcttc tctggatcca aagatgcttc ggccaatgca gggattttac tcatctctgg     1140
gctccagtct gaagatgagg ctgactatta ctgcatgatt tggcacagcg gcggttgggt     1200
gttcggcgga gggaccaagg tcaccgtcct aggtaccacg acgccagcgc cgcgaccacc     1260
aacaccggcg cccaccatcg cgtcgcagcc cctgtccctg cggccagagg cgtgccggcc     1320
agcggcgggg ggcgcagtcg acacgagggg gctggacttc gcctgtgatt tttgggtgct     1380
gggtggtggtt ggtggagtcc tggttgcta tagcttgcta gtaacagtgg cttttattat     1440
tttctgggtg aggagtaaga ggagcaggct cctgcacagt gactacatga acatgactcc     1500
ccgccgcccc gggccaaccc gcaagcatta ccagccctat gccccaccac gcgacttcgc     1560

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Sequence Listing

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agcctatcgc tccaaacggg gcagaaagaa actcctgtat atattcaaac aaccatttat 1620
gagaccagta caaactactc aagaggaaga tggctgtagc tgccgatttc cagaagaaga 1680
agaaggagga tgtgaactga gagtgaagtt cagcaggagc gcagacgccc ccgcgtacca 1740
gcagggccag aaccagctct ataacgagct caatctagga cgaagagagg agtacgatgt 1800
tttggacaag agacgtggcc gggaccctga gatgggggga aagccgcaga gaaggaagaa 1860
ccctcaggaa ggcctgtaca atgaactgca gaaagataag atggcggagg cctacagtga 1920
gattgggatg aaaggcgagc gccggagggg caaggggcac gatggccttt accagggctt 1980
cagtacagcc accaaggaca cctacgacgc cttcacatg caggccctgc cccctcgcta 2040
ggtcgacctc gagggaattc cgataatcaa cctctggatt acaaaatttg tgaaagattg 2100
actggtattc ttaactatgt tgctcctttt acgcta 2136

```

```

<210> 36
<211> 1545
<212> DNA
<213> Artificial sequence

```

```

<220>
<221> misc_feature
<223> P3F2-|ÄZ polynucleotide

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<400> 36
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ggctccggtg cccgtcagtg ggcagagcgc acatcgccca cagtccccga gaagttgggg 180
ggaggggtcg gcaattgaac cgggtgcctag agaaggtggc gcggggtaaa ctgggaaagt 240
gatgtcgtgt actggctccg cttttttccc gaggggtgggg gagaaccgta tataagtgca 300
gtagtgcgag tgaacgttct ttttcgcaac gggtttgccg ccagaacaca ggtgtcgtga 360
cgcggatcca ggcctaagct tacgcgtcct agcgctaccg gtcgccacca tggccttacc 420
agtgaccgcc ttgctcctgc cgctggcctt gctgctccac gccgccaggc cgcagatgca 480
gctagtgcag tctggggctg aggtgaagaa gcctggggcc tcagtgaagg tttcctgcaa 540
ggcatctgga tacaccttca ccagctacta tatgcactgg gtgacgacagg cccctggaca 600
agggcttgag tggatgggaa taatcaacc tagtggtggt agcacaagct acgcacagaa 660
gttccagggc agagtcacca tgaccaggga cacgtccacg agcacagtct acatggagct 720
gagcagcctg agatctgagg acacggccgt gtattactgt gcgagtagtc ggagtgggac 780
tacggtggta aatcatgatg cttttgatat ctgggggaaa gggaccacgg tcaccgtctc 840
gagtggtgga ggcggttcag gcggaggtgg ttctggcggg gccggatcgg acatccagtt 900

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Sequence Listing

gacccagtct ccacccctccc tgtctgctgc tgtaggagac agagtcacca tcacttgccg	960
ggcaagccag gtcattagcc gtgcttttagc ctggtatcaa caaacaccag ggaaacctcc	1020
taaactcctg atctatgatg cctccaattt gcagagtggg gtcccatcaa ggttcagcgg	1080
cagtggatct gggacagatt tcactctcac catcagccgc ctgcagcctg aagattttgc	1140
aacttattac tgtcaacagt ttaatagtta ccctctcact ttcggcggag ggaccaagct	1200
ggagatcaaa cgtaccacga cgccagcgcc gcgaccacca acaccggcgc ccaccatcgc	1260
gtcgcagccc ctgtccctgc gccagaggc gtgccggcca gcggcggggg gcgcagtgca	1320
cacgaggggg ctggacttcg cctgtgatat ctacatctgg gcgcccttgg ccgggacttg	1380
tggggctcct ctcctgtcac tggttatcac cagagtgaag ttcagcagga gcgcagacgc	1440
ccccgcgtag gtcgacctcg aggaattcc gataatcaac ctctggatta caaaatttgt	1500
gaaagattga ctggtattct taactatgtt gtccttttta cgcta	1545

<210> 37
 <211> 1848
 <212> DNA
 <213> Artificial sequence

<220>
 <221> misc_feature
 <223> P3F2-Z polynucleotide

<400> 37	
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caaattacaa aaattcaaaa ttttccgatc acgagactag cctcgagaag cttgatcgat	120
ggctccggtg cccgtcagtg ggagagcgc acatcgccca cagtccccga gaagttgggg	180
ggagggggtcg gcaattgaac cgggtgcctag agaaggtggc gcgggggtaa ctgggaaagt	240
gatgtcgtgt actggctccg cctttttccc gaggggtggg gagaaccgta tataagtgca	300
gtagtcgccg tgaacgttct ttttcgcaac gggtttgccg ccagaacaca ggtgtcgtga	360
cgcggatcca ggcctaagct tacgcgtcct agcgctaccg gtcgccacca tggccttacc	420
agtgaccgcc ttgtcctcgc cgctggcctt gctgtccac gccgccaggc cgcagatgca	480
gctagtgcag tctggggctg aggtgaagaa gcctggggcc tcagtgaagg tttcctgcaa	540
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gttccagggc agagtcacca tgaccaggga cacgtccacg agcacagtct acatggagct	720
gagcagcctg agatctgagg acacggccgt gtattactgt gcgagtagtc ggagtgggac	780
tacggtggta aatcatgatg cttttgatat ctgggggaaa gggaccacgg tcaccgtctc	840
gagtggtgga ggcggttcag gcggaggtgg ttctggcggg gccggatcgg acatccagtt	900

