

SEQUENCE LISTING

<110> MODERNA TX, INC.

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HEWITT, SUSANNAH

BAI, AILIN

HOGUE, STEPHEN

PRESNYAK, VLADIMIR

MCFADYEN, IAIN

BENENATO, KERRY

KUMARASINGHE, ELLALAHEWAGE SATHYAJITH

<120> POLYNUCLEOTIDES ENCODING INTERLEUKIN-12 (IL12) AND USES THEREOF

<130> 3529.035PC02/ELE/C-K

<150> 62/443,693

<151> 2017-01-07

<150> 62/338,483

<151> 2016-05-18

<160> 242

<170> PatentIn version 3.5

<210> 1

<211> 306

<212> PRT

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<223> Wild Type IL12B without signal (IL12B) Amino Acids

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Glu Asp Gly Ile Thr Trp Thr Leu Asp Gln Ser Ser Glu Val Leu Gly
35 40 45

Ser Gly Lys Thr Leu Thr Ile Gln Val Lys Glu Phe Gly Asp Ala Gly
50 55 60

Gln Tyr Thr Cys His Lys Gly Gly Glu Val Leu Ser His Ser Leu Leu
65 70 75 80

Leu Leu His Lys Lys Glu Asp Gly Ile Trp Ser Thr Asp Ile Leu Lys
85 90 95

Asp Gln Lys Glu Pro Lys Asn Lys Thr Phe Leu Arg Cys Glu Ala Lys
100 105 110

Asn Tyr Ser Gly Arg Phe Thr Cys Trp Trp Leu Thr Thr Ile Ser Thr
115 120 125

Asp Leu Thr Phe Ser Val Lys Ser Ser Arg Gly Ser Ser Asp Pro Gln
130 135 140

Gly Val Thr Cys Gly Ala Ala Thr Leu Ser Ala Glu Arg Val Arg Gly
145 150 155 160

Asp Asn Lys Glu Tyr Glu Tyr Ser Val Glu Cys Gln Glu Asp Ser Ala
165 170 175

Cys Pro Ala Ala Glu Glu Ser Leu Pro Ile Glu Val Met Val Asp Ala
180 185 190

Val His Lys Leu Lys Tyr Glu Asn Tyr Thr Ser Ser Phe Phe Ile Arg
195 200 205

Asp Ile Ile Lys Pro Asp Pro Pro Lys Asn Leu Gln Leu Lys Pro Leu
210 215 220

Lys Asn Ser Arg Gln Val Glu Val Ser Trp Glu Tyr Pro Asp Thr Trp
225 230 235 240

Ser Thr Pro His Ser Tyr Phe Ser Leu Thr Phe Cys Val Gln Val Gln
245 250 255

Gly Lys Ser Lys Arg Glu Lys Lys Asp Arg Val Phe Thr Asp Lys Thr
260 265 270

Ser Ala Thr Val Ile Cys Arg Lys Asn Ala Ser Ile Ser Val Arg Ala
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Gln Asp Arg Tyr Tyr Ser Ser Ser Trp Ser Glu Trp Ala Ser Val Pro
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Cys Ser
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35 40 45

His Glu Asp Ile Thr Lys Asp Lys Thr Ser Thr Val Glu Ala Cys Leu
50 55 60

Pro Leu Glu Leu Thr Lys Asn Glu Ser Cys Leu Asn Ser Arg Glu Thr
65 70 75 80

Ser Phe Ile Thr Asn Gly Ser Cys Leu Ala Ser Arg Lys Thr Ser Phe
85 90 95

Met Met Ala Leu Cys Leu Ser Ser Ile Tyr Glu Asp Leu Lys Met Tyr
100 105 110

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

Arg Gln Ile Phe Leu Asp Gln Asn Met Leu Ala Val Ile Asp Glu Leu
130 135 140

Met Gln Ala Leu Asn Phe Asn Ser Glu Thr Val Pro Gln Lys Ser Ser
145 150 155 160

Leu Glu Glu Pro Asp Phe Tyr Lys Thr Lys Ile Lys Leu Cys Ile Leu
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<210> 13

<211> 1596

<212> DNA

<213> Artificial Sequence

<220>

<223> hIL12AB_009

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<220>
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<220>
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<212> DNA

<213> Artificial Sequence

<220>

<223> hIL12AB_013

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<220>
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<211> 1596

<212> DNA

<213> Artificial Sequence

<220>

<223> hIL12AB_015

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<213> Artificial Sequence

<220>
<223> hIL12AB_016

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

<220>
<223> hIL12AB_017

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 <211> 1596
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> hIL12AB_018

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 gctgccgagg agtcctgcc cattgaagtg atggtggatg ccgtccacaa gctgaagtac 660
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<210> 23

<211> 1596

<212> DNA

<213> Artificial Sequence

<220>

<223> hIL12AB_019

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gcggcagaag aaagtcttcc catagaagtc atgggtgatg ctgttcacaa attaaaatat 660
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<210> 24

<211> 1596

<212> DNA

<213> Artificial Sequence

<220>

<223> hIL12AB_020

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<210> 25

<211> 1596

<212> DNA

<213> Artificial Sequence

<220>

<223> hIL12AB_021

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<211> 1596
<212> DNA
<213> Artificial Sequence

<220>
<223> hIL12AB_022

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

<220>
<223> hIL12AB_023

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<212> DNA

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<220>

<223> Syn5 promoter

<400> 47

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<210> 48

<211> 532

<212> PRT

<213> Artificial Sequence

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<223> hIL12AB_001

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Val Glu Leu Asp Trp Tyr Pro Asp Ala Pro Gly Glu Met Val Val Leu
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Thr Cys Asp Thr Pro Glu Glu Asp Gly Ile Thr Trp Thr Leu Asp Gln
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Ser Ser Glu Val Leu Gly Ser Gly Lys Thr Leu Thr Ile Gln Val Lys
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Glu Phe Gly Asp Ala Gly Gln Tyr Thr Cys His Lys Gly Gly Glu Val
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Leu Ser His Ser Leu Leu Leu Leu His Lys Lys Glu Asp Gly Ile Trp
100 105 110

Ser Thr Asp Ile Leu Lys Asp Gln Lys Glu Pro Lys Asn Lys Thr Phe
115 120 125

Leu Arg Cys Glu Ala Lys Asn Tyr Ser Gly Arg Phe Thr Cys Trp Trp
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Leu Thr Thr Ile Ser Thr Asp Leu Thr Phe Ser Val Lys Ser Ser Arg
145 150 155 160

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

Ala Glu Arg Val Arg Gly Asp Asn Lys Glu Tyr Glu Tyr Ser Val Glu
180 185 190

Cys Gln Glu Asp Ser Ala Cys Pro Ala Ala Glu Glu Ser Leu Pro Ile
195 200 205

Glu Val Met Val Asp Ala Val His Lys Leu Lys Tyr Glu Asn Tyr Thr
210 215 220

Ser Ser Phe Phe Ile Arg Asp Ile Ile Lys Pro Asp Pro Pro Lys Asn
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Leu Gln Leu Lys Pro Leu Lys Asn Ser Arg Gln Val Glu Val Ser Trp
245 250 255

Glu Tyr Pro Asp Thr Trp Ser Thr Pro His Ser Tyr Phe Ser Leu Thr
260 265 270

Phe Cys Val Gln Val Gln Gly Lys Ser Lys Arg Glu Lys Lys Asp Arg
275 280 285

Val Phe Thr Asp Lys Thr Ser Ala Thr Val Ile Cys Arg Lys Asn Ala
290 295 300

Ser Ile Ser Val Arg Ala Gln Asp Arg Tyr Tyr Ser Ser Ser Trp Ser
305 310 315 320

Glu Trp Ala Ser Val Pro Cys Ser Gly Gly Gly Gly Gly Gly Ser Arg
325 330 335

Asn Leu Pro Val Ala Thr Pro Asp Pro Gly Met Phe Pro Cys Leu His
340 345 350

His Ser Gln Asn Leu Leu Arg Ala Val Ser Asn Met Leu Gln Lys Ala
355 360 365

Arg Gln Thr Leu Glu Phe Tyr Pro Cys Thr Ser Glu Glu Ile Asp His
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Phe Ile Thr Asn Gly Ser Cys Leu Ala Ser Arg Lys Thr Ser Phe Met
420 425 430

Met Ala Leu Cys Leu Ser Ser Ile Tyr Glu Asp Leu Lys Met Tyr Gln
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Val Glu Phe Lys Thr Met Asn Ala Lys Leu Leu Met Asp Pro Lys Arg
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Gln Ala Leu Asn Phe Asn Ser Glu Thr Val Pro Gln Lys Ser Ser Leu
485 490 495

Glu Glu Pro Asp Phe Tyr Lys Thr Lys Ile Lys Leu Cys Ile Leu Leu
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35 40 45

Leu Thr Cys Asp Thr Pro Glu Glu Asp Gly Ile Thr Trp Thr Leu Asp
50 55 60

Gln Ser Ser Glu Val Leu Gly Ser Gly Lys Thr Leu Thr Ile Gln Val
65 70 75 80

Lys Glu Phe Gly Asp Ala Gly Gln Tyr Thr Cys His Lys Gly Gly Glu
 85 90 95

Val Leu Ser His Ser Leu Leu Leu Leu His Lys Lys Glu Asp Gly Ile
 100 105 110

Trp Ser Thr Asp Ile Leu Lys Asp Gln Lys Glu Pro Lys Asn Lys Thr
 115 120 125

Phe Leu Arg Cys Glu Ala Lys Asn Tyr Ser Gly Arg Phe Thr Cys Trp
 130 135 140

Trp Leu Thr Thr Ile Ser Thr Asp Leu Thr Phe Ser Val Lys Ser Ser
145 150 155 160

Arg Gly Ser Ser Asp Pro Gln Gly Val Thr Cys Gly Ala Ala Thr Leu
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Ser Ala Glu Arg Val Arg Gly Asp Asn Lys Glu Tyr Glu Tyr Ser Val
 180 185 190

Glu Cys Gln Glu Asp Ser Ala Cys Pro Ala Ala Glu Glu Ser Leu Pro
 195 200 205

Ile Glu Val Met Val Asp Ala Val His Lys Leu Lys Tyr Glu Asn Tyr
 210 215 220

Thr Ser Ser Phe Phe Ile Arg Asp Ile Ile Lys Pro Asp Pro Pro Lys
225 230 235 240

Asn Leu Gln Leu Lys Pro Leu Lys Asn Ser Arg Gln Val Glu Val Ser
 245 250 255

Trp Glu Tyr Pro Asp Thr Trp Ser Thr Pro His Ser Tyr Phe Ser Leu
 260 265 270

Thr Phe Cys Val Gln Val Gln Gly Lys Ser Lys Arg Glu Lys Lys Asp
 275 280 285

Arg Val Phe Thr Asp Lys Thr Ser Ala Thr Val Ile Cys Arg Lys Asn
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Ala Ser Ile Ser Val Arg Ala Gln Asp Arg Tyr Tyr Ser Ser Ser Trp
305 310 315 320

Ser Glu Trp Ala Ser Val Pro Cys Ser Gly Gly Gly Gly Gly Ser
325 330 335

Arg Asn Leu Pro Val Ala Thr Pro Asp Pro Gly Met Phe Pro Cys Leu
340 345 350

His His Ser Gln Asn Leu Leu Arg Ala Val Ser Asn Met Leu Gln Lys
355 360 365

Ala Arg Gln Thr Leu Glu Phe Tyr Pro Cys Thr Ser Glu Glu Ile Asp
370 375 380

His Glu Asp Ile Thr Lys Asp Lys Thr Ser Thr Val Glu Ala Cys Leu
385 390 395 400

Pro Leu Glu Leu Thr Lys Asn Glu Ser Cys Leu Asn Ser Arg Glu Thr
405 410 415

Ser Phe Ile Thr Asn Gly Ser Cys Leu Ala Ser Arg Lys Thr Ser Phe
420 425 430

Met Met Ala Leu Cys Leu Ser Ser Ile Tyr Glu Asp Leu Lys Met Tyr
435 440 445

Gln Val Glu Phe Lys Thr Met Asn Ala Lys Leu Leu Met Asp Pro Lys
450 455 460

Arg Gln Ile Phe Leu Asp Gln Asn Met Leu Ala Val Ile Asp Glu Leu
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Met Gln Ala Leu Asn Phe Asn Ser Glu Thr Val Pro Gln Lys Ser Ser
485 490 495

Leu Glu Glu Pro Asp Phe Tyr Lys Thr Lys Ile Lys Leu Cys Ile Leu

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505

510

Leu His Ala Phe Arg Ile Arg Ala Val Thr Ile Asp Arg Val Met Ser

515

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attgtcacac tccagtggc tttgaataaa gtctgagtgg gcggcaaaaa aaaaaaaaaa 1800
aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
aaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 96
<211> 1890
<212> DNA
<213> Artificial Sequence

<220>
<223> hIL12AB_002

<220>
<221> misc_feature
<222> (1)..(1)
<223> 5' terminal guanosine cap

<400> 96
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gagctgaaga aggacgtgta cgtgggtggag ttgattggt accccgacgc ccccggcgag 180
atggtggtgc tgacctgcga ccccccgag gaggacggca tcacctggac cctggaccag 240
agcagcgagg tgctgggcag cggcaagacc ctgaccatcc aggtgaagga gttcggcgac 300
gccggccagt acacctgcca caaggcggc gaggtgctga gccacagcct gctgctgctg 360
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aacaagacct tcctgagatg cgaggccaag aactacagcg gcagattcac ctgctggtgg 480
ctgaccacca tcagcaccga cctgaccttc agcgtgaaga gcagcagagg cagcagcgac 540
ccccagggcg tgacctgcgg cgccgccacc ctgagcgccg agagagtgaag aggcgacaac 600
aaggagtacg agtacagcgt ggagtgccag gaagatagcg cctgccccgc cgccgaggag 660
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agcagcttct tcatcagaga tatcatcaag cccgaccccc ccaagaacct gcagctgaag 780
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 attgtcacac tccagtggtc tttgaataaa gtctgagtgg gcggcaaaaa aaaaaaaaaa 1800
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
 aaaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 97
 <211> 1890
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> hIL12AB_003

<220>
 <221> misc_feature
 <222> (1)..(1)
 <223> 5' terminal guanosine cap

<400> 97
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 atggtggtcc tcacctgtga caccctgaa gaagacggaa tcacctggac cttggaccag 240

agcagtgagg tcttaggctc tggcaaaacc ctgaccatcc aagtcaaaga gtttgagat 300
 gctggccagt acacctgtca caaaggaggc gaggttctaa gccattcgct cctgctgctt 360
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 aataagacct ttctaagatg cgaggccaag aattattctg gacgtttcac ctgctggtgg 480
 ctgacgacaa tcagtactga ttgacattc agtgtcaaaa gcagcagagg ctcttctgac 540
 cccaagggg tgacgtgagg agctgtaca ctctctgcag agagagtcag aggtgacaac 600
 aaggagtatg agtactcagt ggagtgcag gaagatagtg cctgcccagc tgctgaggag 660
 agtctgccc ttaggtcat ggtggatgcc gttcacaagc tcaagtatga aaactacacc 720
 agcagcttct tcactagaga tatcatcaaa cctgaccac ccaagaactt gcagctgaag 780
 ccattaaaga attctcgga ggtggaggc agctgggagt accctgacac ctggagtact 840
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 gtgatgagct atctgaatgc ttctgataa taggctggag cctcgggtggc catgcttctt 1680
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 aaaaaaaaa aaaaaaaaa aaaaaaaaa aaaaaaaaa aaaaaaaaa 1860

aaaaaaaaaa aaaaaaaaaa aaaaatctag

1890

<210> 98

<211> 1893

<212> DNA

<213> Artificial Sequence

<220>

<223> hIL12AB_004

<220>

<221> misc_feature

<222> (1)..(1)