Sequence Listing

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gacccagtct ccacccctccc tgtctgcgtc tgtaggagac agagtcacca tcaattgccg      960
ggcaagccag gtcattagcc gtgcttttagc ctggtatcaa caaacaccag ggaaacctcc      1020
taaactcctg atctatgatg cctccaattt gcagagtggg gtcccatcaa ggttcagcgg      1080
cagtggatct gggacagatt tcaactctcac catcagccgc ctgcagcctg aagattttgc      1140
aacttattac tgtcaacagt ttaatagtta ccctctcact ttcggcggag ggaccaagct      1200
ggagatcaaa cgtaccacga cgccagcgcc gcgaccacca acaccggcgc ccaccatcgc      1260
gtcgcagccc ctgtccctgc gccagaggc gtgccggcca gcggcggggg gcgcagtgca      1320
cacgaggggg ctggacttcg cctgtgatat ctacatctgg gcgcccttgg ccgggacttg      1380
tggggtcctt ctctgtcac tggttatcac cagagtgaag ttcagcagga gcgcagacgc      1440
ccccgcgtac cagcagggcc agaaccagct ctataacgag ctcaatctag gacgaagaga      1500
ggagtacgat gttttggaca agagacgtgg ccgggaccct gagatggggg gaaagccgca      1560
gagaaggaag aaccctcagg aaggcctgta caatgaactg cagaaagata agatggcgga      1620
ggcctacagt gagattggga tgaaaggcga gcgccggagg ggcaaggggc acgatggcct      1680
ttaccagggg ctacgtacag ccaccaagga cacctacgac gcccttcaca tgcaggccct      1740
gccccctcgc taggtcgacc tcgagggaat tccgataatc aacctctgga ttacaaaatt      1800
tgtgaaagat tgactggtat tcttaactat gttgctcctt ttacgcta      1848

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<210> 38
<211> 1980
<212> DNA
<213> Artificial sequence

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<220>
<221> misc_feature
<223> P3F2-BBZ

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<400> 38
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caaattacaa aaattcaaaa ttttccgatc acgagactag cctcgagaag cttgatcgat      120
ggctccggtg cccgtcagtg ggcagagcgc acatcgccca cagtccccga gaagttgggg      180
ggaggggtcg gcaattgaac cgggtgcctag agaaggtggc gcggggtaaa ctgggaaagt      240
gatgtcgtgt actggctccg cctttttccc gaggggtgggg gagaaccgta tataagtgca      300
gtagtgcgag tgaacgttct ttttcgcaac gggtttgccg ccagaacaca ggtgtcgtga      360
cgcggatcca ggcctaagct tacgcgtcct agcgctaccg gtcgccacca tggccttacc      420
agtgaccgcc ttgctcctgc cgctggcctt gctgctccac gccgccaggc cgcagatgca      480
gctagtgcag tctggggctg aggtgaagaa gcctggggcc tcagtgaagg tttcctgcaa      540

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Sequence Listing

ggcatctgga tacaccttca ccagctacta tatgcactgg gtgcgacagg cccctggaca	600
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gttccagggc agagtcacca tgaccaggga cacgtccacg agcacagtct acatggagct	720
gagcagcctg agatctgagg acacggccgt gtattactgt gcgagtagtc ggagtgggac	780
tacggtggta aatcatgatg cttttgatat ctgggggaaa gggaccacgg tcaccgtctc	840
gagtggtgga ggcggttcag gcggaggtgg ttctggcggg ggcggatcgg acatccagtt	900
gacccagtct ccatcctccc tgtctgcgtc tgtaggagac agagtcacca tcacttgccg	960
ggcaagccag gtcattagcc gtgcttttagc ctggtatcaa caaacaccag ggaaacctcc	1020
taaactcctg atctatgatg cctccaattt gcagagtggg gtcccatcaa ggttcagcgg	1080
cagtggatct gggacagatt tcactctcac catcagccgc ctgcagcctg aagattttgc	1140
aacttattac tgtcaacagt ttaatagtta ccctctcact ttcggcggag ggaccaagct	1200
ggagatcaaa cgtaccacga cgccagcgcc gcgaccacca acaccggcgc ccaccatcgc	1260
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caggagcgca gacgccccg cgtacaagca gggccagaac cagctctata acgagctcaa	1620
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gcacgatggc ctttaccagg gtctcagtac agccaccaag gacacctacg acgcccttca	1860
catgcaggcc ctgccccctc gctaggtcga cctcgaggga attccgataa tcaacctctg	1920
gattacaaaa tttgtgaaag attgactggg attcttaact atgttgctcc ttttacgcta	1980

<210> 39

<211> 1989

<212> DNA

<213> Artificial sequence

<220>

<221> misc_feature

<223> P3F2-28Z polynucleotide

<400> 39

gcaggggaaa gaatagtaga cataatagca acagacatac aaactaaaga attacaaaaa	60
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caaattacaa aaattcaaaa ttttccgatc acgagactag cctcgagaag cttgatcgat	120
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Sequence Listing

ggctccggtg	cccgtcagtg	ggcagagcgc	acatcgccca	cagtccccga	gaagttgggg	180
ggaggggtcg	gcaattgaac	cggtgcctag	agaaggtggc	gcggggtaaa	ctgggaaagt	240
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gtagtgcg	tgaacgttct	ttttcgcaac	gggtttgccg	ccagaacaca	ggtgtcgtga	360
cgcggtacca	ggcctaagct	tacgcgtcct	agcgctaccg	gtcgccacca	tggccttacc	420
agtgaccgcc	ttgctcctgc	cgctggcctt	gctgctccac	gccgccaggc	cgcagatgca	480
gctagtgcag	tctggggctg	aggtgaagaa	gcctggggcc	tcagtgaagg	tttctgcaa	540
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agggcttgag	tggatgggaa	taatcaacct	tagtgggtgg	agcacaagct	acgcacagaa	660
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gaccagctct	ccatcctccc	tgtctgcgtc	tgtaggagac	agagtcacca	tcacttgccg	960
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taaactcctg	atctatgatg	cctccaatth	gcagagtggg	gtcccatcaa	ggttcagcgg	1080
cagtggatct	gggacagatt	tcactctcac	catcagccgc	ctgcagcctg	aagatthtgc	1140
aacttattac	tgtcaacagt	ttaatagtta	ccctctcact	ttcggcggag	ggaccaagct	1200
ggagatcaaa	cgtaccacga	cgccagcgcc	gcgaccacca	acaccggcgc	ccaccatcgc	1260
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cgcccttcac	atgcaggccc	tgccccctcg	ctaggtcgac	ctcgagggaa	ttccgataat	1920
caacctctgg	attacaaaat	ttgtgaaaga	ttgactggta	ttcttaacta	tgthtgcctt	1980

Sequence Listing

tttacgcta

1989

<210> 40
<211> 2115
<212> DNA
<213> Artificial sequence

<220>
<221> misc_feature
<223> P3F2-28BBZ polynucleotide

<400> 40
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ggctccggtg cccgtcagtg ggcagagcgc acatcgccca cagtccccga gaagttgggg 180
ggagggggtcg gcaattgaac cgggtgcctag agaaggtggc gcggggtaaa ctgggaaagt 240
gatgtcgtgt actgggtccg cttttttccc gaggggtgggg gagaaccgta tataagtgca 300
gtagtgcgag tgaacgttct ttttcgcaac gggtttgccg ccagaacaca ggtgtcgtga 360
cgcggtatcca ggcctaagct tacgcgtcct agcgtaccg gtcgccacca tggccttacc 420
agtgaccgcc ttgctcctgc cgctggcctt gctgctccac gccgccaggc cgcagatgca 480
gctagtgcag tctgggggctg aggtgaagaa gcctggggcc tcagtgaagg tttcctgcaa 540
ggcatctgga tacaccttca ccagctacta tatgactgg gtgcgacagg cccctggaca 600
agggcttgag tggatgggaa taatcaacc tagtggtggg agcacaagct acgcacagaa 660
gttccagggc agagtcacca tgaccaggga cacgtccacg agcacagtct acatggagct 720
gagcagcctg agatctgagg acacggccgt gtattactgt gcgagtagtc ggagtgggac 780
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gagtggtgga ggcggttcag gcggaggtgg ttctggcggg ggcggatcgg acatccagtt 900
gaccagctct ccacctctcc tgtctgcgtc tgtaggagac agagtcacca tcacttgccg 960
ggcaagccag gtcattagcc gtgctttagc ctggtatcaa caaacaccag ggaaacctcc 1020
taaactcctg atctatgatg cctccaattt gcagagtggg gtcccatcaa ggttcagcgg 1080
cagtggatct gggacagatt tcaactctac catcagccgc ctgcagcctg aagattttgc 1140
aacttattac tgtcaacagt ttaatagtta ccctctcact ttcggcggag ggaccaagct 1200
ggagatcaaa cgtaccacga cgccagcgc gcgaccacca acaccggcgc ccaccatcgc 1260
gtcgcagccc ctgtccctgc gccagaggc gtgccggcca gcggcggggg gcgcagtgca 1320
cacgaggggg ctggacttcg cctgtgattt ttgggtgctg gtggtggttg gtggagtcct 1380
ggcttgctat agcttgctag taacagtggc ctttattatt ttctgggtga ggagtaagag 1440
gagcaggctc ctgcacagt actacatgaa catgactccc cgccgccccg ggccaacctg 1500

Sequence Listing

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caagcattac cagccctatg ccccaccacg cgacttcgca gcctatcgct ccaaacgggg 1560
cagaaagaaa ctctgtata tattcaaaca accatttatg agaccagtac aaactactca 1620
agaggaagat ggctgtagct gccgatttcc agaagaagaa gaaggaggat gtgaactgag 1680
agtgaagttc agcaggagcg cagacgcccc cgcgtagcag cagggccaga accagctcta 1740
taacgagctc aatctaggac gaagagagga gtacgatgtt ttggacaaga gacgtggccg 1800
ggaccctgag atgggggggaa agccgcagag aaggaagaac cctcaggaag gcctgtacaa 1860
tgaactgcag aaagataaga tggcggaggc ctacagttag attgggatga aaggcgagcg 1920
ccggaggggc aaggggcacg atggccttta ccagggtctc agtacagcca ccaaggacac 1980
ctacgacgcc cttcacatgc aggccctgcc ccctcgctag gtcgacctcg aggggaattcc 2040
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<210> 41
<211> 353
<212> PRT
<213> Artificial sequence

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<220>
<221> MISC_FEATURE
<223> P1A6E-|ÄZ amino acid sequence

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<400> 41

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```

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

```

```

His Ala Ala Arg Pro Gln Val Gln Leu Glu Gln Ser Gly Leu Gly Leu
20          25          30

```

```

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

```

```

Thr Val Ser Ser Asp Ser Ala Ala Trp Asn Trp Ile Arg Gln Ser Pro
50          55          60

```