<223> 5' terminal guanosine cap

<400> 98

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tgggagctga agaaagacgt ctacgtagta gagttggatt ggtaccaga cgcacctgga 180

gaaatggtgg ttctcacctg tgacacgcca gaagaagacg gtatcacctg gacgtggac 240

cagagctcag aagttcttgg cagtggaaaa acgctgacca tacaagtaa agaatttggg 300

gatgctggcc agtacacctg ccacaaagga ggagaagttc tcagccacag cctgctgctg 360

ctgcacaaga aagaagatgg catctggagc acagatattt taaaagacca gaaggagccc 420

aagaacaaaa ccttccttcg atgtgaggcc aagaactaca gtggccgctt cacctgctgg 480

tggctacca ccatcagcac agacctcacc ttctcgtga agagcagccg tggcagctca 540

gacccccaag gagtcacctg tggggcggcc acgtgtcgg cagaaagagt tcgaggtgac 600

aacaaggaat atgaatactc ggtggaatgt caagaagatt cggcctgccc ggcggcagaa 660

gaaagtcttc ccatagaagt catgtggat gctgttcaca aattaaaata tgaaaactac 720

accagcagct tcttcacag agatatcatc aagccagacc cgccaagaa cctgcagctg 780

aagcccctga agaacagccg gcaggtggaa gtttctggg agtaccaga tacgtggagc 840

acgccgcaca gctacttcag cctcaccttc tgtgtacaag tacaaggcaa gagcaagaga 900

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gacctggca tgttccctg cctgcaccac agccaaaatt tacttcgagc tgtttctaac 1140

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 cggcagatat ttttgatca aaacatgctg gctgtcattg atgagctcat gcaagcatta 1500
 aactcaact cagagacggt gcccagaag agcagcctgg aggagccaga ttctacaaa 1560
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 accattgtca cactccagt gctttgaat aaagtctgag tgggcggcaa aaaaaaaaaa 1800
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
 aaaaaaaaaa aaaaaaaaaa aaaaaaaatc tag 1893

<210> 99
 <211> 1890
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> hIL12AB_005

<220>
 <221> misc_feature
 <222> (1)..(1)
 <223> 5' terminal guanosine cap

<400> 99
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 gagctgaaga aagacgtcta cgtagtagag ttgattggt acccagacgc acctggagaa 180
 atggtgggtc tcacctgtga cagccagaa gaagacggtc tcacctggac gctggaccag 240
 agctcagaag ttctggcag tggaaaaacg ctgaccatac aagtaaaaga atttgggat 300
 gctggccagt acacctgcca caaaggagga gaagtctca gccacagcct gctgctgctg 360

cacaagaaag aagatggcat ctggagcaca gatatttta aagaccagaa ggagcccaag 420
aacaaaacct tccttcgatg tgaggccaag aactacagt gccgcttcac ctgctggtgg 480
ctcaccacca tcagcacaga cctcaccttc tcggtgaaga gcagccgtgg cagctcagac 540
ccccaaggag tcacctgtgg ggcgccacg ctgtggcag aaagagttcg aggtgacaac 600
aaggaatatg aatactcggg ggaatgtcaa gaagattcgg cctgcccggc ggcagaagaa 660
agtcttccca tagaagtcac ggtggatgct gttcacaat taaaatatga aaactacacc 720
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aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
aaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 100
<211> 1890

<212> DNA
<213> Artificial Sequence

<220>
<223> hIL12AB_006

<220>
<221> misc_feature
<222> (1)..(1)
<223> 5' terminal guanosine cap

<400> 100
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gagctgaaga aggacgtgta cgtggtggag ttgattggt accccgacgc ccccggcgag 180
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gccggccagt acacctgcca caaggcgccg gaggtgctga gccacagcct gctgctgctg 360
cacaagaagg aggacggcat ctggagcaca gatatcctga aggaccagaa ggagcccaag 420
aacaagacct tcctgagatg cgaggccaag aactacagcg gcagattcac ctgctggtgg 480
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gccccttggg cctcccccca gcccctctc cccttctgc acccgtacct cccaaacacc 1740
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
aaaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 101
<211> 1890
<212> DNA
<213> Artificial Sequence

<220>
<223> hIL12AB_007

<220>
<221> misc_feature
<222> (1)..(1)
<223> 5' terminal guanosine cap

<400> 101
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gtgatgtcct acttaaatgc ttcttgataa taggctggag cctcgggtggc caagcttctt 1680
gccccttggg cctcccccca gcccctctc ccttctctgc acccgtaccc cccaaacacc 1740
attgtcacac tccagtggc ttgaataaa gtctgagtgg gcggcaaaaa aaaaaaaaaa 1800
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aaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 102

<211> 1890

<212> DNA

<213> Artificial Sequence

<220>

<223> hIL12AB_008

<220>

<221> misc_feature

<222> (1)..(1)

<223> 5' terminal guanosine cap

<400> 102

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gagcttaaga aggacgtgta cgtggaggag ctcgattggt acccgcacgc acctggcgag 180

atgggtggtgc taacctgcga taccctcgag gaggacggga tcaactggac cctggatcag 240

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cacaagaagg aggatgggat ctggtcaacc gacatcctga aggatcagaa ggagcctaag 420

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ttgaccacaa tcagactga cctgaccttt tccgtgaagt ccagcagagg aagcagcgat 540

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<210> 103
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 <212> DNA
 <213> Artificial Sequence

<220>
 <223> hIL12AB_009

<220>
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<210> 104
<211> 1890
<212> DNA
<213> Artificial Sequence

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<220>
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<220>
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<222> (1)..(1)

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<223> 5' terminal guanosine cap

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atgggtgttc tcacctgca cactcctgaa gaagacgga tcacctggac gctggacaa 240
agcagcgaag ttttaggtc tgaaaaacg ctgaccatac aagtaaaaga attggcgac 300
gctggccagt acacgtgcca caaaggagga gaagtttaa gccacagtt acttcttct 360
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<210> 105
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 <212> DNA
 <213> Artificial Sequence

<220>
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<220>
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 <222> (1)..(1)
 <223> 5' terminal guanosine cap

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<210> 106
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<220>
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<220>
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 <222> (1)..(1)
 <223> 5' terminal guanosine cap

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attgtcacac tccagtggc tttgaataaa gtctgagtgg gcggcaaaaa aaaaaaaaaa 1800
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 aaaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 107
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<220>
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<220>
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<220>
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1890

<210> 109

<211> 1890

<212> DNA

<213> Artificial Sequence

<220>

<223> hIL12AB_015

<220>

<221> misc_feature

<222> (1)..(1)

<223> 5' terminal guanosine cap

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<210> 110
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<220>
 <223> hIL12AB_016

<220>
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 <223> 5' terminal guanosine cap

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aaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 111

<211> 1890

<212> DNA
<213> Artificial Sequence

<220>
<223> hIL12AB_017

<220>
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<222> (1)..(1)
<223> 5' terminal guanosine cap

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

<220>
 <223> hIL12AB_018

<220>
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<211> 1890

<212> DNA

<213> Artificial Sequence

<220>

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<220>

<221> misc_feature

<222> (1)..(1)

<223> 5' terminal guanosine cap

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atggtggttc tcacctgtga cactcctgaa gaagacggtt tcacctggac gctggaccaa 240

agctcagaag ttcttggcag tggaaaaacg ctgaccatac aagtaaaaga atttggggat 300

gctggccagt acacgtgcca caaaggagga gaagttctca gccacagttt acttcttctt 360

cacaagaaag aagatggcat ctggtccaca gatattttaa aagaccagaa ggagcccaag 420

aacaaaacct tctccgctg tgaggccaag aactacagtg gtcgtttcac ctgctggtgg 480

ctcaccacca tctccactga cctcaccttc tctgtaaaaa gcagccgtgg ttcttctgac 540

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<210> 114
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 <213> Artificial Sequence

<220>
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<220>
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<210> 115

<211> 1890

<212> DNA

<213> Artificial Sequence

<220>

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<220>

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<222> (1)..(1)

<223> 5' terminal guanosine cap

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<210> 116
<211> 1890
<212> DNA
<213> Artificial Sequence

<220>
<223> hIL12AB_022

<220>
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<222> (1)..(1)
<223> 5' terminal guanosine cap

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agcagctttt tcatacgca catcatcaag cccgaccccc ccaagaacct gcagcttaag 780
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ccccacagct acttctcct gacctttgt gtccaagtcc agggaaagag caagaggag 900
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<210> 117
<211> 1890
<212> DNA
<213> Artificial Sequence

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<220>
<223> hIL12AB_023

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<220>
<221> misc_feature
<222> (1)..(1)
<223> 5' terminal guanosine cap

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<400> 117
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aaaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 118
<211> 1890
<212> DNA
<213> Artificial Sequence

<220>
<223> hIL12AB_024

<220>
<221> misc_feature
<222> (1)..(1)
<223> 5' terminal guanosine cap

<400> 118
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tcctccgagg tgctgggctc cggcaagacg ctgaccatcc aagtgaagga gttcgtgac 300
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aacaagacct ttctgagggtg cgaggccaag aactacagcg gccgattcac ctgctggtgg 480
ctcaccacca tatcaccga cctgacttct tccgtcaagt cctccgggg gtccagcgac 540
ccccaggag tgacctgcgg cgccgccacc ctacgcgcg agcgggtgcg gggggacaac 600
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agcagtttct tcacaggga tatcatcaag ccagatcccc cgaagaatct gcaactgaag 780
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attgtcacac tccagtggtc ttgaataaa gtctgagtgg gcggcaaaaa aaaaaaaaaa 1800
aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
aaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 119
<211> 1890
<212> DNA
<213> Artificial Sequence

<220>
<223> hIL12AB_025

<220>
<221> misc_feature
<222> (1)..(1)
<223> 5' terminal guanosine cap

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1890

<210> 120

<211> 1890

<212> DNA

<213> Artificial Sequence

<220>

<223> hIL12AB_026

<220>

<221> misc_feature

<222> (1)..(1)

<223> 5' terminal guanosine cap

<400> 120

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gagctgaaga aggacgtgta cgtggaggag ctggactggt accctgacgc cccgggggag 180

atggctgtgc tgacctgca ccccccgaa gaggacggtg tcacctggac cctggaccag 240

tccagcgagg tgctgggcag cggcaagacc ctgactattc aagtcaagga gttcggagac 300

gccggccagt acacctgcca caagggtgga gaggtgttat cacacagcct gctgctgctg 360

cacaagaagg aagacgggat ctggagcacc gacatcctga aggaccagaa ggagcccaaa 420

aacaagacct tcctgcggtg cgaggccaag aactattcgg gccgctttac gtgctggtgg 480

ctgaccacca tcagactga tctcaccttc agcgtgaagt cctcccgggg gtcgtccgac 540

ccccaggggg tgacctgcgg ggccgccacc ctgtccgccg agagagtga gggcgataat 600

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 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
 aaaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 121
 <211> 1890
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> hIL12AB_027

<220>
 <221> misc_feature
 <222> (1)..(1)
 <223> 5' terminal guanosine cap

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cacaagaagg aggacggcat atgtccacc gacatcctga aggatcagaa ggagccgaag 420
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aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
aaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 122

<211> 1890

<212> DNA
<213> Artificial Sequence

<220>
<223> hIL12AB_028

<220>
<221> misc_feature
<222> (1)..(1)
<223> 5' terminal guanosine cap

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gccggtcagt acacctgcca caagggcggc gaggtgctga gccacagcct actgctctg 360
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aacaagacgt tcctccgggt cgaggccaag aactacagcg gcaggtttac ctgctggtgg 480
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attgtcacac tccagtggtc tttgaataaa gtctgagtgg gcggcaaaaa aaaaaaaaaa 1800
aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
aaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 123
<211> 1890
<212> DNA
<213> Artificial Sequence

<220>
<223> hIL12AB_029

<220>
<221> misc_feature
<222> (1)..(1)
<223> 5' terminal guanosine cap

<400> 123
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cataagaagg aagacggcat ctggagcacc gacatactga aggatcagaa ggagccaag 420
aacaagacct tcctgaggtg cgaggccaag aactactccg ggcgcttac ctgttggtgg 480
ctgaccacca tctccaccga cctgacctc agcgtgaaga gcagcagggg gagcagcgac 540

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ccccaggggg tgacctgcgg agccgcgacc ttgtcgccg agcgggtgag gggcgacaat    600
aaggagtacg agtactcgg cgaatgccag gaggactccg cctgccccgc cgccgaggag    660
tccctcccca tcgaagtgat ggtggacgcc gtccacaagc tgaagtacga gaactacacc    720
agcagcttct tcatacggga tatcatcaag cccgaccccc cgaagaacct gcagctgaaa    780
cccttgaaga actccaggca ggtggagggtg agctgggagt accccgacac ctggtccacc    840
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aagaaggata ggggtgttac cgacaagacc tccgccacgg tgatctgtcg gaaaaacgcc    960
agcatctccg tgcgggcccc ggacaggtac tattccagca gctggagcga gtgggcctcc   1020
gtcccctgct ccggcggcgg tggcgggggc agcaggaacc tccccgtggc ccccccgat   1080
cccgggatgt tcccatgcct gcaccacagc caaacctgc tgagggccgt ctccaatatg   1140
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gaggatatca ccaaggacaa gacctccagc gtcgaggcgt gcctgccctt ggagctcacg   1260
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cagattttcc tggaccagaa catgtggcc gtgattgacg agctgatgca ggcgtgaac   1500
ttcaacagcg agacagtgcc gcagaagagc tcctggagg agccggactt ttacaagacc   1560
aagataaagc tgtgcatcct gctccacgcc ttcagaatac gggccgtcac catcgatagg   1620
gtgatgtctt acctgaacgc ctctgataa taggctggag cctcggtggc catgcttctt   1680
gccccttggg cctcccccca gcccctctc ccttctctgc acccgtaacc cccaaacacc   1740
attgtcacac tccagtggc ttgaataaa gtctgagtgg gcggcaaaaa aaaaaaaaaa   1800
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa   1860
aaaaaaaaaa aaaaaaaaaa aaaaatctag                                     1890

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<210> 124

<211> 1890

<212> DNA

<213> Artificial Sequence

<220>

<223> hIL12AB_030

<220>

<221> misc_feature

<222> (1)..(1)

<223> 5' terminal guanosine cap

<400> 124

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gaactgaaaa aggacgtgta cgtggtcgag ctggattggt acccgcacgc ccccgcgaa 180

atggtggtgc tgacgtgtga tcccccgag gaggacggga tcacctggac cctggtacag 240

agcagcgagg tgctggggag cgggaagacc ctgacgatcc aggtcaagga gttcggcgac 300

gctgggcagt acacctgtca caagggcggg gaggtgctgt cccactccct gctgctctg 360

cataagaaag aggacggcat ctggtccacc gacatcctca aggaccagaa ggagcccaag 420

aacaagacct tcctgcggtg tgaggcgaag aactacagcg gccgtttcac ctgctggtgg 480

ctgacgaaa tcagaccga ctgacgttc tccgtgaagt cctccagagg cagctccgac 540

ccccaagggg tgacgtgcgg cgcggccacc ctgagcgccg agcgggtgcg gggggacaac 600

aaggagtacg agtactccgt ggagtgccag gaggacagcg cctgtccgc agccaggag 660

tccctgcca tcgaagtcac ggtggacgcc gtccacaagc tgaagtacga gaactacacc 720

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ccgctgaaga atagcaggca ggtggagggt tcctgggagt acccgacac ctggagcacg 840

ccccacagct attcagcct gacctttgc gtgcaggtcc aggggaagag caagcgggag 900

aagaaggacc gcgtgtttac ggacaaaacc agcgccaccg tgatctgcag gaagaacgcc 960

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gaagacatca ccaaggacaa gaccagcaca gtggaggcct gcctgccct ggaactgacc 1260

aagaacgagt cctgtctgaa ctccgggaa accagcttca taaccaacgg ctctgtctc 1320

gccagcagga agaccagctt catgatggcc ctgtgcctca gtcctatcta cgaggacctc 1380

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cagatcttcc tggaccagaa tatgtggcc gtgatcgatg agttaatgca ggcgctgaac 1500
 ttcaacagcg agacgggtgcc ccaaaagtcc tcgctggagg agcccgactt ctacaagacc 1560
 aagatcaagc tgtgcatcct cctgcacgcc ttccgaatcc gggccgtaac catcgacagg 1620
 gtgatgagct atctcaacgc ctctgataa taggctggag cctcgggtggc catgcttctt 1680
 gcccttggg cctccccca gccctctc ccttctgc acccgtaccc cccaaacacc 1740
 attgtcacac tccagtggc tttgaataaa gtctgagtg gcggcaaaaa aaaaaaaaaa 1800
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
 aaaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 125
 <211> 1890
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> hIL12AB_031

<220>
 <221> misc_feature
 <222> (1)..(1)
 <223> 5' terminal guanosine cap

<400> 125
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 gagctgaaga aagacgtgta cgtggtggag ctggactggt atcccgacgc cccgggggag 180
 atggtggtgc tgacctgca cccccggaa gaggacggca tcacctggac gctcgaccag 240
 tcgtccgaag tgctggggtc gggcaagacc ctacacatcc aggtgaagga gttcgagac 300
 gccggccagt acacctgtca taaggggggg gaggtgctga gccacagcct cctgctcctg 360
 caaaaaagg aggacggcat ctggagcacc gatatcctca aggaccagaa ggagccaag 420
 aacaagacgt tcctgaggtg tgaggccaag aactacagcg ggcgggtcac gtgttggtgg 480
 ctaccacca tctcaccga cctcacctc tccgtgaagt caagcagggg cagctccgac 540
 cccaaggcg tcacctgcgg cgccgccacc ctgagcgccg agagggtcag gggggataac 600
 aaggaatacg agtacagtgt ggagtgccaa gaggatagcg cctgtccgc cgccgaagag 660

agcctgccca tcgaagtgat ggtggacgcc gtgcacaagc tgaagtacga gaactacacc 720
 tccagcttct tcatcaggga tatcatcaag cccgatcccc ccaagaacct gcagctgaag 780
 cccctgaaga acagcaggca ggtggagggtg agctgggagt atcccgcacac gtggagcacc 840
 ccgcacagct acttctcgt gaccttctgc gtgcaggtgc aagggaagtc caagaggag 900
 aagaaggata ggggtgttac cgacaaaacg agcgccaccg tgatctgccg gaagaatgcc 960
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 gaagatatca ccaaagacaa gacctcgacc gtggaggcct gcctgccctt ggagctcacc 1260
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 ttcaacagcg agacgggtgcc ccagaagagc agcctcgagg agcccgactt ctataagacc 1560
 aagataaagc tgtgcattct gctgcacgcc ttcagaatca gggccgtgac catcgatagg 1620
 gtgatgagct acctgaacgc cagctgataa taggctggag cctcggtggc catgcttctt 1680
 gcccttggg cctccccca gccctctc ccttctgc acccgtaacc cccaaacacc 1740
 attgtcacac tccagtggc tttgaataaa gtctgagtgg gcggcaaaaa aaaaaaaaaa 1800
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
 aaaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 126
 <211> 1890
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> hIL12AB_032

<220>
 <221> misc_feature
 <222> (1)..(1)

<223> 5' terminal guanosine cap

<400> 126

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gagctgaaga aagacgtata cgctgtggag ctggactggt atcccgacgc tcccggcgag 180
atggtggtcc tcacctgca caccacagag gaggacggca tcacctggac cctggaccag 240
agctccgagg tcctgggcag cggtaaagacc ctacccatcc aggtgaagga gtttggtgat 300
gccgggcagt atacctgcca caaggcggc gaggtgctgt cccacagcct cctgttactg 360
cataagaagg aggatggcat ctggagcacc gacatcctca aggaccagaa agagcccaag 420
aacaagacct ttctgcggtg cgaggcgaag aattactccg gccggtcac ctgctggtgg 480
ctgaccacca tcagcacgga cctgacgttc tccgtgaagt cgagcagggg gagctccgat 540
ccccagggcg tgacctgcgg cgcgccacc ctgagcgccg agcgctccg cggggacaat 600
aaggaatacg aatatacggt ggagtgccag gaggacagcg cctgccccgc ggccgaggag 660
agcctccga tcgaggtgat ggtggatgcc gtccacaagc tcaaatacga aaactacacc 720
agcagcttct tcattagga catcatcaag cccgaccccc caaaaacct gcagctgaag 780
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cagatatcc tggaccagaa catgctcgcc gtgatgatg aactgatgca agcctgaac 1500
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attgtcacac tccagtggc tttgaataaa gtctgagtgg gcggcaaaaa aaaaaaaaaa 1800
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aaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 127
<211> 1890
<212> DNA
<213> Artificial Sequence

<220>
<223> hIL12AB_033

<220>
<221> misc_feature
<222> (1)..(1)
<223> 5' terminal guanosine cap

<400> 127
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gagctgaaaa aagacgtgta cgtggtggag ctggactggt acccggacgc ccccggcgag 180
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gccggccagt acacatgcca taaggcgagg gaggtgctga gccacagcct gtcctcctg 360
cacaagaagg aggatggcat ctggtctaca gacatcctga aggaccagaa agagcccaag 420
aacaagacct tctccggtg cgaggccaag aactactccg ggcggttac ttgttggtgg 480
ctgaccacca tcagaccga cctcacctc agcgtgaaga gctccgagg gagctccgac 540
cccaggggg tcacctgcgg cgccgccacc ctgagcgccg agcgggtgag gggcgacaac 600
aaggagtatg aatacagcgt ggaatgcaa gaggacagcg cctgtccgc gcccgaggaa 660
agcctgcca tcaggtgat ggtggacgc gtccaaaac tcaagtacga gaactacac 720
agcagtttct tcattgcga catcatcaag ccggacccc caaaaacct gcagctcaa 780
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 attgtcacac tccagtggc tttgaataaa gtctgagtgg gcggcaaaaa aaaaaaaaaa 1800
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
 aaaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 128
 <211> 1890
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> hIL12AB_034

<220>
 <221> misc_feature
 <222> (1)..(1)
 <223> 5' terminal guanosine cap

<400> 128
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gagctgaaga aagacgtgta cgtggtggag ctggactggt atcccacgc ccccggcgag 180
atggtcgtgc tgacctgca cccccggag gaggacggca tcacctggac cctggatcag 240
tcctccgagg tgctgggcag cgggaagacc ctgacatcc aggtgaaaga gttcggagat 300
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aataaaacgt tcctgaggtg cgaagccaag aactattccg gacggtcac ctgctggtg 480
ctgaccacca tcagaccga cctcaccttc tccgtaaagt caagcagggg cagctccgac 540
ccccagggcg tgacctgcgg agccgccacc ctgagcgcag agagggtgag gggcgacaac 600
aaggagtacg aatactccgt cgagtgccag gaggacagcg cctgccccgc cgccgaggaa 660
agtctgcca tcgaggtgat ggtggacgcc gtgcacaagc tcaaatacga gaactacacc 720
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ccccactct actttagcct gacctttgc gtgcaggtgc aggggaaaag caagcgggag 900
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tcaatcagcg tgaggccca ggtacgttac tactccagct cctggagcga gtgggccagc 1020
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gcccctggg cctccccca gcccctctc ccttctctg acccgtacc ccaaacacc 1740

attgtcacac tccagtggtc ttgaataaa gtctgagtg gcggcaaaaa aaaaaaaaaa 1800
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
 aaaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 129
 <211> 1890
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> hIL12AB_035

<220>
 <221> misc_feature
 <222> (1)..(1)
 <223> 5' terminal guanosine cap

<400> 129
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 gagttaaaga aggacgtgta cgtgggtggag ctggattggt accccgacgc cccgggcgag 180
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 tccagcgagg tgctgggcag cggcaagacc ctgaccatac aggtgaagga atttggggac 300
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 cataagaagg aggacggcat ctggagcacc gacatcctga aggacaaaaa ggagcccaag 420
 aacaagacct tcctgagggt cgaggccaaa aactattccg gccgctttac ctgttggtgg 480
 ctgaccacca tctccaccga tctgacctc agcgtgaagt cgtctagggg ctctccgac 540
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 aagaaggacc ggtgttcac cgataagacg agcgccaccg ttatctgcag gaagaacgcc 960

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 aagaatgaat cctgcctgaa cagccgagag accagcttta tcaccaacgg ctctgcctg 1320
 gccagcagga agacctcctt catgatggcc ctgtgcctct ccagcatcta cgaggatctg 1380
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 aagatcaaac tgtgcatcct cctgcacgcg ttcaggatcc gcgccgtcac catagacagg 1620
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 gcccttggg cctccccca gccctctc ccttctgc acccgtaacc cccaaacacc 1740
 attgtcacac tccagtggc tttgaataaa gtctgagtgg gcggcaaaaa aaaaaaaaaa 1800
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
 aaaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 130
 <211> 1890
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> hIL12AB_036

<220>
 <221> misc_feature
 <222> (1)..(1)
 <223> 5' terminal guanosine cap

<400> 130
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 gagctgaaga aggacgtgta cgtggtggaa ctggactggt acccgacgc ccctggcgag 180
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 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860

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1890

<210> 131

<211> 1890

<212> DNA

<213> Artificial Sequence

<220>

<223> hIL12AB_037

<220>

<221> misc_feature

<222> (1)..(1)

<223> 5' terminal guanosine cap

<400> 131

ggggaaataa gagagaaaag aagagtaaga agaaatataa gagccacat gtgccaccaa 60

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gagctcaaaa aagacgtgta cgtggtggag ctcgattggt acccagacgc gccgggggaa 180

atggtggtgc tgacctgca caccacagag gaggatggca tcacgtggac gctggatcag 240

tccagcgagg tgctggggag cggcaagacg ctccatcc aggtgaagga atttgcgac 300

gcgggccagt atacctgtca caaggcggc gagtgctga gccactcct gctgctgctg 360

cacaagaagg aggatgggat ctggtcaacc gatatcctga aagaccagaa ggagcccaag 420

aacaagacct tcctgcgctg cgaggccaag aactatagcg gcaggttcac ctgctggtgg 480

ctgaccacca tcagcacga cctgacctc agcgtgaaat cctccagggg cagcagcgac 540

ccccagggcg tgacctgcgg tgccgccacg ctctccgag agcgagtgaagg ggtgacaac 600

aaggagtacg agtacagcgt ggaatgtcag gaggacagcg cctgtccgc cgccaggag 660

tcgtgccca tcgaggtgat ggtcgacggt gtgcacaagc taaatacga gaattacac 720

agcagcttct tcacaggga catcatcaag cccgacccc ccaagaacct gcagctgaag 780

ccctgaaga acagcaggca ggtggaggtg agctgggagt acccgacac ctggagcacc 840

cccactcct acttcagcct gacgttctgt gtgcaggtgc aggggaagtc caagaggag 900

aagaaggacc ggtgttcac cgacaagacc agcgccaccg tgatatgccg caagaacgcg 960

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 gtgatgagct acctcaacgc ctctgataa taggctggag cctcgggtggc catgcttctt 1680
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 aaaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 132
 <211> 1890
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> hIL12AB_038

<220>
 <221> misc_feature
 <222> (1)..(1)
 <223> 5' terminal guanosine cap

<400> 132
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cacaaaaagg aggatggcat ctggagcacc gacatcctga aggaccagaa ggagcccaag 420
aacaagacat ttctcaggtg tgaggccaag aactattcgg gcaggtttac ctgttggtgg 480
ctcaccacca tctctaccga cctgacgttc tccgtcaagt caagcagggg gagctcggac 540
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aaggagtacg agtattccgt ggagtgccag gaggacagcg cctgccccgc cgccgaggag 660
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aaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 133

<211> 1890

<212> DNA
<213> Artificial Sequence

<220>
<223> hIL12AB_039

<220>
<221> misc_feature
<222> (1)..(1)
<223> 5' terminal guanosine cap

<400> 133
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agctccgagg tgctggggag cggcaagacc ctgaccattc aggtgaaaga gttcggcgac 300
gccggccaat atacctgcca caaggggggg gaggtcctgt cgatttcct gctgctgctt 360
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aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
aaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 134
<211> 1890
<212> DNA
<213> Artificial Sequence

<220>
<223> hIL12AB_040

<220>
<221> misc_feature
<222> (1)..(1)
<223> 5' terminal guanosine cap

<400> 134
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aacaagacct ttctgagatg cgaggccaag aattacagcg gccgtttcac ctgctggtgg 480
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 gtgatgagct acctgaatgc ctctgataa taggctggag cctcggtggc catgcttctt 1680
 gcccttggg cctccccca gccctctc ccttctgc acccgtaacc ccaaacacc 1740
 attgtcacac tccagtggc ttgaataaa gtctgagtg gcggcaaaaa aaaaaaaaaa 1800
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
 aaaaaaaaaa aaaaaaaaaa aaaaatctag 1890

<210> 135

<211> 47

<212> DNA

<213> Artificial Sequence

<220>

<223> 5'UTR-001 (Upstream UTR)

<400> 135
gggaaataag agagaaaaga agagtaagaa gaaatataag agccacc 47

<210> 136
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> 5'UTR-002 (Upstream UTR)

<400> 136
gggagatcag agagaaaaga agagtaagaa gaaatataag agccacc 47

<210> 137
<211> 145
<212> DNA
<213> Artificial Sequence

<220>
<223> 5'UTR-003 (Upstream UTR)

<400> 137
ggaataaaag tctcaacaca acatatacaa aacaaacgaa tctcaagcaa tcaagcattc 60
tacttctatt gcagcaattt aaatcatttc ttttaaagca aaagcaattt tctgaaaatt 120
ttcaccattt acgaacgata gcaac 145

<210> 138
<211> 42
<212> RNA
<213> Artificial Sequence

<220>
<223> 5'UTR-004 (Upstream UTR)

<400> 138
gggagacaag cuuggcauuc cgguacuguu gguaaagcca cc 42

<210> 139
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> 5'UTR-005 (Upstream UTR)

<400> 139
gggagatcag agagaaaaga agagtaagaa gaaatataag agccacc 47

<210> 140
<211> 145
<212> DNA
<213> Artificial Sequence

<220>
<223> 5'UTR-006 (Upstream UTR)

<400> 140
ggaataaaag tctcaacaca acatatacaa aacaaacgaa tctcaagcaa tcaagcattc 60
tacttctatt gcagcaattt aaatcatttc ttttaaagca aaagcaattt tctgaaaatt 120
ttcaccattt acgaacgata gcaac 145

<210> 141
<211> 42
<212> RNA
<213> Artificial Sequence

<220>
<223> 5'UTR-007 (Upstream UTR)

<400> 141
gggagacaag cuuggcauuc cgguacuguu gguaaagcca cc 42

<210> 142
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> 5'UTR-008 (Upstream UTR)

<400> 142
gggaattaac agagaaaaga agagtaagaa gaaatataag agccacc 47

<210> 143
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> 5'UTR-009 (Upstream UTR)

<400> 143
gggaaattag acagaaaaga agagtaagaa gaaatataag agccacc 47

<210> 144

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

<220>
<223> 5'UTR-010 (Upstream UTR)

<400> 144
gggaaataag agagtaaaga acagtaagaa gaaatataag agccacc 47

<210> 145
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> 5'UTR-011 (Upstream UTR)

<400> 145
gggaaaaaag agagaaaaga agactaagaa gaaatataag agccacc 47

<210> 146
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> 5'UTR-012 (Upstream UTR)