```

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

```

```

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

```

```

Asp Thr Ser Lys Asn Gln Phe Ser Leu Gln Leu Asn Ser Val Thr Pro
100         105         110

```

Sequence Listing

Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Ser Asn Ser Tyr Tyr Tyr
 115 120 125
 Tyr Ala Met Asp Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
 130 135 140
 Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gln
 145 150 155 160
 Ala Val Leu Thr Gln Pro Ser Ser Leu Ser Ala Ser Pro Gly Ala Ser
 165 170 175
 Ala Ser Leu Thr Cys Thr Leu Arg Ser Gly Ile Asn Val Gly Ile Tyr
 180 185 190
 Arg Ile Tyr Trp Tyr Gln Gln Arg Pro Gly Ser Pro Pro Gln Ile Leu
 195 200 205
 Leu Thr Tyr Lys Ser Asp Ser Asp Lys Tyr Gln Gly Ser Gly Val Pro
 210 215 220
 Ser Arg Phe Ser Gly Ser Lys Asp Ala Ser Ala Asn Ala Gly Ile Leu
 225 230 235 240
 Leu Ile Ser Gly Leu Gln Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Met
 245 250 255
 Ile Trp His Ser Gly Gly Trp Val Phe Gly Gly Gly Thr Lys Val Thr
 260 265 270
 Val Leu Gly Thr Thr Thr Pro Ala Pro Arg Pro Pro Thr Pro Ala Pro
 275 280 285
 Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg Pro Glu Ala Cys Arg Pro
 290 295 300
 Ala Ala Gly Gly Ala Val His Thr Arg Gly Leu Asp Phe Ala Cys Asp
 305 310 315 320
 Ile Tyr Ile Trp Ala Pro Leu Ala Gly Thr Cys Gly Val Leu Leu Leu
 325 330 335
 Ser Leu Val Ile Thr Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro
 340 345 350
 Ala

Sequence Listing

<210> 42
 <211> 454
 <212> PRT
 <213> Artificial sequence

<220>
 <221> MISC_FEATURE
 <223> P1A6E-Z amino acid sequence

<400> 42

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

His Ala Ala Arg Pro Gln Val Gln Leu Glu Gln Ser Gly Leu Gly Leu
 20 25 30

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

Thr Val Ser Ser Asp Ser Ala Ala Trp Asn Trp Ile Arg Gln Ser Pro
 50 55 60

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

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

Asp Thr Ser Lys Asn Gln Phe Ser Leu Gln Leu Asn Ser Val Thr Pro
 100 105 110

Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Ser Asn Ser Tyr Tyr Tyr
 115 120 125

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

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gln
 145 150 155 160

Ala Val Leu Thr Gln Pro Ser Ser Leu Ser Ala Ser Pro Gly Ala Ser
 165 170 175

Ala Ser Leu Thr Cys Thr Leu Arg Ser Gly Ile Asn Val Gly Ile Tyr
 180 185 190

Arg Ile Tyr Trp Tyr Gln Gln Arg Pro Gly Ser Pro Pro Gln Ile Leu

Sequence Listing

195	200	205																	
Leu	Thr	Tyr	Lys	Ser	Asp	Ser	Asp	Lys	Tyr	Gln	Gly	Ser	Gly	Val	Pro				
210						215					220								
Ser	Arg	Phe	Ser	Gly	Ser	Lys	Asp	Ala	Ser	Ala	Asn	Ala	Gly	Ile	Leu				
225					230					235					240				
Leu	Ile	Ser	Gly	Leu	Gln	Ser	Glu	Asp	Glu	Ala	Asp	Tyr	Tyr	Cys	Met				
				245					250					255					
Ile	Trp	His	Ser	Gly	Gly	Trp	Val	Phe	Gly	Gly	Gly	Thr	Lys	Val	Thr				
			260					265					270						
Val	Leu	Gly	Thr	Thr	Thr	Pro	Ala	Pro	Arg	Pro	Pro	Thr	Pro	Ala	Pro				
		275					280					285							
Thr	Ile	Ala	Ser	Gln	Pro	Leu	Ser	Leu	Arg	Pro	Glu	Ala	Cys	Arg	Pro				
	290					295					300								
Ala	Ala	Gly	Gly	Ala	Val	His	Thr	Arg	Gly	Leu	Asp	Phe	Ala	Cys	Asp				
305					310					315					320				
Ile	Tyr	Ile	Trp	Ala	Pro	Leu	Ala	Gly	Thr	Cys	Gly	Val	Leu	Leu	Leu				
				325					330					335					
Ser	Leu	Val	Ile	Thr	Arg	Val	Lys	Phe	Ser	Arg	Ser	Ala	Asp	Ala	Pro				
			340					345					350						
Ala	Tyr	Gln	Gln	Gly	Gln	Asn	Gln	Leu	Tyr	Asn	Glu	Leu	Asn	Leu	Gly				
		355					360					365							
Arg	Arg	Glu	Glu	Tyr	Asp	Val	Leu	Asp	Lys	Arg	Arg	Gly	Arg	Asp	Pro				
	370					375					380								
Glu	Met	Gly	Gly	Lys	Pro	Gln	Arg	Arg	Lys	Asn	Pro	Gln	Glu	Gly	Leu				
385					390					395					400				
Tyr	Asn	Glu	Leu	Gln	Lys	Asp	Lys	Met	Ala	Glu	Ala	Tyr	Ser	Glu	Ile				
				405					410					415					
Gly	Met	Lys	Gly	Glu	Arg	Arg	Arg	Gly	Lys	Gly	His	Asp	Gly	Leu	Tyr				
			420					425					430						
Gln	Gly	Leu	Ser	Thr	Ala	Thr	Lys	Asp	Thr	Tyr	Asp	Ala	Leu	His	Met				
		435					440					445							

Sequence Listing

Gln Ala Leu Pro Pro Arg
450

<210> 43
<211> 498
<212> PRT
<213> Artificial sequence

<220>
<221> MISC_FEATURE
<223> P1A6E-BBZ amino acid sequence

<400> 43

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

His Ala Ala Arg Pro Gln Val Gln Leu Glu Gln Ser Gly Leu Gly Leu
20 25 30

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

Thr Val Ser Ser Asp Ser Ala Ala Trp Asn Trp Ile Arg Gln Ser Pro
50 55 60

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

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

Asp Thr Ser Lys Asn Gln Phe Ser Leu Gln Leu Asn Ser Val Thr Pro
100 105 110

Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Ser Asn Ser Tyr Tyr Tyr
115 120 125

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

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gln
145 150 155 160

Ala Val Leu Thr Gln Pro Ser Ser Leu Ser Ala Ser Pro Gly Ala Ser
165 170 175

Ala Ser Leu Thr Cys Thr Leu Arg Ser Gly Ile Asn Val Gly Ile Tyr
180 185 190

Sequence Listing

Arg Ile Tyr Trp Tyr Gln Gln Arg Pro Gly Ser Pro Pro Gln Ile Leu
195 200 205

Leu Thr Tyr Lys Ser Asp Ser Asp Lys Tyr Gln Gly Ser Gly Val Pro
210 215 220

Ser Arg Phe Ser Gly Ser Lys Asp Ala Ser Ala Asn Ala Gly Ile Leu
225 230 235 240

Leu Ile Ser Gly Leu Gln Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Met
245 250 255

Ile Trp His Ser Gly Gly Trp Val Phe Gly Gly Gly Thr Lys Val Thr
260 265 270

Val Leu Gly Thr Thr Thr Pro Ala Pro Arg Pro Pro Thr Pro Ala Pro
275 280 285

Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg Pro Glu Ala Cys Arg Pro
290 295 300

Ala Ala Gly Gly Ala Val His Thr Arg Gly Leu Asp Phe Ala Cys Asp
305 310 315 320

Ile Tyr Ile Trp Ala Pro Leu Ala Gly Thr Cys Gly Val Leu Leu Leu
325 330 335

Ser Leu Val Ile Thr Leu Tyr Cys Lys Arg Gly Arg Lys Lys Leu Leu
340 345 350

Tyr Ile Phe Lys Gln Pro Phe Met Arg Pro Val Gln Thr Thr Gln Glu
355 360 365

Glu Asp Gly Cys Ser Cys Arg Phe Pro Glu Glu Glu Glu Gly Gly Cys
370 375 380

Glu Leu Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Lys
385 390 395 400

Gln Gly Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu
405 410 415