<400> 146
gggaaataag agagaaaaga agagtaagaa gatataag agccacc 47

<210> 147
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> 5'UTR-013 (Upstream UTR)

<400> 147
gggaaataag agacaaaaca agagtaagaa gaaatataag agccacc 47

<210> 148
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> 5'UTR-014 (Upstream UTR)

<400> 148
 gggaaattag agagtaaaga acagtaagta gaattaaaag agccacc 47

<210> 149
 <211> 47
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> 5'UTR-015 (Upstream UTR)

<400> 149
 gggaaataag agagaataga agagtaagaa gaaatataag agccacc 47

<210> 150
 <211> 47
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> 5'UTR-016 (Upstream UTR)

<400> 150
 gggaaataag agagaaaaga agagtaagaa gaaaattaag agccacc 47

<210> 151
 <211> 47
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> 5'UTR-017 (Upstream UTR)

<400> 151
 gggaaataag agagaaaaga agagtaagaa gaaatttaag agccacc 47

<210> 152
 <211> 92
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> 5'UTR-018 (Upstream UTR)

<400> 152
 tcaagctttt ggaccctcgt acagaagcta atacgactca ctataggga ataaagagaga 60

aaagaagagt aagaagaaat ataagagcca cc 92

<210> 153

<211> 142
<212> DNA
<213> Artificial Sequence

<220>

<223> 142-3p 5'UTR-001 (Upstream UTR including miR142-3p)

<400> 153

tgataatagt ccataaagta ggaaacacta cagctggagc ctcggtggcc atgcttcttg 60

ccccttgggc ctccccccag cccctctcc ccttctgca cccgtacccc cgtggtcttt 120

gaataaagtc tgagtgggcg gc 142

<210> 154

<211> 142

<212> DNA

<213> Artificial Sequence

<220>

<223> 142-3p 5'UTR-002 (Upstream UTR including miR142-3p)

<400> 154

tgataatagg ctggagcctc ggtggctcca taaagtagga aacactacac atgcttcttg 60

ccccttgggc ctccccccag cccctctcc ccttctgca cccgtacccc cgtggtcttt 120

gaataaagtc tgagtgggcg gc 142

<210> 155

<211> 142

<212> DNA

<213> Artificial Sequence

<220>

<223> 142-3p 5'UTR-003 (Upstream UTR including miR142-3p)

<400> 155

tgataatagg ctggagcctc ggtggccatg cttctgccc cttccataaa gtaggaaaca 60

ctacatgggc ctccccccag cccctctcc ccttctgca cccgtacccc cgtggtcttt 120

gaataaagtc tgagtgggcg gc 142

<210> 156

<211> 142

<212> DNA

<213> Artificial Sequence

<220>

<223> 142-3p 5'UTR-004 (Upstream UTR including miR142-3p)

<400> 156
tgataatagg ctggagcctc ggtggccatg cttcttgccc cttgggcctc cccccagtcc 60
ataaagtagg aaacactaca cccctectcc ccttctgca cccgtacccc cgtggtcttt 120
gaataaagtc tgagtgggcg gc 142

<210> 157
<211> 142
<212> DNA
<213> Artificial Sequence

<220>
<223> 142-3p 5'UTR-005 (Upstream UTR including miR142-3p)

<400> 157
tgataatagg ctggagcctc ggtggccatg cttcttgccc cttgggcctc cccccagccc 60
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gaataaagtc tgagtgggcg gc 142

<210> 158
<211> 142
<212> DNA
<213> Artificial Sequence

<220>
<223> 142-3p 5'UTR-006 (Upstream UTR including miR142-3p)

<400> 158
tgataatagg ctggagcctc ggtggccatg cttcttgccc cttgggcctc cccccagccc 60
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gaataaagtc tgagtgggcg gc 142

<210> 159
<211> 142
<212> DNA
<213> Artificial Sequence

<220>
<223> 142-3p 5'UTR-007 (Upstream UTR including miR142-3p)

<400> 159
tgataatagg ctggagcctc ggtggccatg cttcttgccc cttgggcctc cccccagccc 60
ctctccccct tctgcaccc gtaccccctg ggtcttgaa taaagtcca taaagtagga 120
aacactacac tgagtgggcg gc 142

<210> 160
<211> 371
<212> DNA
<213> Artificial Sequence

<220>
<223> 3'UTR-001 (Creatine Kinase UTR)

<400> 160
gcgcctgccc acctgccacc gactgctgga acccagccag tgggagggcc tggcccacca 60

gagtctgct cctcactec tcgccccgcc ccctgtcca ggtcccacc tgggggctct 120

ctccaccctt ctgaggttc cagtttcaac cagagttcca accaatgggc tccatcctct 180

ggattctggc caatgaaata tctccctggc agggctctct tcttttcca gagctccacc 240

ccaaccagga gctctagtta atggagagct cccagcacac tcggagcttg tgctttgtct 300

ccacgcaaag cgataaataa aagcattggg gcccttggg ctttgaataa agcctgagta 360

ggaagtctag a 371

<210> 161
<211> 568
<212> DNA
<213> Artificial Sequence

<220>
<223> 3'UTR-002 (Myoglobin UTR)

<400> 161
gcccctgceg ctcccacccc caccatctg ggccccgggt tcaagagaga gcggggctctg 60

atctcgtgta gccatataga gtttgcttct gactgtctgc ttgtttagt agagggtggc 120

aggaggagct gaggggctgg ggctgggggtg ttgaagtgg cttgcatgc ccagcgatgc 180

gcctccctgt gggatgtcat caccctggga accgggagtg gcccttggct cactgtgttc 240

tgcatggttt ggatctgaat taattgtcct ttcttctaaa tccaaccga acttcttcca 300

acctccaaac tggtctgaac cccaaatcca agcattaac tacacctgac agtagcaatt 360

gtctgattaa tcaactggccc cttgaagaca gcagaatgtc cttttgcaat gaggaggaga 420

tctgggctgg gcgggccagc tggggaagca ttgactatc tggaacttgt gtgtgcctcc 480

tcaggtagtg cagtgactca cctggtttta ataaaacaac ctgcaacatc tcatggtctt 540

tgaataaagc ctgagtagga agtctaga 568

<210> 162
<211> 289
<212> DNA
<213> Artificial Sequence

<220>
<223> 3'UTR-003 (alpha-actin UTR)

<400> 162
acacactcca cctccagcac gcgactctc aggacgacga atcttctcaa tgggggggcg 60

gctgagctcc agccaccccg cagtcacttt ctttgaaca acttccgttg ctgccatcgt 120

aaactgacac agtggttata acgtgtacat acattaactt attacctcat ttgtttattt 180

ttcgaaacaa agccctgtgg aagaaaatgg aaaacttgaa gaagcattaa agtcattctg 240

ttaagctgcg taaatggctt ttgaataaag cctgagtagg aagtctaga 289

<210> 163
<211> 379
<212> DNA
<213> Artificial Sequence

<220>
<223> 3'UTR-004 (Albumin UTR)

<400> 163
catcacattt aaaagcatct cagcctacca tgagaataag agaaagaaaa tgaagatcaa 60

aagcttattc atctgttttt cttttcgtt ggtgtaaagc caacaccctg tctaaaaaac 120

ataaatttct ttaatcattt tgcctctttt ctctgtgctt caattaataa aaaatggaaa 180

gaatctaata gagtgggtaca gcactgttat tttcaaaga tgtgttgcta tctgaaaat 240

tctgtaggtt ctgtggaagt tccagtgttc tctcttattc cacttcggta gaggatttct 300

agtttcttgt gggctaatta aataaatcat taatactctt ctaatggctt ttgaataaag 360

cctgagtagg aagtctaga 379

<210> 164
<211> 118
<212> DNA
<213> Artificial Sequence

<220>
<223> 3'UTR-005 (alpha-globin UTR)

<400> 164
gctgccttct gcggggcttg ccttctggcc atgcccttct tctctccctt gcacctgtac 60

ctcttggctct ttgaataaag cctgagtagg aaggcggccg ctcgagcatg catctaga 118

<210> 165

<211> 908

<212> DNA

<213> Artificial Sequence

<220>

<223> 3'UTR-006 (G-CSF UTR)

<400> 165

gccaaagcct ccccatccca tgtatttata tctatttaatt atttatgtct atttaagcct 60

catattttaa gacaggggaag agcagaacgg agccccaggc ctctgtgtcc ttccctgcat 120

ttctgagttt cattctcctg cctgtagcag tgagaaaaag ctctgtcctt cccatccctt 180

ggactgggag gtagataggt aaataccaag tatttattac tatgactgct cccagccctt 240

ggctctgcaa tgggcactgg gatgagccgc tgtgagcccc tggctctgag ggtccccacc 300

tgggaccctt gagagtatca ggtctccac gtgggagaca agaaatccct gtttaatat 360

taaacagcag tgttcccat ctgggtcctt gcacccctca ctctggcctc agccgactgc 420

acagcggccc ctgcatcccc ttggctgtga ggccctgga caagcagagg tggccagagc 480

tgggaggcat ggccctgggg tccacgaat ttgctgggga atctcgtttt tcttctaag 540

acttttggga catggtttga ctccgaaca tcaccgacgc gtctcctgtt ttctgggtg 600

gcctcgggac acctgcctg cccccacgag ggtcaggact gtgactcttt ttagggccag 660

gcaggtgcct ggacatttgc ctgctggac ggggactggg gatgtgggag ggagcagaca 720

ggaggaatca tgtcaggcct gtgtgtgaaa ggaagctcca ctgtaccct ccacctttc 780

acccccact caccagtgtc cctccactg tcacattgta actgaacttc aggataataa 840

agtgtttgcc tccatggtct ttgaataaag cctgagtagg aaggcggccg ctcgagcatg 900

catctaga 908

<210> 166

<211> 835

<212> DNA

<213> Artificial Sequence

<220>

<223> 3'UTR-007 (Col1a2; collagen, type I, alpha 2 UTR)

<400> 166

actcaatcta aattaaataa gaaagaaatt tgaaaaaact ttctctttgc cattttctt 60

tcttctttt taactgaaag ctgaatcctt ccatttctt tgacatcta ctgcttaaa 120
 ttgtgggcaa aagagaaaaa gaaggattga tcagagcatt gtgcaatata gtttcattaa 180
 ctccttcccc cgctcccca aaaatttgaa tttttttt aacactctta cacctgttat 240
 ggaaaatgtc aacctttgta agaaaaccaa aataaaaatt gaaaaataaa aaccataaac 300
 attgcacca ctgtggctt tgaatatct tccacagagg gaagtttaa acccaaactt 360
 ccaaagggtt aaactacctc aaaacacttt cccatgagtg tgatccacat tgtaggtgc 420
 tgacctagac agagatgaac tgaggctctt gtttgttt gttcataata caaagggtgct 480
 aattaatagt atttcagata ctgaagaat gttgatgggt ctagaagaat ttgagaagaa 540
 atactcctgt attgagttgt atcgtgtggt gtattttta aaaaatttga ttagcattc 600
 atattttcca tcttattccc aattaaagt atgcagatta ttgcccaaa tcttctcag 660
 attcagcatt tgttcttgc cagtctcatt ttcattctt tccatgggtc cacagaagct 720
 ttgtttcttg ggcaagcaga aaaattaaat tgtacctatt ttgtatatgt gagatgttta 780
 aataaattgt gaaaaaaatg aaataaagca tgtttggtt tccaaaagaa catat 835

<210> 167

<211> 297

<212> DNA

<213> Artificial Sequence

<220>

<223> 3'UTR-008 (Col6a2; collagen, type VI, alpha 2 UTR)

<400> 167

cgccgcccgc cgggccccgc agtcgagggt cgtgagccca ccccgccat ggtgctaagc 60
 gggcccggtt cccacacggc cagcaccgct gtcactcgg acgacgccct gggcctgcac 120
 ctctccagct cctccacgg ggtccccgta gccccggccc ccgccagcc ccaggtctcc 180
 ccaggccctc cgcaggtgc ccggcctccc tccccctgca gccatccaa ggctcctgac 240
 ctacctggcc cctgagctct ggagcaagcc ctgaccaat aaaggctttg aacccat 297

<210> 168

<211> 602

<212> DNA

<213> Artificial Sequence

<220>

<223> 3'UTR-009 (RPN1; ribophorin I UTR)

<400> 168

ggggctagag ccctctccgc acagcgtgga gacggggcaa ggaggggggt tattaggatt 60
ggtggttttg ttttgctttg tttaaagccg tgggaaaatg gcacaacttt acctctgtgg 120
gagatgcaac actgagagcc aaggggtggg agttgggata attttatat aaaagaagtt 180
ttccacttt gaattgctaa aagtggcatt ttcctatgt gcagtcactc ctctcatttc 240
taaaataggg acgtggccag gcacgggtggc tcatgcctgt aatcccagca ctttgggagg 300
ccgaggcagg cggctcacga ggtcaggaga tcgagactat cctggctaac acggtaaaac 360
cctgtctcta ctaaaagtac aaaaaattag ctgggcgtgg tggtagggcac ctgtagtccc 420
agctactcgg gaggtgagg caggagaaag gcatgaatcc aagaggcaga gcttgcaagt 480
agctgagatc acgccattgc actccagcct gggcaacagt gttaagactc tgtctcaaat 540
ataaataaat aaataataa ataaataaat aaataaaaat aaagcgagat gttgccctca 600
aa 602

<210> 169

<211> 785

<212> DNA

<213> Artificial Sequence

<220>

<223> 3'UTR-010 (LRP1; low density lipoprotein receptor-related protein
1 UTR)

<400> 169

ggccctgccc cgctcgactg cccccagaaa gcctcctgcc ccctgccagt gaagtccttc 60
agttagcccc tccccagcca gcccttcctt ggccccgccg gatgtataaa tgtaaaaatg 120
aaggaattac attttatatg tgagcgagca agccggcaag cgagcacagt attattctc 180
catccctcc ctgcctgctc cttggcacc ccatgctgcc ttcagggaga caggcaggga 240
gggcttgggg ctgcacctcc taccctcca ccagaacgca cccactggg agagctggtg 300
gtgcagcctt cccctccctg tataagacac ttgccaagg ctctccctc tcgcccac 360
cctgcttgcc cgctcccaca gcttcctgag ggctaattct gggaaggag agttctttgc 420
tgcccctgtc tggaagacgt ggctctgggt gaggtaggcg ggaaaggatg gagtgtttta 480
gttcttgggg gagggcacc caaacccag cccaactcc aggggcacct atgagatggc 540
catgtcaac cccctccca gacaggcctt ccctgtctcc agggcccca ccgaggttc 600

cagggtgga gacttctct ggtaaacatt cctccagcct cccctccct ggggacgcca 660
aggaggtggg ccacaccag gaagggaag cgggcagccc cgtttggg acgtgaacgt 720
tttaataatt ttgctgaat tcctttacaa ctaaataaca cagatattgt tataaataaa 780
attgt 785

<210> 170
<211> 3001
<212> DNA
<213> Artificial Sequence

<220>
<223> 3'UTR-011 (Nnt1; cardiotrophin-like cytokine factor 1 UTR)