Glu Tyr Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly
420 425 430

Gly Lys Pro Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu
435 440 445

Sequence Listing

Gln Lys Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly
450 455 460

Glu Arg Arg Arg Gly Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser
465 470 475 480

Thr Ala Thr Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro
485 490 495

Pro Arg

<210> 44
<211> 501
<212> PRT
<213> Artificial sequence

<220>
<221> MISC_FEATURE
<223> P1A6E-28Z amino acid sequence

<400> 44

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

His Ala Ala Arg Pro Gln Val Gln Leu Glu Gln Ser Gly Leu Gly Leu
20 25 30

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

Thr Val Ser Ser Asp Ser Ala Ala Trp Asn Trp Ile Arg Gln Ser Pro
50 55 60

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

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

Asp Thr Ser Lys Asn Gln Phe Ser Leu Gln Leu Asn Ser Val Thr Pro
100 105 110

Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Ser Asn Ser Tyr Tyr Tyr
115 120 125

Tyr Ala Met Asp Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser

Sequence Listing

130

135

140

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gln
145 150 155 160

Ala Val Leu Thr Gln Pro Ser Ser Leu Ser Ala Ser Pro Gly Ala Ser
165 170 175

Ala Ser Leu Thr Cys Thr Leu Arg Ser Gly Ile Asn Val Gly Ile Tyr
180 185 190

Arg Ile Tyr Trp Tyr Gln Gln Arg Pro Gly Ser Pro Pro Gln Ile Leu
195 200 205

Leu Thr Tyr Lys Ser Asp Ser Asp Lys Tyr Gln Gly Ser Gly Val Pro
210 215 220

Ser Arg Phe Ser Gly Ser Lys Asp Ala Ser Ala Asn Ala Gly Ile Leu
225 230 235 240

Leu Ile Ser Gly Leu Gln Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Met
245 250 255

Ile Trp His Ser Gly Gly Trp Val Phe Gly Gly Gly Thr Lys Val Thr
260 265 270

Val Leu Gly Thr Thr Thr Pro Ala Pro Arg Pro Pro Thr Pro Ala Pro
275 280 285

Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg Pro Glu Ala Cys Arg Pro
290 295 300

Ala Ala Gly Gly Ala Val His Thr Arg Gly Leu Asp Phe Ala Cys Asp
305 310 315 320

Phe Trp Val Leu Val Val Val Gly Gly Val Leu Ala Cys Tyr Ser Leu
325 330 335

Leu Val Thr Val Ala Phe Ile Ile Phe Trp Val Arg Ser Lys Arg Ser
340 345 350

Arg Leu Leu His Ser Asp Tyr Met Asn Met Thr Pro Arg Arg Pro Gly
355 360 365

Pro Thr Arg Lys His Tyr Gln Pro Tyr Ala Pro Pro Arg Asp Phe Ala
370 375 380

Sequence Listing

Ala Tyr Arg Ser Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala
385 390 395 400

Tyr Gln Gln Gly Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg
405 410 415

Arg Glu Glu Tyr Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu
420 425 430

Met Gly Gly Lys Pro Gln Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr
435 440 445

Asn Glu Leu Gln Lys Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly
450 455 460

Met Lys Gly Glu Arg Arg Arg Gly Lys Gly His Asp Gly Leu Tyr Gln
465 470 475 480

Gly Leu Ser Thr Ala Thr Lys Asp Thr Tyr Asp Ala Leu His Met Gln
485 490 495

Ala Leu Pro Pro Arg
500

<210> 45
<211> 543
<212> PRT
<213> Artificial sequence

<220>
<221> MISC_FEATURE
<223> P1A6E-28BBZ amino acid sequence

<400> 45

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

His Ala Ala Arg Pro Gln Val Gln Leu Glu Gln Ser Gly Leu Gly Leu
20 25 30

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

Thr Val Ser Ser Asp Ser Ala Ala Trp Asn Trp Ile Arg Gln Ser Pro
50 55 60

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

Sequence Listing

Phe Asn Asp Tyr Ala Val Ser Val Lys Gly Arg Ile Thr Ile Asn Ser
 85 90 95
 Asp Thr Ser Lys Asn Gln Phe Ser Leu Gln Leu Asn Ser Val Thr Pro
 100 105 110
 Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Ser Asn Ser Tyr Tyr Tyr
 115 120 125
 Tyr Ala Met Asp Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
 130 135 140
 Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gln
 145 150 155 160
 Ala Val Leu Thr Gln Pro Ser Ser Leu Ser Ala Ser Pro Gly Ala Ser
 165 170 175
 Ala Ser Leu Thr Cys Thr Leu Arg Ser Gly Ile Asn Val Gly Ile Tyr
 180 185 190
 Arg Ile Tyr Trp Tyr Gln Gln Arg Pro Gly Ser Pro Pro Gln Ile Leu
 195 200 205
 Leu Thr Tyr Lys Ser Asp Ser Asp Lys Tyr Gln Gly Ser Gly Val Pro
 210 215 220
 Ser Arg Phe Ser Gly Ser Lys Asp Ala Ser Ala Asn Ala Gly Ile Leu
 225 230 235 240
 Leu Ile Ser Gly Leu Gln Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Met
 245 250 255
 Ile Trp His Ser Gly Gly Trp Val Phe Gly Gly Gly Thr Lys Val Thr
 260 265 270
 Val Leu Gly Thr Thr Thr Pro Ala Pro Arg Pro Pro Thr Pro Ala Pro
 275 280 285
 Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg Pro Glu Ala Cys Arg Pro
 290 295 300
 Ala Ala Gly Gly Ala Val His Thr Arg Gly Leu Asp Phe Ala Cys Asp
 305 310 315 320
 Phe Trp Val Leu Val Val Val Gly Gly Val Leu Ala Cys Tyr Ser Leu
 325 330 335

Sequence Listing

Leu Val Thr Val Ala Phe Ile Ile Phe Trp Val Arg Ser Lys Arg Ser
340 345 350

Arg Leu Leu His Ser Asp Tyr Met Asn Met Thr Pro Arg Arg Pro Gly
355 360 365

Pro Thr Arg Lys His Tyr Gln Pro Tyr Ala Pro Pro Arg Asp Phe Ala
370 375 380

Ala Tyr Arg Ser Lys Arg Gly Arg Lys Lys Leu Leu Tyr Ile Phe Lys
385 390 395 400

Gln Pro Phe Met Arg Pro Val Gln Thr Thr Gln Glu Glu Asp Gly Cys
405 410 415

Ser Cys Arg Phe Pro Glu Glu Glu Glu Gly Gly Cys Glu Leu Arg Val
420 425 430

Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly Gln Asn
435 440 445

Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr Asp Val
450 455 460

Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys Pro Gln
465 470 475 480

Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys Asp
485 490 495

Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg Arg
500 505 510

Arg Gly Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala Thr
515 520 525

Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
530 535 540

<210> 46
<211> 346
<212> PRT
<213> Artificial sequence

<220>
<221> MISC_FEATURE
<223> P3F2-1ÅZ amino acid sequence

Sequence Listing

<400> 46

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

His Ala Ala Arg Pro Gln Met Gln Leu Val Gln Ser Gly Ala Glu Val
20 25 30

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

Thr Phe Thr Ser Tyr Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln
50 55 60

Gly Leu Glu Trp Met Gly Ile Ile Asn Pro Ser Gly Gly Ser Thr Ser
65 70 75 80

Tyr Ala Gln Lys Phe Gln Gly Arg Val Thr Met Thr Arg Asp Thr Ser
85 90 95

Thr Ser Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr
100 105 110

Ala Val Tyr Tyr Cys Ala Ser Ser Arg Ser Gly Thr Thr Val Val Asn
115 120 125

His Asp Ala Phe Asp Ile Trp Gly Lys Gly Thr Thr Val Thr Val Ser
130 135 140

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
145 150 155 160

Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
165 170 175

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Val Ile Ser Arg Ala
180 185 190

Leu Ala Trp Tyr Gln Gln Thr Pro Gly Lys Pro Pro Lys Leu Leu Ile
195 200 205

Tyr Asp Ala Ser Asn Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
210 215 220

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Gln Pro
225 230 235 240

Sequence Listing

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Phe Asn Ser Tyr Pro Leu
245 250 255

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg Thr Thr Thr Pro
260 265 270

Ala Pro Arg Pro Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu
275 280 285

Ser Leu Arg Pro Glu Ala Cys Arg Pro Ala Ala Gly Gly Ala Val His
290 295 300

Thr Arg Gly Leu Asp Phe Ala Cys Asp Ile Tyr Ile Trp Ala Pro Leu
305 310 315 320

Ala Gly Thr Cys Gly Val Leu Leu Leu Ser Leu Val Ile Thr Arg Val
325 330 335

Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala
340 345

<210> 47
<211> 447
<212> PRT
<213> Artificial sequence

<220>
<221> MISC_FEATURE
<223> P3F2-Z amino acid sequence

<400> 47

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

His Ala Ala Arg Pro Gln Met Gln Leu Val Gln Ser Gly Ala Glu Val
20 25 30

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

Thr Phe Thr Ser Tyr Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln
50 55 60

Gly Leu Glu Trp Met Gly Ile Ile Asn Pro Ser Gly Gly Ser Thr Ser
65 70 75 80

Tyr Ala Gln Lys Phe Gln Gly Arg Val Thr Met Thr Arg Asp Thr Ser
85 90 95

Sequence Listing

Thr Ser Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr
 100 105 110
 Ala Val Tyr Tyr Cys Ala Ser Ser Arg Ser Gly Thr Thr Val Val Asn
 115 120 125
 His Asp Ala Phe Asp Ile Trp Gly Lys Gly Thr Thr Val Thr Val Ser
 130 135 140
 Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
 145 150 155 160
 Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
 165 170 175
 Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Val Ile Ser Arg Ala
 180 185 190
 Leu Ala Trp Tyr Gln Gln Thr Pro Gly Lys Pro Pro Lys Leu Leu Ile
 195 200 205
 Tyr Asp Ala Ser Asn Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
 210 215 220
 Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Gln Pro
 225 230 235 240
 Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Phe Asn Ser Tyr Pro Leu
 245 250 255
 Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg Thr Thr Thr Pro
 260 265 270
 Ala Pro Arg Pro Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu
 275 280 285
 Ser Leu Arg Pro Glu Ala Cys Arg Pro Ala Ala Gly Gly Ala Val His
 290 295 300
 Thr Arg Gly Leu Asp Phe Ala Cys Asp Ile Tyr Ile Trp Ala Pro Leu
 305 310 315 320
 Ala Gly Thr Cys Gly Val Leu Leu Leu Ser Leu Val Ile Thr Arg Val
 325 330 335
 Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly Gln Asn
 340 345 350

Sequence Listing

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

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

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

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

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

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

<210> 48
<211> 491
<212> PRT
<213> Artificial sequence

<220>
<221> MISC_FEATURE
<223> P3F2-BBZ amino acid sequence

<400> 48

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

His Ala Ala Arg Pro Gln Met Gln Leu Val Gln Ser Gly Ala Glu Val
20 25 30

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

Thr Phe Thr Ser Tyr Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln
50 55 60

Gly Leu Glu Trp Met Gly Ile Ile Asn Pro Ser Gly Gly Ser Thr Ser
65 70 75 80

Tyr Ala Gln Lys Phe Gln Gly Arg Val Thr Met Thr Arg Asp Thr Ser
85 90 95

Thr Ser Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr

Sequence Listing

100

105

110

Ala Val Tyr Tyr Cys Ala Ser Ser Arg Ser Gly Thr Thr Val Val Asn
115 120 125

His Asp Ala Phe Asp Ile Trp Gly Lys Gly Thr Thr Val Thr Val Ser
130 135 140

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
145 150 155 160

Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
165 170 175

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Val Ile Ser Arg Ala
180 185 190

Leu Ala Trp Tyr Gln Gln Thr Pro Gly Lys Pro Pro Lys Leu Leu Ile
195 200 205

Tyr Asp Ala Ser Asn Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
210 215 220

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Gln Pro
225 230 235 240

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Phe Asn Ser Tyr Pro Leu
245 250 255

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg Thr Thr Thr Pro
260 265 270

Ala Pro Arg Pro Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu
275 280 285

Ser Leu Arg Pro Glu Ala Cys Arg Pro Ala Ala Gly Gly Ala Val His
290 295 300

Thr Arg Gly Leu Asp Phe Ala Cys Asp Ile Tyr Ile Trp Ala Pro Leu
305 310 315 320

Ala Gly Thr Cys Gly Val Leu Leu Leu Ser Leu Val Ile Thr Leu Tyr
325 330 335

Cys Lys Arg Gly Arg Lys Lys Leu Leu Tyr Ile Phe Lys Gln Pro Phe
340 345 350

Sequence Listing

Met Arg Pro Val Gln Thr Thr Gln Glu Glu Asp Gly Cys Ser Cys Arg
355 360 365

Phe Pro Glu Glu Glu Gly Gly Cys Glu Leu Arg Val Lys Phe Ser
370 375 380

Arg Ser Ala Asp Ala Pro Ala Tyr Lys Gln Gly Gln Asn Gln Leu Tyr
385 390 395 400

Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr Asp Val Leu Asp Lys
405 410 415

Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys Pro Arg Arg Lys Asn
420 425 430

Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys Asp Lys Met Ala Glu
435 440 445

Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg Arg Arg Gly Lys Gly
450 455 460

His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala Thr Lys Asp Thr Tyr