<400> 170
atattaagga tcaagctgt agctaataat gccaccttg cagtttggg aacaggcaa 60
taaagtatca gtatacatgg tgatgtacat ctgtagcaa gctcttgag aaaatgaaga 120
ctgaagaaag caaagcaaaa actgtataga gagattttc aaaagcagta atccctcaat 180
tttaaaaaag gattgaaaat tctaaatgtc ttctgtgca tattttttgt gtaggaatc 240
aaaagtattt tataaaagga gaaagaacag cctcattta gatgtagtcc tgttgattt 300
tttatgctc ctcaagtaacc agaatgttt taaaaaacta agtgtttagg attcaagac 360
aacattatac atggctctga aatatctgac acaatgtaa cattgcaggc acctgcattt 420
tatgttttt tttaacaa atgtgactaa ttgaaactt ttatgaactt ctgagctgtc 480
cccttgcaat tcaaccgcag ttgaattaa tcatatcaa tcagtttaa tttttaaat 540
tgtacttcag agtctatatt tcaaggcac attttctac tactattta atacattaa 600
ggactaaata atcttcaga gatgctggaa acaaatcatt tgctttatat gttcattag 660
aataccaatg aaacatacaa ctgaaaatt agtaatagta ttttgaaga tccatttct 720
aattggagat ctcttaatt tcgatcaact tataatgtgt agtactatat taagtgcact 780
tgagtggat tcaacattg actaataaaa tgagttcatc atgttgcaa gtgatgtggc 840
aattatctct ggtgacaaaa gagtaaaatc aaatatttct gcctgttaca aatatcaagg 900
aagacctgct actatgaaat agatgacatt aatctgtct cactgtttat aatacggatg 960
gattttttt caaatcagtg tgtgtttga ggtcttatgt aattgatgac atttgagaga 1020
aatggtggct tttttagct accttttgt tcatttaagc accagtaaag atcatgtctt 1080
tttatagaag ttagatttt cttgtgact ttgctatct gcctaaagct ctaaatatag 1140

gtgaatgtgt gatgaatact cagattatTT gtctctctat ataattagtt tggactaag 1200
tttctcaaaa aattattaac acatgaaaga caatctctaa accagaaaaa gaagtagtac 1260
aaattttgtt actgtaatgc tcgcgtttag tgagttaaa acacacagta tcttttggtt 1320
ttataatcag tttctatTTt gctgtgcctg agattaagat ctgtgtatgt gtgtgtgtgt 1380
gtgtgtgcgt ttgtgtgta aagcagaaaa gacttttta aaagtttta gtgataaatg 1440
caatttgta attgatctta gatcactagt aaactcaggg ctgaattata ccatgtatat 1500
tctattagaa gaaagtaaac accatcttta ttctgcctt tttcttctc tcaaagtagt 1560
tgtagttata tctagaaaga agcaattttg atttcttgaa aaggtagttc ctgcactcag 1620
tttaactaa aaataatcat acttggattt tatttattt tgcatagta aaaatttaa 1680
tttatatata tttttatta gtattatctt attctttgct atttgccaat cctttgtcat 1740
caattgtgtt aaatgaattg aaaattcatg cctgttcat tttattttac tttattggtt 1800
aggatattta aaggattttt gtatatataa ttcttaaat taatattcca aaaggtagt 1860
ggacttagat tataaattat ggcaaaaatc taaaaacaac aaaaatgatt tttatacatt 1920
ctatttcatt attcctcttt ttccaataag tcatacaatt ggtagatatg acttatttta 1980
ttttgtatt attcactata tctttatgat atttaagat aaataattaa aaaaatttat 2040
tgtacctat agtctgtcac caaaaaaaaa aaattatctg taggtagtga aatgctaag 2100
ttgattgtc ttaagggtc tttaactat cctttattt ctcattgtc ttaaattagg 2160
agtttgtgt taaattactc atctaagcaa aaaatgtata taaatcccat tactgggtat 2220
atacccaaag gattataaat catgctgcta taaagacaca tgcacacgta tgtttattgc 2280
agcactattc acaatagcaa agacttgga ccaacccaaa tgtccatcaa tgatagactt 2340
gattaagaaa atgtgcacat atacaccatg gaatactatg cagccataaa aaaggatgag 2400
ttcatgtcct tttaggggac atggataaag ctggaaacca tcattctgag caaactattg 2460
caaggacaga aaaccaaaaca ctgcatgttc tcatcatag gtgggaattg aacaatgaga 2520
acacttgga acaagggtggg gaacaccaca caccagggcc tgtcatgggg tggggggagt 2580
ggggagggat agcattagga gatataccta atgtaaatga tgagttaatg ggtgcagcac 2640
accaacatgg cacatgtata catatgtagc aaacctgcac gttgtgcaca tgtaccctag 2700
aacttaaagt ataattaaaa aaaaaagaa aacagaagct atttataaag aagttattg 2760

ctgaaataaa tgtgatcttt cccattaaaa aaataaagaa attttggggt aaaaaaacac 2820
aatatatgtt attcttgaag aattctaaga gagtggatgt gaagtgttct caccacaaaa 2880
gtgataacta attgaggtaa tgcacatatt aattagaaag attttgtcat tccacaatgt 2940
atatatactt aaaaatatgt tatacacaat aaatacatac attaaaaaat aagtaaatgt 3000
a 3001

<210> 171
<211> 1037
<212> DNA
<213> Artificial Sequence

<220>
<223> 3'UTR-012 (Col6a1; collagen, type VI, alpha 1 UTR)

<400> 171
cccacctgc acgccggcac caaacctgt cctcccaccc ctcccactc atcactaaac 60
agagtaaaat gtgatgcgaa tttcccgac caacctgatt cgctagattt ttttaagga 120
aaagcttggg aagccaggac acaacgctgc tgctgcttt gtgcagggtc ctccggggct 180
cagccctgag ttggcatcac ctgctgaggg ccctctgggg ctcagccctg agctagtgtc 240
acctgcacag ggccctctga ggctcagccc tgagctggcg tcacctgtgc agggccctct 300
ggggctcagc cctgagctgg cctcacctgg gttcccacc ccgggctctc ctgccctgcc 360
ctctgccccg cctccctcc tgctgcgca gctcctccc taggcacctc tgtgctgcat 420
cccaccagcc tgagcaagac gccctctcgg ggctgtgcc gcactagcct ccctctctc 480
tgtccccata gctggtttt cccaccaatc ctacctaac agttacttta caattaaact 540
caaagcaagc tcttctctc agcttggggc agccattggc ctctgtctcg ttttgggaaa 600
ccaaggtcag gaggccgttg cagacataaa tctcggcgac tcggccccgt ctctgaggg 660
tcctgtggtg gaccggcctg gaccttgccc ctacagccct ggaggccgct gctgaccagc 720
actgaccccg acctcagaga gtactcgagc gggcgctggc tgcactcaag accctcgaga 780
ttaacggtgc taaccccgtc tctcctccc tcccgagag actggggcct ggactggaca 840
tgagagcccc ttggtgccac agagggtgt gtcttactag aaacaacgca aacctctct 900
tcctcagaat agtgatgtgt tcgacgttt atcaaaggcc cctttctat gttcatgtta 960
gtttgtctc ttctgtgtt tttctgaac catatccatg ttgctgactt ttccaaataa 1020
aggttttcac tcctctc 1037

<210> 172
<211> 577
<212> DNA
<213> Artificial Sequence

<220>
<223> 3'UTR-013 (Calr; calreticulin UTR)

<400> 172
agaggcctgc ctccagggtc ggactgaggc ctgagcgctc ctgccgcaga gctggccgcg 60
ccaaataatg tctctgtgag actcgagaac ttccattttt ttccaggctg gttcggattt 120
gggggtggatt ttggttttgt tccccctctc cactctcccc caccctctcc ccgccctttt 180
ttttttttt tttaaactg gtattttatc ttgattctc cttcagccct caccctgggt 240
tctcatcttt ctgatcaac atcttttctt gcctctgtcc cttctctca tctcttagct 300
ccccccaac ctggggggca gtggtgtgga gaagccacag gcctgagatt tcattctgctc 360
tccttctcgg agcccagagg agggcagcag aaggggggtg tgctccaac ccccagcac 420
tgaggaagaa cggggctctt ctcatctcac cctccctttt ctcccctgcc ccaggactg 480
ggccacttct ggggtggggca gtgggtccca gattggctca cactgagaat gtaagaacta 540
caaacaaat ttctattaa ttaattttg tgtctcc 577

<210> 173
<211> 2212
<212> DNA
<213> Artificial Sequence

<220>
<223> 3'UTR-014 (Colla1; collagen, type I, alpha 1 UTR)

<400> 173
ctccctccat cccaacctgg ctccctccca cccaaccaac ttccccca acccggaac 60
agacaagcaa ccaaaactga acccctcaa aagccaaaaa atgggagaca attcacatg 120
gactttggaa aatattttt tcctttgcat tcattctca aacttagttt ttattttga 180
ccaaccgaac atgacaaaaa accaaaagt cattcaacct taccaaaaaa aaaaaaaaaa 240
aaagaataaa taaataactt tttaaaaaag gaagcttggg ccacttgctt gaagacccat 300
gcgggggtaa gtccctttct gcccgttggg cttatgaaac ccaatgctg ccctttctgc 360
tcctttctcc acacccccct tggggcctcc cctccactcc ttccaaatc tgtctccca 420

gaagacacag gaaacaatgt attgtctgcc cagcaatcaa aggcaatgct caaacaccca 480
 agtggccccc accctcagcc cgctctgcc cgcccagcac cccagggccc tgggggacct 540
 ggggttctca gactgcaaaa gaagccttgc catctggcgc tcccatggct cttgcaacat 600
 ctccccctcg ttttgaggg ggtcatgccg ggggagccac cagcccctca ctgggttcgg 660
 aggagagtca ggaagggcca cgacaaagca gaaacatcgg atttggggaa cgcgtgtcaa 720
 tcccttgtgc cgcagggctg ggcgggagag actgttctgt tccttgtga actgtgtgc 780
 tgaaagacta cctcgttctt gtcttgatgt gtcaccgggg caactgcctg ggggcgggga 840
 tgggggcagg gtggaagcgg ctccccattt tataccaaag gtgctacatc tatgtgatgg 900
 gtgggggtggg gagggaatca ctggtgctat agaaattgag atgccccccc aggccagcaa 960
 atgttccttt ttgtcaaag tctattttta ttcttgata ttttctttt tttttttt 1020
 ttttgtgga tggggacttg tgaattttc taaaggctgt atttaacatg ggaggagagc 1080
 gtgtgaggct ccagcccagc ccgtgtctca cttccaccc tctctccacc tgctctggc 1140
 ttctcaggcc tctgctctcc gacctctctc ctctgaaacc ctctccaca gctgcagccc 1200
 atctccccgg ctccctcta gtctgtctg cgtctctgt ccccggttt cagagacaac 1260
 ttcccaaagc acaaagcagt tttcccctt aggggtggga ggaagcaaaa gactctgtac 1320
 ctattttgta tgtgtataat aatttgatg gttttaatt attttgattg ctggaataaa 1380
 gcatgtggaa atgacccaaa cataatccgc agtggcctcc taattcctt ctttgagtt 1440
 gggggagggg tagacatggg gaaggggctt tgggtgatg ggctgcctt ccattctgc 1500
 ccttccctc cccactattc tctctagat cctccataa cccactccc ctttctca 1560
 ccctcttat accgcaaacc ttctacttc ctcttcatt ttctattctt gcaatttct 1620
 tgcacctttt ccaaactctc ttctccctg caataccata caggcaatcc acgtgcacaa 1680
 cacacacaca cactcttcac atctgggggt gtccaaacct cataccact ccccttcaag 1740
 cccatccact ctccaccccc tggatgcctt gcacttggtg gcggtgggat gctcatgat 1800
 actgggaggg tgaggggagt ggaaccctg aggaggacct gggggcctct cttgaactg 1860
 acatgaaggg tcacttgcc tctgtccct tctaccac gctgacctc tgccgaagga 1920
 gcaacgcaac aggagagggg tctgtgagc ctggcgaggg tctgggaggg accaggagga 1980
 aggcgtgctc cctgctcgt gtctggccc tgggggagtg agggagacag acacctggga 2040
 gagctgtggg gaaggcactc gcaccgtgct cttgggaagg aaggagacct ggccctgctc 2100

accacggact gggcgctcg acctcctgaa tccccagaac acaaccccc tgggctgggg 2160

tggctgggg aaccatcgtg ccccgccctc ccgcctactc cttttaagc tt 2212

<210> 174

<211> 729

<212> DNA

<213> Artificial Sequence

<220>

<223> 3'UTR-015 (Plod1; procollagen-lysine, 2-oxoglutarate
5-dioxygenase 1 UTR)

<400> 174

ttggccaggc ctgacctct tggaccttc ttcttgccg acaaccactg cccagcagcc 60

tctgggacct cgggggccca gggaaccag tccagcctcc tggctgtga ctccattg 120

ctcttgagc caccaatcaa agagattcaa agagattcct gcaggccaga ggcggaacac 180

acctttatgg ctggggctct ccgtgggtgt ctggaccag cccctggaga caccattcac 240

tttactgct ttgtagtac tegtgtctc caacctgtct tctgaaaaa ccaaggcccc 300

ctccccac ctctccatg gggtgagact tgagcagaac aggggcttc ccaagttgcc 360

cagaaagact gtctgggtga gaagccatgg ccagagcttc tccaggcac aggtgttga 420

ccagggactt ctgctcaag tttggggta aagacacctg gatcagactc caagggtgc 480

cctgagtctg ggacttctgc ctccatggct ggtcatgaga gcaaaccgta gtcccctgga 540

gacagcgact ccagagaacc tcttgggaga cagaagaggc atctgtgcac agctcgatct 600

tctactgcc tgtggggagg ggagtgcag gtccacacac cacactgggt caccctgtcc 660

tggatgcctc tgaagagagg gacagaccgt cagaaactgg agagtttcta ttaaaggta 720

tttaaacca 729

<210> 175

<211> 847

<212> DNA

<213> Artificial Sequence

<220>

<223> 3'UTR-016 (Nucb1; nucleobindin 1 UTR)

<400> 175

tcctccggga ccccgacct caggattcct gatgtccaa ggcgactgat gggcgctgga 60

tgaagtggca cagtcagctt ccctgggggc tgggtcatg ttgggtcct gggcggggg 120

cacggcctgg catttcacgc attgctgcca cccaggtcc acctgtctcc actttcacag 180
 cctccaagtc tgtggctctt cccttctgtc ctccgagggg ctgaccttct ctggtgtcca 240
 gtgaggtgct cagtgatcgg cttaaactag agaagcccgcc cccctcccct tctccgtctg 300
 tccaagagg gtctgtctgt agcctgcgtt cctaggtggc tcggcctcag ctgcctgggt 360
 tgtggccgcc ctagcatcct gtatgccac agctactgga atccccgctg ctgctccggg 420
 ccaagcttct ggttgattaa tgaggcatg ggggtgtccc tcaagacctt cccctacctt 480
 ttgtggaacc agtgatgcct caaagacagt gtcccctcca cagctgggtg ccaggggcag 540
 gggatcctca gtatagccgg tgaacctga taccaggagc ctgggcctcc ctgaaccctt 600
 ggcttcacg catctcatcg ccagcctcct cctggacctc ttggcccca gcccttccc 660
 cacacagccc cagaagggtc ccagagctga cccactcca ggacctaggc ccagccctc 720
 agcctcatct ggagcccctg aagaccagtc ccaccacct ttctggctc atctgacct 780
 gctccgcatc ctgctgtgtg tctgttcca tgtccggtt ccatccaaat acactttctg 840
 gaacaaa 847

<210> 176
 <211> 110
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> 3'UTR-017 (alpha-globin)

<400> 176
 gctggagcct cgggtggccat gcttcttccc ccttgggcct cccccagcc cctcctccc 60
 ttctgcacc cgtacccccg tggctttga ataaagtctg agtgggcggc 110

<210> 177
 <211> 119
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> 3'UTR-018

<400> 177
 tgataatagg ctggagcctc ggtggccatg cttcttccc cttgggcctc cccccagcc 60
 ctctcccct tctgcacc gtacccccgt ggtctttgaa taaagtctga gtgggcggc 119

<210> 178

<211> 183

<212> PRT

<213> Artificial Sequence

<220>

<223> Tumor necrosis factor ligand superfamily member 4 isoform 1 [Homo sapiens]