465 470 475 480

Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
485 490

<210> 49
<211> 494
<212> PRT
<213> Artificial sequence

<220>
<221> MISC_FEATURE
<223> P3F2-28Z amino acid sequence

<400> 49

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

His Ala Ala Arg Pro Gln Met Gln Leu Val Gln Ser Gly Ala Glu Val
20 25 30

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

Thr Phe Thr Ser Tyr Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln
50 55 60

Sequence Listing

Gly Leu Glu Trp Met Gly Ile Ile Asn Pro Ser Gly Gly Ser Thr Ser
 65 70 75 80
 Tyr Ala Gln Lys Phe Gln Gly Arg Val Thr Met Thr Arg Asp Thr Ser
 85 90 95
 Thr Ser Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr
 100 105 110
 Ala Val Tyr Tyr Cys Ala Ser Ser Arg Ser Gly Thr Thr Val Val Asn
 115 120 125
 His Asp Ala Phe Asp Ile Trp Gly Lys Gly Thr Thr Val Thr Val Ser
 130 135 140
 Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
 145 150 155 160
 Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
 165 170 175
 Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Val Ile Ser Arg Ala
 180 185 190
 Leu Ala Trp Tyr Gln Gln Thr Pro Gly Lys Pro Pro Lys Leu Leu Ile
 195 200 205
 Tyr Asp Ala Ser Asn Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
 210 215 220
 Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Gln Pro
 225 230 235 240
 Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Phe Asn Ser Tyr Pro Leu
 245 250 255
 Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg Thr Thr Thr Pro
 260 265 270
 Ala Pro Arg Pro Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu
 275 280 285
 Ser Leu Arg Pro Glu Ala Cys Arg Pro Ala Ala Gly Gly Ala Val His
 290 295 300
 Thr Arg Gly Leu Asp Phe Ala Cys Asp Phe Trp Val Leu Val Val Val
 305 310 315 320

Sequence Listing

Gly Gly Val Leu Ala Cys Tyr Ser Leu Leu Val Thr Val Ala Phe Ile
325 330 335

Ile Phe Trp Val Arg Ser Lys Arg Ser Arg Leu Leu His Ser Asp Tyr
340 345 350

Met Asn Met Thr Pro Arg Arg Pro Gly Pro Thr Arg Lys His Tyr Gln
355 360 365

Pro Tyr Ala Pro Pro Arg Asp Phe Ala Ala Tyr Arg Ser Arg Val Lys
370 375 380

Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly Gln Asn Gln
385 390 395 400

Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr Asp Val Leu
405 410 415

Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys Pro Gln Arg
420 425 430

Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys Asp Lys
435 440 445

Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg Arg Arg
450 455 460

Gly Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr Ala Thr Lys
465 470 475 480

Asp Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
485 490

<210> 50
<211> 536
<212> PRT
<213> Artificial sequence

<220>
<221> MISC_FEATURE
<223> P3F2-28BBZ amino acid sequence

<400> 50

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

His Ala Ala Arg Pro Gln Met Gln Leu Val Gln Ser Gly Ala Glu Val

Sequence Listing

20

25

30

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

Thr Phe Thr Ser Tyr Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln
50 55 60

Gly Leu Glu Trp Met Gly Ile Ile Asn Pro Ser Gly Gly Ser Thr Ser
65 70 75 80

Tyr Ala Gln Lys Phe Gln Gly Arg Val Thr Met Thr Arg Asp Thr Ser
85 90 95

Thr Ser Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr
100 105 110

Ala Val Tyr Tyr Cys Ala Ser Ser Arg Ser Gly Thr Thr Val Val Asn
115 120 125

His Asp Ala Phe Asp Ile Trp Gly Lys Gly Thr Thr Val Thr Val Ser
130 135 140

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
145 150 155 160

Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
165 170 175

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Val Ile Ser Arg Ala
180 185 190

Leu Ala Trp Tyr Gln Gln Thr Pro Gly Lys Pro Pro Lys Leu Leu Ile
195 200 205

Tyr Asp Ala Ser Asn Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
210 215 220

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Gln Pro
225 230 235 240

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Phe Asn Ser Tyr Pro Leu
245 250 255

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg Thr Thr Thr Pro
260 265 270

Sequence Listing

Ala Pro Arg Pro Pro Thr Pro Ala Pro Thr Ile Ala Ser Gln Pro Leu
275 280 285

Ser Leu Arg Pro Glu Ala Cys Arg Pro Ala Ala Gly Gly Ala Val His
290 295 300

Thr Arg Gly Leu Asp Phe Ala Cys Asp Phe Trp Val Leu Val Val Val
305 310 315 320

Gly Gly Val Leu Ala Cys Tyr Ser Leu Leu Val Thr Val Ala Phe Ile
325 330 335

Ile Phe Trp Val Arg Ser Lys Arg Ser Arg Leu Leu His Ser Asp Tyr
340 345 350

Met Asn Met Thr Pro Arg Arg Pro Gly Pro Thr Arg Lys His Tyr Gln
355 360 365

Pro Tyr Ala Pro Pro Arg Asp Phe Ala Ala Tyr Arg Ser Lys Arg Gly
370 375 380

Arg Lys Lys Leu Leu Tyr Ile Phe Lys Gln Pro Phe Met Arg Pro Val
385 390 395 400

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

Glu Glu Gly Gly Cys Glu Leu Arg Val Lys Phe Ser Arg Ser Ala Asp
420 425 430

Ala Pro Ala Tyr Gln Gln Gly Gln Asn Gln Leu Tyr Asn Glu Leu Asn
435 440 445

Leu Gly Arg Arg Glu Glu Tyr Asp Val Leu Asp Lys Arg Arg Gly Arg
450 455 460

Asp Pro Glu Met Gly Gly Lys Pro Gln Arg Arg Lys Asn Pro Gln Glu
465 470 475 480

Gly Leu Tyr Asn Glu Leu Gln Lys Asp Lys Met Ala Glu Ala Tyr Ser
485 490 495

Glu Ile Gly Met Lys Gly Glu Arg Arg Arg Gly Lys Gly His Asp Gly
500 505 510

Leu Tyr Gln Gly Leu Ser Thr Ala Thr Lys Asp Thr Tyr Asp Ala Leu
515 520 525

Sequence Listing

His Met Gln Ala Leu Pro Pro Arg
530 535

<210> 51
<211> 14
<212> PRT
<213> Homo Sapiens

<400> 51

Thr Leu Arg Ser Gly Ile Asn Val Gly Ile Tyr Arg Ile Tyr
1 5 10

<210> 52
<211> 11
<212> PRT
<213> Homo Sapiens

<400> 52

Tyr Lys Ser Asp Ser Asp Lys Tyr Gln Gly Ser
1 5 10

<210> 53
<211> 9
<212> PRT
<213> Homo Sapiens

<400> 53

Met Ile Trp His Ser Gly Gly Trp Val
1 5

<210> 54
<211> 12
<212> PRT
<213> Homo Sapiens

<400> 54

Gly Asp Thr Val Ser Ser Asp Ser Ala Ala Trp Asn
1 5 10

<210> 55
<211> 18
<212> PRT
<213> Homo Sapiens

<400> 55

Arg Thr Tyr Tyr Arg Ser Lys Trp Phe Asn Asp Tyr Ala Val Ser Val
1 5 10 15

Lys Gly

Sequence Listing

<210> 56
 <211> 11
 <212> PRT
 <213> Homo Sapiens

<400> 56

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

<210> 57
 <211> 11
 <212> PRT
 <213> Homo Sapiens

<400> 57

Arg Ala Ser Gln Val Ile Ser Arg Ala Leu Ala
 1 5 10

<210> 58
 <211> 7
 <212> PRT
 <213> Homo Sapiens

<400> 58

Asp Ala Ser Asn Leu Gln Ser
 1 5

<210> 59
 <211> 9
 <212> PRT
 <213> Homo Sapiens

<400> 59

Gln Gln Phe Asn Ser Tyr Pro Leu Thr
 1 5

<210> 60
 <211> 10
 <212> PRT
 <213> Homo Sapiens

<400> 60

Gly Tyr Thr Phe Thr Ser Tyr Tyr Met His
 1 5 10

<210> 61
 <211> 17
 <212> PRT
 <213> Homo Sapiens

<400> 61

Sequence Listing

Ile Ile Asn Pro Ser Gly Gly Ser Thr Ser Tyr Ala Gln Lys Phe Gln
1 5 10 15

Gly

<210> 62
<211> 15
<212> PRT
<213> Homo Sapiens

<400> 62

Ser Arg Ser Gly Thr Thr Val Val Asn His Asp Ala Phe Asp Ile
1 5 10 15

<210> 63
<211> 25
<212> DNA
<213> Artificial sequence

<220>
<221> misc_feature
<223> primer

<400> 63
accacgacgc cagcgccgcg accac 25

<210> 64
<211> 22
<212> DNA
<213> Artificial sequence

<220>
<221> misc_feature
<223> primer

<400> 64
tagcgtaaaa ggagcaacat ag 22

<210> 65
<211> 622
<212> PRT
<213> Homo Sapiens

<400> 65

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

Sequence Listing

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

Sequence Listing

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 Val Ala Thr Leu Ile Asp
 405 410 415
 Arg Phe Val Lys Gly Arg Gly Gln Leu Asp Lys Asp Thr Leu Asp Thr
 420 425 430
 Leu Thr Ala Phe Tyr Pro Gly Tyr Leu Cys Ser Leu Ser Pro Glu Glu
 435 440 445
 Leu Ser Ser Val Pro Pro Ser Ser Ile Trp Ala Val Arg Pro Gln Asp
 450 455 460
 Leu Asp Thr Cys Asp Pro Arg Gln Leu Asp Val Leu Tyr Pro Lys Ala
 465 470 475 480
 Arg Leu Ala Phe Gln Asn Met Asn Gly Ser Glu Tyr Phe Val Lys Ile
 485 490 495
 Gln Ser Phe Leu Gly Gly Ala Pro Thr Glu Asp Leu Lys Ala Leu Ser
 500 505 510
 Gln Gln Asn Val Ser Met Asp Leu Ala Thr Phe Met Lys Leu Arg Thr
 515 520 525
 Asp Ala Val Leu Pro Leu Thr Val Ala Glu Val Gln Lys Leu Leu Gly
 530 535 540

Sequence Listing

Pro His Val Glu Gly Leu Lys Ala Glu Glu Arg His Arg Pro Val Arg
545 550 555 560

Asp Trp Ile Leu Arg Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly Leu
565 570 575

Gly Leu Gln Gly Gly Ile Pro Asn Gly Tyr Leu Val Leu Asp Leu Ser
580 585 590

Met Gln Glu Ala Leu Ser Gly Thr Pro Cys Leu Leu Gly Pro Gly Pro
595 600 605

Val Leu Thr Val Leu Ala Leu Leu Leu Ala Ser Thr Leu Ala
610 615 620

<210> 66

<211> 95

<212> PRT

<213> Artificial sequence

<220>

<223> human mesothelin fragment

<400> 66

Glu Val Glu Lys Thr Ala Cys Pro Ser Gly Lys Lys Ala Arg Glu Ile
1 5 10 15

Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp Glu Leu Glu Ala Cys Val
20 25 30

Asp Ala Ala Leu Leu Ala Thr Gln Met Asp Arg Val Asn Ala Ile Pro
35 40 45

Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys His Lys Leu Asp Glu Leu
50 55 60

Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile Gln His Leu Gly Tyr Leu
65 70 75 80

Phe Leu Lys Met Ser Pro Glu Asp Ile Arg Lys Trp Asn Val Thr
85 90 95

<210> 67

<211> 95

<212> PRT

<213> Artificial sequence

<220>

<223> human mesothelin fragment

Sequence Listing

<400> 67

Ser Leu Glu Thr Leu Lys Ala Leu Leu Glu Val Asn Lys Gly His Glu
1 5 10 15

Met Ser Pro Gln Val Ala Thr Leu Ile Asp Arg Phe Val Lys Gly Arg
20 25 30

Gly Gln Leu Asp Lys Asp Thr Leu Asp Thr Leu Thr Ala Phe Tyr Pro
35 40 45

Gly Tyr Leu Cys Ser Leu Ser Pro Glu Glu Leu Ser Ser Val Pro Pro
50 55 60

Ser Ser Ile Trp Ala Val Arg Pro Gln Asp Leu Asp Thr Cys Asp Pro
65 70 75 80

Arg Gln Leu Asp Val Leu Tyr Pro Lys Ala Arg Leu Ala Phe Gln
85 90 95

<210> 68

<211> 95

<212> PRT

<213> Artificial sequence

<220>

<223> human mesothelin fragment

<400> 68

Asn Met Asn Gly Ser Glu Tyr Phe Val Lys Ile Gln Ser Phe Leu Gly
1 5 10 15

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

Met Asp Leu Ala Thr Phe Met Lys Leu Arg Thr Asp Ala Val Leu Pro
35 40 45

Leu Thr Val Ala Glu Val Gln Lys Leu Leu Gly Pro His Val Glu Gly
50 55 60

Leu Lys Ala Glu Glu Arg His Arg Pro Val Arg Asp Trp Ile Leu Arg
65 70 75 80

Gln Arg Gln Asp Asp Leu Asp Thr Leu Gly Leu Gly Leu Gln Gly
85 90 95

<210> 69

<211> 42

<212> PRT

Sequence Listing

<213> Artificial sequence

<220>

<223> human mesothelin fragment

<400> 69

Glu Val Glu Lys Thr Ala Cys Pro Ser Gly Lys Lys Ala Arg Glu Ile
1 5 10 15

Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp Glu Leu Glu Ala Cys Val
20 25 30

Asp Ala Ala Leu Leu Ala Thr Gln Met Asp
35 40

<210> 70

<211> 42

<212> PRT

<213> Artificial sequence

<220>

<223> human mesothelin fragment

<400> 70

Asp Ala Ala Leu Leu Ala Thr Gln Met Asp Arg Val Asn Ala Ile Pro
1 5 10 15

Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys His Lys Leu Asp Glu Leu
20 25 30

Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile
35 40

<210> 71

<211> 31

<212> PRT

<213> Artificial sequence

<220>

<223> human mesothelin fragment

<400> 71

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

Phe Leu Lys Met Ser Pro Glu Asp Ile Arg Lys Trp Asn Val Thr
20 25 30

<210> 72

<211> 64

<212> PRT

<213> Artificial sequence

Sequence Listing

<220>

<223> human mesothelin fragment

<400> 72

Glu Val Glu Lys Thr Ala Cys Pro Ser Gly Lys Lys Ala Arg Glu Ile
1 5 10 15

Asp Glu Ser Leu Ile Phe Tyr Lys Lys Trp Glu Leu Glu Ala Cys Val
20 25 30

Asp Ala Ala Leu Leu Ala Thr Gln Met Asp Arg Val Asn Ala Ile Pro
35 40 45

Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys His Lys Leu Asp Glu Leu
50 55 60

<210> 73

<211> 63

<212> PRT

<213> Artificial sequence

<220>

<223> human mesothelin fragment

<400> 73

Asp Ala Ala Leu Leu Ala Thr Gln Met Asp Arg Val Asn Ala Ile Pro
1 5 10 15

Phe Thr Tyr Glu Gln Leu Asp Val Leu Lys His Lys Leu Asp Glu Leu
20 25 30

Tyr Pro Gln Gly Tyr Pro Glu Ser Val Ile Gln His Leu Gly Tyr Leu
35 40 45

Phe Leu Lys Met Ser Pro Glu Asp Ile Arg Lys Trp Asn Val Thr
50 55 60

<210> 74

<211> 30

<212> PRT

<213> Artificial sequence

<220>

<223> human mesothelin fragment

<400> 74

Tyr Lys Lys Trp Glu Leu Glu Ala Cys Val Asp Ala Ala Leu Leu Ala
1 5 10 15

Thr Gln Met Asp Arg Val Asn Ala Ile Pro Phe Thr Tyr Glu

<210> 75
 <211> 20
 <212> PRT
 <213> Artificial sequence

<220>
 <223> human mesothelin fragment

<400> 75

Leu	Glu	Ala	Cys	Val	Asp	Ala	Ala	Leu	Leu	Ala	Thr	Gln	Met	Asp	Arg
1				5				10						15	

Val	Asn	Ala	Ile
			20