<400> 178

Met Glu Arg Val Gln Pro Leu Glu Glu Asn Val Gly Asn Ala Ala Arg
1 5 10 15

Pro Arg Phe Glu Arg Asn Lys Leu Leu Val Ala Ser Val Ile Gln
20 25 30

Gly Leu Gly Leu Leu Leu Cys Phe Thr Tyr Ile Cys Leu His Phe Ser
35 40 45

Ala Leu Gln Val Ser His Arg Tyr Pro Arg Ile Gln Ser Ile Lys Val
50 55 60

Gln Phe Thr Glu Tyr Lys Lys Glu Lys Gly Phe Ile Leu Thr Ser Gln
65 70 75 80

Lys Glu Asp Glu Ile Met Lys Val Gln Asn Asn Ser Val Ile Ile Asn
85 90 95

Cys Asp Gly Phe Tyr Leu Ile Ser Leu Lys Gly Tyr Phe Ser Gln Glu
100 105 110

Val Asn Ile Ser Leu His Tyr Gln Lys Asp Glu Glu Pro Leu Phe Gln
115 120 125

Leu Lys Lys Val Arg Ser Val Asn Ser Leu Met Val Ala Ser Leu Thr
130 135 140

Tyr Lys Asp Lys Val Tyr Leu Asn Val Thr Thr Asp Asn Thr Ser Leu
145 150 155 160

Asp Asp Phe His Val Asn Gly Gly Glu Leu Ile Leu Ile His Gln Asn
165 170 175

Pro Gly Glu Phe Cys Val Leu
180

<210> 179

<211> 133

<212> PRT

<213> Artificial Sequence

<220>

<223> TNFSF4 isoform 2 [Homo sapiens]

<400> 179

Met Val Ser His Arg Tyr Pro Arg Ile Gln Ser Ile Lys Val Gln Phe
1 5 10 15

Thr Glu Tyr Lys Lys Glu Lys Gly Phe Ile Leu Thr Ser Gln Lys Glu
20 25 30

Asp Glu Ile Met Lys Val Gln Asn Asn Ser Val Ile Ile Asn Cys Asp
35 40 45

Gly Phe Tyr Leu Ile Ser Leu Lys Gly Tyr Phe Ser Gln Glu Val Asn
50 55 60

Ile Ser Leu His Tyr Gln Lys Asp Glu Glu Pro Leu Phe Gln Leu Lys
65 70 75 80

Lys Val Arg Ser Val Asn Ser Leu Met Val Ala Ser Leu Thr Tyr Lys
85 90 95

Asp Lys Val Tyr Leu Asn Val Thr Thr Asp Asn Thr Ser Leu Asp Asp
100 105 110

Phe His Val Asn Gly Gly Glu Leu Ile Leu Ile His Gln Asn Pro Gly
115 120 125

Glu Phe Cys Val Leu
130

<210> 180

<211> 198

<212> PRT

<213> Artificial Sequence

<220>

<223> TNFSF4 [Mus musculus]

<400> 180

Met Glu Gly Glu Gly Val Gln Pro Leu Asp Glu Asn Leu Glu Asn Gly
1 5 10 15

Ser Arg Pro Arg Phe Lys Trp Lys Lys Thr Leu Arg Leu Val Val Ser
20 25 30

Gly Ile Lys Gly Ala Gly Met Leu Leu Cys Phe Ile Tyr Val Cys Leu
35 40 45

Gln Leu Ser Ser Ser Pro Ala Lys Asp Pro Pro Ile Gln Arg Leu Arg
50 55 60

Gly Ala Val Thr Arg Cys Glu Asp Gly Gln Leu Phe Ile Ser Ser Tyr
65 70 75 80

Lys Asn Glu Tyr Gln Thr Met Glu Val Gln Asn Asn Ser Val Val Ile
85 90 95

Lys Cys Asp Gly Leu Tyr Ile Ile Tyr Leu Lys Gly Ser Phe Phe Gln
100 105 110

Glu Val Lys Ile Asp Leu His Phe Arg Glu Asp His Asn Pro Ile Ser
115 120 125

Ile Pro Met Leu Asn Asp Gly Arg Arg Ile Val Phe Thr Val Val Ala
130 135 140

Ser Leu Ala Phe Lys Asp Lys Val Tyr Leu Thr Val Asn Ala Pro Asp
145 150 155 160

Thr Leu Cys Glu His Leu Gln Ile Asn Asp Gly Glu Leu Ile Val Val
165 170 175

Gln Leu Thr Pro Gly Tyr Cys Ala Pro Glu Gly Ser Tyr His Ser Thr
180 185 190

Val Asn Gln Val Pro Leu

<210> 181
 <211> 549
 <212> RNA
 <213> Artificial Sequence

<220>
 <223> TNFSF4, ORF [Homo sapiens]

<400> 181
 auggaaaggg uccaaccccu ggaagagaau gugggaaaug cagccaggcc aagauucgag 60
 aggaacaagc uauugcuggu ggccucugua auucaggac uggggcugcu ccugugcuuc 120
 accuacaucu gccugcacuu cucugcucuu cagguaucac aucgguauc ucgaauucaa 180
 aguaucaaag uacaauuuac cgaauuaag aaggagaaag guuucauccu cacuucccaa 240
 aaggaggaug aaaucaugaa ggugcagaac aacucaguca ucaucaacug ugauggguuu 300
 uaucucaucu ccugaaggg cuacuucucc caggaaguca acauuagccu ucauuaccag 360
 aaggauagg agccccucuu ccaacugaag aaggucaggu cugucaacuc cuugauggug 420
 gccucucuga cuuacaaaga caaagucua uugauguga ccacugaaa uaccuccug 480
 gaugacuucc augugaugg cggagaacug auucuuauc aucaaaaucc uggugaauuc 540
 uguguccuu 549

<210> 182
 <211> 3484
 <212> RNA
 <213> Artificial Sequence

<220>
 <223> TNFSF4, transcript variant 1, mRNA, NM_003326

<400> 182
 ggccugggga ccuuugccua uuuucugauu gauaggcuuu guuuugucuu uaccuccuuc 60
 uuucugggga aaacuucagu uuuaucgcac guccccuuu uccauaucuu caucuuccu 120
 cuaccagau ugugaagau gaaagggucc aaccucugga agagaugug ggaaaugcag 180
 ccaggccaag auucgagagg aacaagcuau ugcugguggc cucuguaau caggacugg 240
 ggcugcuccu gugcuucacc uacaucugcc ugcacuucuc ugcucuucag guaucacauc 300
 gguauccucg aaaucaaagu aucaaaguac aaauuaccga auuaagaag gagaaagguu 360
 ucauccucac uucccaaaag gaggaugaaa ucaugaaggu gcagaacaac ucagucauca 420

ucaacuguga uggguuuuau cucaucuccc ugaagggcua cuucucccag gaagucaaca	480
uuagccuua uuaccagaag gaugaggagc cccucuucca acugaagaag gucaggucug	540
ucaacuccuu gaugguggcc ucucugacuu acaaagacaa agucuacuug aaugugacca	600
cugacaauac cucccggaug gacuuccaug ugaauggcgg agaacugauu cuuauccauc	660
aaaauccugg ugaauucugu guccuuugag gggcugaugg caauaucuaa aaccaggcac	720
cagcaugaac accaagcugg ggguggacag ggcauggauu cuucauugca agugaaggag	780
ccucccagcu cagccacgug ggaugugaca agaagcagau ccuggcccuc ccgccccac	840
cccucaggga uauuuuuuac uuauuuuaua uaccaguuaa ucuuuuuuau ccuuauuuu	900
ucuaauuugc cuagccguca caccucaaga uugccuugag ccuacuaggc accuuuguga	960
gaaagaaaa auagaugccu cuucuuaag augcauuguu ucuauugguc aggcaauugu	1020
cauaauaaac uuauugacuu gaaaacggua ccugacuacc auuugcugga aauuugacau	1080
guguguggca uuaucaaaau gaagaggagc aaggagugaa ggaguggggg uaugaauucug	1140
caaaggugg uaugaaccaa cccuggaag ccaaagcggc cucuccaagg uuaauuugau	1200
ugcaguuugc auauugccua aaauuuuacu uucucauuug guggggguuc aaaagaaga	1260
ucagcuugug aaaaucagg acuuagaagag agccgucuaa gaaauaccac gugcuuuuu	1320
ucuuuaccu uuugcuuucc cagccuccaa acauaguuaa uagaaauuuc ccucaaaga	1380
acugucuggg gaugugaugc uuugaaaaau cuauacagug acuaaagaga gauuuucug	1440
uauacaggga gagugagaua acuuauugug aaggguuagc uuucuguaac aggauagcag	1500
ggaacuggac aucucagggu aaaagucagu acggauuuua auagccuggg gaggaaaaca	1560
cauucuugc cacagacagg caaagcaaca caugcuauc cuccugccua ugcugagaua	1620
cgcacucagc uccaugucuu guacacacag aaacauugcu gguuuaaga aaugagguga	1680
uccuauuauc aaauucauuc ugaugucuaa uagcacuaag aaguuaugu gccuuauga	1740
aaauaauugau cucugucuag aaauaccaua gaccuauau agucucacau ugauaauga	1800
aacuagaagg gucuauaauc agccuaugcc agggcuucaa uggaauagua ucccuuug	1860
uuuaguuga augucccuu aacuugauu aauguguuuu gcuuauggcg cuguggaca	1920
ucugauuuuu caugucaacu uuccagauga uuuguaacu cucugugcca aaccuuuuu	1980
aaacauaaau uuugagaua uguuuuuuaa aauguagca cauguuucc ugacuuuuc	2040

aauagaggau acaacaucaac agaauuuuuc uggaugauuc uguguuauca aggaauugua 2100
cugugcuaca auuauucua gaauuccag aaagguggag ggcuguucgc ccuacacua 2160
aauggucuca guuggauuuu uuuuuccugu uuucuauuuc cucuaaagua caccuuaac 2220
uauauuccca ucccucuaau uuaaucuguu augaaggaag guaaaauaaa augcuauua 2280
gaagaaauug uagguaaggu aagaggaauc aaguucugag uggcugcaa ggcacucaca 2340
gaaucauau cauggcuaaa uauuuagga gggccuacug uggaccaggc acugggcuaa 2400
auacuuacau uuacaagaau cauucugaga cagauuuca augauaucug gcuucacuac 2460
ucagaagauu gugugugugu uugugugugu gugugugugu guauuucacu uuuuguuuu 2520
gaccauguuc ugcaaaauug caguucua gugagugua uccgaaaag uaaacguuuu 2580
ugacuauagg uaauuuuuu gaaaugcau gguucauuuu uaaguugga auuuuuaucu 2640
auauuucua cagaugugca gugcacaugc aggccuaagu auauguugug uguguuguuu 2700
gucuuugaug ucaugguccc cucucuagg ugcucacucg cuuugggugc accuggccug 2760
cucuucccau guuggccucu gcaaccacac agggauuuu cugcuauca ccagccucac 2820
uccaccuucc uuccaucaaa aaauugugug ugugucucag uccuguaag ucauguccu 2880
cacagggaga auuaacccu cgauuacau ggcagaguuu ugugggaaa gaauugaug 2940
aaaagucagg agaucagaau uuuuuuuug acuuagccac uaacuagcca uguaaccuug 3000
ggaaagucan uuccauuuu ugguucuugc uuuucuuuc guuuuagag aggaauuuu 3060
aaauucuaac aguuuagaau cuuauucua caguguuauc ugugaugca cauauuuuu 3120
gucuauguuc uuguugcuau gagucaagga guguaaccu cuccuuuacu auguugaug 3180
uauuuuuuuc uggacaagcu uacauuucc ucagccauu uugugagucc uucaagagca 3240
guuaucauu guuaguuga uauuuucua uuagagaug cuuagggau uccaauccc 3300
auccaaauca uauuuuguuc uuaaguauac ugggcagguc ccuauuuu agucuaauu 3360
uuguauuuag ugcuuuccug gcucucagag aguauuuuu uugauuuuu uauauaguu 3420
aauguaaua uugcuuuu cauggaaaca auuuuagau cucagaauuc acuaaaaaa 3480
aaaa

3484

<210> 183
<211> 1609
<212> RNA
<213> Artificial Sequence

<220>

<223> Mus musculus Tnfsf4, mRNA, NM_009452

<400> 183

auugcuuuuu gucuccuguu cugggaccuu uaucuucuga cccgcaggcu ugacuuugcc	60
cuuauuggcu ccuuuguggu gaagagcagu cuuccccag guuccccgcc acagcuguau	120
cuccucugca ccccgacugc agagauggaa ggggaagggg uucaacccu ggaugagaau	180
cuggaaaacg gaucaaggcc aagauucaag uggaagaaga cgcuaaggcu gguggucucu	240
gggaucaagg gagcagggau gcuucugugc uucaucuau ucugccugca acucucuucc	300
ucuccggcaa aggaccucc aauccaaaga cucagaggag caguuaccag augugaggau	360
gggcaacuau ucaucagcuc auacaagaau gaguaucaaa cuauggaggu gcagaacaau	420
ucgguuugca ucaagugcga ugggcuuuau aucaucuacc ugaagggcuc cuuuuuccag	480
gaggucaaga uugaccuua uuuccgggag gaucauaa ccaucucuau uccaugcug	540
aacgaugguc gaaggauugu cuucacugug guggccucuu ugguuucaa agauaauguu	600
uaccugacug uaaaugcucc ugauacucuc ugcgaaacacc uccagauaaa ugauggggag	660
cugauuguug uccagcuaac gccuggauac ugugcuccug aaggaucuua ccacagcacu	720
gugaaccaag uaccacugug aaauccacuc ugagggugga cgggacacag guucuucuc	780
gagagagaug agugcauccu gcucaugaga ugugacugaa ugcagagccu acccuacuuc	840
cucacucagg gauauuuuu ucaugucuua cauaacagu gaccucucu ucccaggauu	900
gccuugagcc ugcuaagagc uguucuggga augaaaaaa aaauaaugu cuucucaaga	960
cacauugcuu cugucgguca gaagcuauc guaauaaaca ucugccacug aaaauggcgc	1020
uugauugcua ucuucuagaa uuuugauguu gucaaaagaa agcaaaacau ggaaagggug	1080
guguccaccg gccaguagga gcuggagugc ucucucaag guuaagguga uagaaguua	1140
cauguugccu aaaacugucu cucaucucu ggggggcuug gaaagaagau uaccccgugg	1200
aaagcaggac uugaagauga cuguuuuagc aacaaggugc acucuuuucc uggccccuga	1260
auacacauaa aagacaacuu ccuucuaaga acuaccuagg gacuaugaua cccaccaaag	1320
aaccacguca gcgaugcaaa gaaaaccagg agagcuuugu uuauuuugca gaguauacga	1380
gagauuuuac ccugagggcu auuuuuauua uacaggauga gagugaacug gaugucucag	1440
gauaaaggcc aagaaggauu uuucacaguc ugagcaagac uguuuuugua gguucucucu	1500

ccaaaacuuu uagguaaaau uuugauaaau uaaaaauuuu uaguuaauuu uuuggaccu 1560

uuucaauaga agauugaaac auuuccagau gguuucauau cccacaag 1609

<210> 184

<211> 737

<212> RNA

<213> Artificial Sequence

<220>

<223> mRNA sequence: Human OX40L with 5'-UTR, 3'-UTR, and miR-122 binding site

<400> 184

gggaaauaag agagaaaaga agaguaagaa gaaauuaag agccaccaug gaaagggucc 60

aacccugga agagaauugug ggaaugcag ccaggccaag auucgagagg aacaagcuau 120

ugcugguggc cucugaaau cagggacugg ggcugcuccu gugcuucacc ucaucugcc 180

ugcacuucuc ugcucuucag guaucacauc gguaucucg aaaucaaagu aucaaaguac 240

aauuuaccga auauaagaag gagaaagguu ucauccucac uucccaaaag gaggaugaaa 300

ucaugaaggu gcagaacaac ucagucauca ucaacuguga ugguuuuuau cucaucucc 360

ugaagggcua cuucucccag gaagucaaca uuagccuua uuaccagaag gaugaggagc 420

cccucuucca acugaagaag gucaggucug ucaacuccuu gaugguggcc ucucugacuu 480

acaaagacaa agucuacuug aaugugacca cugacaauac cuccuggau gacuuccaug 540

ugaauggcgg agaacugauu cuuauccauc aaaauccugg ugaauucugu guccuuugau 600

aaauaggcugg agccucggug gccaugcuuc uugcccuug gccuccccc cagccccucc 660

uccccuuccu gcacccguac ccccaaaca ccuugucac acuccagugg ucuuugaaua 720

aagucugagu gggcggc 737

<210> 185

<211> 782

<212> RNA

<213> Artificial Sequence

<220>

<223> mRNA sequence: murine OX40L with 5'-UTR, 3'-UTR, and miR-122 binding site

<400> 185

gggaaauaag agagaaaaga agaguaagaa gaaauuaag agccaccaug gaaggggaag 60

ggguucaacc ccuggaugag aaucuggaaa acggaucaag gccagauuc aaguggaaga 120

agacgcuaag gcuggugguc ucugggauca agggagcagg gaugcuucug ugcuucaucu 180
 augucugccu gcaacucucu uccucuccgg caaaggaccc uccaauccaa agacucagag 240
 gagcaguua cagaugugag gaugggcaac uauucaucag cucauacaag aaugaguauc 300
 aaacuaugga ggugcagaac aaucgguug ucaucaagug cgaugggcuu uauaucaucu 360
 accugaaggg cuccuuuuuc caggagguca agauugaccu ucauuuccgg gaggaucuaa 420
 aucccaucuc uauuccaag cugaacgaug gucgaaggau ugucuucacu gugguggccu 480
 cuuuggcuuu caaagauaaa guuuaccuga cuguaaaugc uccugauacu cucugcgaac 540
 accuccagau aaaugauggg gagcugauug uuguccagcu aacgccugga uacugugcuc 600
 cugaaggauc uuaccacagc acugugaacc aguaccacu gugauaaug gcuggagccu 660
 cgguggccau gcuucuugcc ccuugggccu cccccagcc ccuccuccc uuccugcacc 720
 cguaccccc aaacaccauu gucacacucc aguggucuuu gaauaaaguc ugagugggcg 780
 gc 782

<210> 186

<211> 549

<212> DNA

<213> Artificial Sequence

<220>

<223> Codon optimized human OX40L sequences

<400> 186

atggaaaggg tccaaccct ggaagagaat gtgggaaatg cagccaggcc aagattcgag 60
 aggaacaagc tattgctggt ggctctgta attcaggac tggggctgct cctgtgcttc 120
 acctacatct gctgcactt ctctgctctt caggtatcac atcggtatcc tcgaattcaa 180
 agtatcaaag tacaatttac cgaatataag aaggagaaag gtttcactct cacttcccaa 240
 aaggaggatg aaatcatgaa ggtgcagaac aactcagtca tcatcaactg tgatgggttt 300
 tatctcatct ccctgaaggg ctacttctcc caggaagtca acattagcct tcattaccag 360
 aaggatgagg agcccctctt ccaactgaag aaggtcaggt ctgtcaactc cttgatgggtg 420
 gcctctctga cttacaaaga caaagtctac ttgaatgtga ccactgacaa tacctccctg 480
 gatgacttcc atgtgaatgg cggagaactg attcttatcc atcaaaatcc tggatgaattc 540
 tgtgtcctt 549

<210> 187
<211> 594
<212> DNA
<213> Artificial Sequence

<220>
<223> Codon optimized mouse OX40L sequences

<400> 187
atggaagggg aaggggttca acccctggat gagaatctgg aaaacggatc aaggccaaga 60
ttcaagtgga agaagacgct aaggctggtg gtctctggga tcaaggagc agggatgctt 120
ctgtgcttca tctatgtctg cctgcaactc tcttctctc cggaagga cctccaatc 180
caaagactca gaggagcagt taccagatgt gaggatgggc aactattcat cagctcatac 240
aagaatgagt atcaaactat ggaggtgcag aacaattcgg ttgtcatcaa gtgcgatggg 300
ctttatatca tctacctgaa gggctcctt ttccaggagg tcaagattga ccttcatttc 360
cgggaggatc ataatcccat ctctattcca atgctgaacg atggcgaag gattgtcttc 420
actgtggtgg cctctttggc ttcaaagat aaagtttacc tgactgtaaa tgctctgat 480
actctctcg aacacctcca gataaatgat ggggagctga ttgtgtcca gctaacgcct 540
ggatactgtg ctctgaagg atcttaccac agcactgtga accaagtacc actg 594

<210> 188
<211> 549
<212> RNA
<213> Artificial Sequence

<220>
<223> Codon-optimized sequence 1 for ENSP 281834

<400> 188
auggagagag ugcagcccu ggaggagaac gugggcaacg ccgccagacc cagauucgag 60
agaaacaagc ugcugcuggu ggccagcgug auccagggcc ugggccugcu gcugugcuuc 120
accuacau cu gccugcacuu cagcgcccug caggugagcc acagauacc cagaauccag 180
agcaucaagg ugcaguucac cgaguacaag aaggagaagg gcuucauccu gaccagccag 240
aaggaggacg agaucaugaa ggugcagaac aacagcguga ucaucaacug cgacggcuuc 300
uaccugauca gccugaagg cuacuucagc caggagguga acaucagccu gcacuaccag 360
aaggacgagg agccccuguu ccagcugaag aaggugagaa gcgugaacag ccugauggug 420
gccagccuga ccuacaagga caagguguac cugaacguga ccaccgaaa caccagccug 480

gacgacuucc acgugaacgg cggcgagcug auccugaucc accagaaccc cggcgaguuc 540

ugcgugcug 549

<210> 189

<211> 549

<212> RNA

<213> Artificial Sequence

<220>

<223> Codon-optimized sequence 2 for ENSP 281834

<400> 189

auggagcgug ugcagccucu ugaggagaau gugggaaaug cagcccggcc ucgauucgaa 60

cguaauaaac uccugcucgu ggccuccgug auccaggguc ucgguuuuu gcuguguuuu 120

accuauauau gcuuacacuu uagugcauuu caggucucac accgguaccc ucgcauucag 180

ucuauaaaag ugcaguuuac cgaguauaag aaggagaaag guuuuuuacu gacuucucag 240

aaagaggacg agaucaugaa ggugcagaau aaugcguca uuaucaacug cgauggauuc 300

uaucauuuu ccuaaaagg guacuucagc caggagguca auauaucacu gcacuaucua 360

aaggacgagg agccccuguu ucaacugaag aaagugcgau caguuaacuc ucugaugguu 420

gccucucuga ccuauaagga caaagucuac uugaacguga caacugacaa caccucacug 480

gaugacuuc augugaauagg gggggaacug auucuuauc aucagaaucc aggagaauuc 540

ugugugcuc 549

<210> 190

<211> 549

<212> RNA

<213> Artificial Sequence

<220>

<223> Codon-optimized sequence 3 for ENSP 281834

<400> 190

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agaaacaagc ugcugcuggu ggccagcguc auccagggcc ugaggccugcu gcugugcuuc 120

accuacacu gccugcacuu cagcggccug caggugagcc accgcuaccc ccgcauccag 180

agcaucaagg ugcaguucac agaguacaag aaggagaagg gcuucauccu gaccagccag 240

aaggaggaug agaucaugaa ggugcagaac aacagcguca ucaucaacug ugauggcuuc 300

uaccugauca gccugaaggg cuacuucagc caggagguga acaucagccu gcacuaccag 360
aaggauagg agccccucu ccagcugaag aaggugcgcu cugugaacag ccugauggug 420
gccagccuga ccuacaagga caagguguac cugaauguga ccacagaaa caccagccug 480
gaugacuucc acgugaagg aggagagcug auccugaucc accagaacc ugagaguuc 540
ugugugcug 549

<210> 191
<211> 549
<212> RNA
<213> Artificial Sequence

<220>
<223> Codon-optimized sequence 4 for ENSP 281834

<400> 191
auggagcggg ugcagcccu ggaggagaac gugggcaacg cggccgccc gcguuuugag 60
cgaaauaagu uacugcuugu ugcaucugug auacaggggu ugguuuacu ucuuugcuuu 120
acauauuuu gucuccacu uagugcgcu cagguaucac aucgguacc gcgcauccag 180
ucaaucaagg uccaguucac ugaauuaaa aaggagaaag gauucauuc gacuucaca 240
aaaggagc aaaucaugaa agugcagaac aacucuguaa uuauaacug cgauggguuc 300
uauugauca gucugaaggg auuuuuuagc caggaguaa auuuuucacu acuuuauag 360
aaggacgaag aaccacuuu ucaacugaag aaaguccgu cggugaacuc ccugaugguu 420
gcuagccua ccuacaagga uaaagucuau uaaaacguca caacagauaa cacuagccuc 480
gacgauuucc augugaacgg aggugaacug auuuugaucc auaaaacc cggcgaguuc 540
ugcguuuua 549

<210> 192
<211> 549
<212> RNA
<213> Artificial Sequence

<220>
<223> Codon-optimized sequence 5 for ENSP 281834

<400> 192
auggagcggg uccagcccu cgaggagaac guugguaug ccgcacgucc cagguuugaa 60
cgcaacaagc ugcuguuggu ggccagcguc auucaggggc ugguuuuguu gcugugcuuc 120
acuuacauu gucugcauuu uagugcacuc caggugucc accgcuacc ccgaaucua 180

uccauuaaag uccaauuuac cgaauacaaa aaagagaagg guuucuuuc uaccuccag	240
aaggaggaug aaauuaugaa ggugcagaac aaucuguaa ucaucaacug ugacggauuc	300
uacugauuu cacugaaggg auacuuuucc caggagguga acaucagucu gcauuauag	360
aaggacgaag aaccgcuuuu ucaacugaag aagguuagga gugugaacuc cuuaauggua	420
gccagccuga cauuaaagga caagguauau cugaacguca ccacugauaa caccucuuua	480
gacgauuuuc auguaaagg gggagaauug auacucauuc accagaaucc gggugaguuu	540
uguguucug	549

<210> 193
 <211> 399
 <212> RNA
 <213> Artificial Sequence

<220>
 <223> Codon-optimized sequence 1 for ENSP 356691

<400> 193	
auggugagcc acagauaccc cagaauccag agcaucaagg ugcaguucac cgaguacaag	60
aaggagaagg gcuucauccu gaccagccag aaggaggacg agaucaugaa ggugcagaac	120
aacagcguga ucaucaacug cgacggcuuc uaccugauca gccugaaggg cuacuucagc	180
caggagguga acaucagccu gcacuaccag aaggacgagg agcccuguu ccagcugaag	240
aaggugagaa gcgugaacag ccugauggug gccagccuga ccuacaagga caagguguac	300
cugaacguga ccaccgaaa caccagccug gacgacuucc acgugaacgg cggcgagcug	360
auccugauc accagaaccc cggcgaguuc ugcgugcug	399

<210> 194
 <211> 399
 <212> RNA
 <213> Artificial Sequence

<220>
 <223> Codon-optimized sequence 2 for ENSP 356691

<400> 194	
augguuuc accguuaccc acggauccag ucuaucaagg uucaguuuac cgaguacaaa	60
aaggaaaaag gguucauccu caccucucag aaagaggacg aaaucaugaa ggugcagaau	120
aacucuguaa ucauuauug cgacgguuuu uacugauuu cacugaaggg cuacuuuagu	180

caggaaguua auauuaguuu gcacuaccaa aaggacgagg agccucucuu ccaacuaaaa	240
aagguaagau ccguuaauuc ccuauggug gccuccuuaa cuuauaagga caagguguau	300
cugaauguga ccacagauaa cacaucccug gacgacuuuc auguaaaugg cggcgaguua	360
auucugauac accagaaccc uggcgaguuc ugcgugcug	399

<210> 195
 <211> 399
 <212> RNA
 <213> Artificial Sequence

<220>
 <223> Codon-optimized sequence 3 for ENSP 356691

<400> 195	
auggugagcc accgcuaccc ccgcauccag agcaucaagg ugcaguucac agaguacaag	60
aaggagaagg gcuucauccu gaccagccag aaggaggauag agaucaugaa ggugcagaac	120
aacagcgua ucaucaacug ugauggcuuc uaccugauca gccugaagg cuacuucagc	180
caggagguga acaucagccu gcacuaccag aaggauagg agcccucuu ccagcugaag	240
aaggugcgcu cugugaacag ccugauggug gccagccuga ccuacaagga caagguguac	300
cugaauguga ccacagacaa caccagccug gaugacuucc acgugaauagg aggagagcug	360
auccugaucc accagaaccc uggagaguuc ugugugcug	399

<210> 196
 <211> 399
 <212> RNA
 <213> Artificial Sequence

<220>
 <223> Codon-optimized sequence 4 for ENSP 356691

<400> 196	
auggugagcc accgguaccc ccggauccag agcaucaagg ugcaguucac cgaauacaag	60
aaggagaagg guuuuauccu gacgagccag aaggaagacg agauuaugaa gguccaaaac	120
aacucagua ucauaaacug cgauggauuu uaccugaucu cucugaaagg guacuucucc	180
caggaaguga auauuagcuu gcacuaucua aaagaugagg agccucuaau ccagcucaag	240
aaggucagaa gcgucaauag ucugaugguc gcaucauuua ccuauaaaga caaaguauau	300
cuaaauguga cgacagacaa uacaucccuc gaugauuuuc acgucaacgg aggcgaacuc	360
auucugaucc accagaaucc aggggaauuu ugcgugcug	399

<210> 197
<211> 399
<212> RNA
<213> Artificial Sequence

<220>
<223> Codon-optimized sequence 5 for ENSP 356691

<400> 197
auggucucac accgguaccc ccguauccag aguaauaagg ugcaauucac ggaguauaaa 60
aaagaaaagg gauucauucu gacgucucag aaggaagaug agaucaugaa gguccagaac 120
aauucuguga ucauuauug cgauggauuu uaucugauuu cacuuaaaagg auauuuuucc 180
caggagguua auaucaguuu gcacuaucag aaagacgagg agccauuuuu ccagcugaag 240
aaggugagau cagugaauag ccugaugguu gcgucacuga cguauaaaga caaaguuuuau 300
cuaaacguua ccacugauaa uacaucccuu gaugauuuuc augugaacgg gggugaacug 360
auccuuauac accagaaccc cggagaguuc uguguguug 399

<210> 198
<211> 399
<212> RNA
<213> Artificial Sequence

<220>
<223> Codon-optimized sequence 1 for ENSP 439704

<400> 198
auggugagcc acagauaccc cagaauccag agcaucaagg ugcaguucac cgaguacaag 60
aaggagaagg gcuucauccu gaccagccag aaggaggacg agaucaugaa ggugcagaac 120
aacagcguga ucaucaacug cgacggcuuc uaccugauca gccugaaggg cuacuucagc 180
caggagguga acaucagccu gcacuaccag aaggacgagg agcccuguu ccagcugaag 240
aaggugagaa gcgugaacag ccugauggug gccagccuga ccuacaagga caagguguac 300
cugaacguga ccaccgaaa caccagccug gacgacuucc acgugaacgg cggcgagcug 360
auccugaucc accagaaccc cggcgaguuc ugcgugcug 399

<210> 199
<211> 399
<212> RNA
<213> Artificial Sequence

<220>

<223> Codon-optimized sequence 2 for ENSP 439704

<400> 199

auggugucac accgguaccc ucggauccag ucuauuaaag uucaauuuac ggaguacaag 60
aaagaaaaag gcuuuauccu uacaagccaa aaggaagacg agaucaugaa agugcaaaac 120
aacaguguga uuauaaaauug ugauggcuuc uaccuuauua gucugaaggg cuacuuuagu 180
caggaaguca auauuagccu acacuaccag aaagacgagg agccccucuu ucaacugaaa 240
aaggugcgcu ccgugaauuc guugaugguc gccucucuga ccuacaaaga uaagguguau 300
cuuaacguua cuaccgacaa uacuagucug gacgacuuuc acgucaacgg aggcgaacuu 360
auucugaucc accagaaccc cggcgaaauuc ugcgugcug 399

<210> 200

<211> 399

<212> RNA

<213> Artificial Sequence

<220>

<223> Codon-optimized sequence 3 for ENSP 439704

<400> 200

auggugagcc accgcuaccc ccgcauccag agcaucaagg ugcaguucac agaguacaag 60
aaggagaagg gcuucauccu gaccagccag aaggaggaug agaucaugaa ggugcagaac 120
aacagcguca ucaucaacug ugauggcuuc uaccugauca gccugaaggg cuacuucagc 180
caggagguga acaucagccu gcacuaccag aaggauagg agccccucuu ccagcugaag 240
aaggugcgcu cugugaacag ccugauggug gccagccuga ccuacaagga caagguguac 300
cugaauguga ccacagacaa caccagccug gaugacuucc acgugaauagg aggagagcug 360
auccugaucc accagaaccc uggagaguuc ugugugcug 399

<210> 201

<211> 399

<212> RNA

<213> Artificial Sequence

<220>

<223> Codon-optimized sequence 4 for ENSP 439704

<400> 201

auggugagcc accgguaccc ccggauccag agcaucaagg ugcaguucac agaguacaag 60
aaggagaagg gauuuauucu cacaagucag aaagaagaug agaucaugaa gguucagaac 120

aacucaguca uuauuaauug cgacggauuc uaucucauua gccucaaagg cuauuucagc 180
 caggagguca auaucagccu gcacuaccag aaggauagg aaccucucuu ucagcugaaa 240
 aaaguccgcu cugugaaauuc ccucaugguc gcuucccuga ccuacaagga uaaaguuuau 300
 uugaacguua caacagauaa uacaucgcug gacgacuucc augugaaugg uggcgaacua 360
 auucuaauac accaaaaucc aggcgaauuu uguguccuu 399

<210> 202
 <211> 399
 <212> RNA
 <213> Artificial Sequence

<220>
 <223> Codon-optimized sequence 5 for ENSP 439704

<400> 202
 augguauccc auagauaccc acguauuca agcauaaagg ugcaguucac agaguacaaa 60
 aaggagaagg guuucuuacu gacgucacag aaggaggacg agauaaugaa ggugcagaau 120
 aauguguga ucaucaauug ugauggauuc uauuugauca gccucaaagg uuauuucua 180
 caggaaguca acauuucccu gcacuaccag aaggacgaag agccuuuguu ucagcugaag 240
 aaggugcgcu cagugaacag uuugauggua gccucccuaa cuuauaaaga uaaaguuuau 300
 cugaacguga caaccgauaa cacaucccug gacgacuucc acgucaaugg aggugaguua 360
 auccugauc aucagaauc cggagaauuc ugcguuccu 399

<210> 203
 <211> 2
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> GS linker

<220>
 <221> repeat_unit
 <222> (1)..(1)
 <223> G can be repeated n times, wherein n is 1 to 100

<220>
 <221> misc_feature
 <222> (1)..(2)
 <223> sequence can be repeated n times, wherein n is 1 to 100

<400> 203

Gly Ser
1

<210> 204

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> GS linker

<220>

<221> misc_feature

<222> (1)..(5)

<223> sequence can be repeated n times, wherein n is 1 to 5

<400> 204

Gly Gly Gly Gly Ser
1 5

<210> 205

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> GS linker

<400> 205

Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly
1 5 10

<210> 206

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> GS linker

<400> 206

Gly Gly Ser Gly Gly Gly Gly Gly
1 5

<210> 207

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

<220>
<223> GS linker

<400> 207

Gly Ser Gly Ser Gly Ser Gly Ser
1 5

<210> 208
<211> 1
<212> PRT
<213> Artificial Sequence

<220>
<223> Gly-rich linker

<220>
<221> misc_feature
<222> (1)..(1)
<223> sequence can be repeated n times, wherein n is 1 to 100

<400> 208

Gly
1

<210> 209
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> linker

<220>
<221> VARIANT
<222> (1)..(5)
<223> sequence can be repeated n times, wherein n is 1 to 100

<400> 209

Glu Ala Ala Ala Lys
1 5

<210> 210
<211> 16

<212> PRT
<213> Artificial Sequence

<220>
<223> linker

<400> 210

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

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

<220>
<223> linker

<400> 211

Gly Ser Gly Ser Gly Ser
1 5

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

<220>
<223> linker

<400> 212

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

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

<220>
<223> linker

<400> 213

Gly Gly Ser Gly Gly His Met Gly Ser Gly Gly
1 5 10

<210> 214

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

<220>
<223> linker

<400> 214

Gly Gly Ser Gly Gly Ser Gly Gly Ser Gly Gly
1 5 10

<210> 215
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> linker

<400> 215

Gly Gly Ser Gly Gly
1 5

<210> 216
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> linker

<400> 216

Gly Ser Gly Ser Gly Ser Gly Ser
1 5

<210> 217
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> linker

<400> 217

Gly Gly Gly Ser Glu Gly Gly Gly Ser Glu Gly Gly Gly Ser Glu Gly
1 5 10 15

Gly Gly

<210> 218
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> linker

<400> 218

Ala Ala Gly Ala Ala Thr Ala Ala
1 5

<210> 219
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> linker

<400> 219

Gly Gly Ser Ser Gly
1 5

<210> 220
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> linker

<400> 220

Gly Ser Gly Gly Gly Thr Gly Gly Gly Ser Gly
1 5 10

<210> 221
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> linker

<400> 221

Gly Ser Gly Ser Gly Ser Gly Ser Gly Gly Ser Gly
1 5 10

<210>	222
<211>	14
<212>	PRT
<213>	Artificial Sequence

<220>
<223> linker

 $\langle 400 \rangle$ 222

Gly Ser Gly Gly Ser Gly Ser Gly Gly Ser Gly Gly Ser Gly
1 5 10

<210> 223
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> linker

<400> 223

Gly Ser Gly Gly Ser Gly Gly Ser Gly Gly Ser Gly Gly Ser
1 5 10

<210>	224
<211>	6
<212>	DNA
<213>	Artificial Sequence

<220>
<223> restriction site motif for Xba1

<400>	224	
tctaga		6

<210>	225
<211>	6
<212>	DNA
<213>	Artificial Sequence

<220>
<223> restriction site motif for EcoRI

<400> 225
gaattc 6

<210> 226
<211> 5
<212> DNA
<213> Artificial Sequence

<220>
<223> restriction site motif for EcoRII

<400> 226
ccwgg 5

<210> 227
<211> 6
<212> DNA
<213> Artificial Sequence

<220>
<223> restriction site motif for HindIII

<400> 227
aagctt 6

<210> 228
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> enzyme site in the T7 RNA polymerase

<220>
<221> misc_feature
<222> (2)..(5)
<223> n may be any nucleotide

<220>
<221> misc_feature
<222> (7)..(7)
<223> n may be any nucleotide

<220>
<221> misc_feature
<222> (10)..(10)
<223> n may be any nucleotide

<220>
<221> misc_feature
<222> (14)..(14)
<223> n may be any nucleotide

<220>
<221> misc_feature
<222> (16)..(17)
<223> n may be any nucleotide

<220>
<221> misc_feature
<222> (19)..(19)
<223> n may be any nucleotide

<400> 228
gnnnnwnrcrn ctcncnnwnd 20

<210> 229
<211> 4
<212> DNA
<213> Artificial Sequence

<220>
<223> structural motif

<400> 229
gggg 4

<210> 230
<211> 4
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic polynucleotide

<400> 230
atcg 4

<210> 231
<211> 6
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic polynucleotide

<400> 231
atcccg 6

<210> 232
<211> 9
<212> RNA
<213> Artificial Sequence

<220>
<223> Kozak sequence

<400> 232
ccrccaugg 9

<210> 233
<211> 6
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic polynucleotide

<220>
<221> misc_feature
<222> (1)..(6)
<223> guanine bases can be substituted by at least 1, at least 2, at
least 3 or at least 4 adenine nucleotides

<400> 233
gggaga 6

<210> 234
<211> 6
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic polynucleotide

<220>
<221> misc_feature
<222> (1)..(6)
<223> guanine bases can be substituted by at least 1, at least 2, at
least 3 or at least 4 cytosine bases

<400> 234
gggaga 6

<210> 235
<211> 6
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic polynucleotide

<220>

<221> misc_feature
<222> (1)..(6)
<223> guanine bases can be substituted by at least 1, at least 2, at
least 3 or at least 4 thymine

<400> 235

gggaga

6

<210> 236

<211> 1596

<212> DNA

<213> Artificial Sequence

<220>

<223> hIL12AB_002

<400> 236

atgtgccacc agcagctggt gatcagctgg ttcagcctgg tgttctctggc cagccccctg 60

gtggccatct gggagctgaa gaaggacgtg tacgtggtgg agttggattg gtaccccgac 120

gccccggcg agatggtggt gctgacctgc gacacccccg aggaggacgg catcacctgg 180

accctggacc agagcagcga ggtgctgggc agcggcaaga ccctgaccat ccaggtgaag 240

gagttcggcg acgccggcca gtacacctgc cacaagggcg gcgaggtgct gagccacagc 300

ctgctgctgc tgcacaagaa ggaggacggc atctggagca cgcacatct gaaggaccag 360

aaggagccca agaacaagac cttctgaga tgcgaggcca agaactacag cggcagattc 420

acctgctggt ggctgaccac catcagcacc gacctgacct tcagcgtgaa gagcagcaga 480

ggcagcagcg acccccaggg cgtgacctgc ggcgccgcca ccctgagcgc cgagagagtg 540

agaggcgaca acaaggagta cgagtacagc gtggagtgcc aggaagatag cgctgcccc 600

gccgccgagg agagcctgcc catcgagggtg atggtggacg ccgtgcacaa gctgaagtac 660

gagaactaca ccagcagctt cttcatcaga gatatcatca agcccgaccc cccaagaac 720

ctgcagctga agcccctgaa gaacagccgg caggtggagg tgagctggga gtaccccgac 780

acctggagca cccccacag ctacttcagc ctgaccttct gcgtgcaggt gcagggaag 840

agcaagagag agaagaaaga tagagtgttc accgacaaga ccagcgccac cgtgatctgc 900

agaaagaacg ccagcatcag cgtgagagcc caagatagat actacagcag cagctggagc 960

gagtgggcca gcgtgccctg cagcggcggc ggccggcggcg gcagcagaaa cctgcccgtg 1020

gccacccccg acccggcat gttcccctgc ctgcaccaca gccagaacct gctgagagcc 1080

gtgagcaaca tgctgcagaa ggccccgcag accctggagt tctaccctg caccagcgag 1140

gagatcgacc acgaagatat caccaaagat aagaccagca ccgtggaggc ctgcctgccc 1200
 ctggagctga ccaagaacga gagctgcctg aacagcagag agaccagctt catcaccaac 1260
 ggcagctgcc tggccagcag aaagaccagc ttcatgatgg ccctgtgcct gagcagcatc 1320
 tacgaggacc tgaagatgta ccaggtggag ttcaagacca tgaacgcaa gctgctgatg 1380
 gacccaagc ggcagatctt cctggaccag aacatgctgg ccgtgatcga cgagctgatg 1440
 caggccctga acttaacag cgagaccgtg cccagaaga gcagcctgga ggagcccagc 1500
 ttctacaaga ccaagatcaa gctgtgcatc ctgtgcacg ccttcagaat cagagccgtg 1560
 accatcgaca gagtgatgag ctacctgaac gccagc 1596

<210> 237
 <211> 1596
 <212> RNA
 <213> Artificial Sequence

<220>
 <223> hIL12AB_002

<400> 237
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 guggccaucu gggagcugaa gaaggacgug uacguggugg aguuggauug guaccccagc 120
 gccccggcg agaugguggu gcugaccugc gacacccccg aggaggacgg caucccugg 180
 acccuggacc agagcagcga ggugcugggc agcggcaaga ccugaccrau ccaggugaag 240
 gaguucggcg acgccggcca guacaccugc cacaagggcg gcgaggugcu gagccacagc 300
 cugcugcugc ugcacaagaa ggaggacggc aucuggagca ccgacauccu gaaggaccag 360
 aaggagccca agaacaagac cuuccugaga ugcgaggcca agaacuacag cggcagauuc 420
 accugcuggu ggcugaccac caucagcacc gaccugaccu ucagcgugaa gagcagcaga 480
 ggcagcagcg acccccaggg cgugaccugc ggcgccgcca ccugagcgc cgagagagug 540
 agaggcgaca acaaggagua cgaguacagc guggagugcc aggaagauag cgccugcccc 600
 gccgccgagg agagccugcc caucgaggug augguggacg ccgugcaca gcugaaguac 660
 gagaacuaca ccagcagcuu cuucaucaga gauaucauca agcccgaccc cccaagaac 720
 cugcagcuga agccccugaa gaacagccgg cagguggagg ugagcuggga guaccccagc 780
 accuggagca cccccacag cuacuucagc cugaccuucu gcgugcaggu gcagggaag 840

agcaagagag agaagaaaga uagaguguuc accgacaaga ccagcgccac cgugaucugc	900
agaaagaacg ccagcaucag cgugagagcc caagauagau acuacagcag cagcuggagc	960
gagugggcca gcgugcccug cagcggcggc ggcgcgggcg gcagcagaaa ccugcccug	1020
gccacccccg acccgggau guucccugc cugcaccaca gccagaaccu gcugagagcc	1080
gugagcaaca ugcugcagaa ggcccggcag acccuggagu ucuaccccug caccagcgag	1140
gagaucgacc acgaagauau caccaaagau aagaccagca ccguggaggc cugccugccc	1200
cuggagcuga ccaagaacga gagcugccug aacagcagag agaccagcuu caucaccaac	1260
ggcagcugcc uggccagcag aaagaccagc uucaugaugg ccugugccu gagcagcauc	1320
uacgaggacc ugaagaugua ccagguggag uucaagacca ugaacgcaa gcugcugaug	1380
gacccaagc ggcagaucuu ccuggaccag acaugcugg ccgugaucga cgagcugaug	1440
caggcccuga acuucaacag cgagaccgug cccagaaga gcagccugga ggagcccac	1500
uucuacaaga ccaagaucua gcugugcauc cugcugcacg ccuucagaau cagagccgug	1560
accaucgaca gagugaugag cuaccugaac gccagc	1596

<210> 238
 <211> 138
 <212> RNA
 <213> Artificial Sequence

<220>
 <223> 3UTR-018 + miR-122-5p binding site

<400> 238	
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<220>
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138

<210> 240

<211> 141

<212> RNA

<213> Artificial Sequence

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<223> 3UTR-019 + miR-122 binding site

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cagugaaccu caccugugac acgccugaag aagaugacau caccuggacc ucagaccaga 240

gacauggagu cauaggcucu ggaaagaccc ugaccaucac ugucaaagag uuccuagaug 300

cuggccagua caccugccac aaaggaggcg agacucugag ccacucacau cugcugcucc 360

acaagaagga aaauaggauu ugguccacug aaauuuuaaa aaauuucaaa aacaagacuu 420

uccugaagug ugaagcacca aaauacuccg gacgguucac gugcucaugg cuggugcaaa 480

gaaacaugga cuugaaguuc aacaucaaga gcaguagcag uuccccugac ucucgggcag 540

ugacaugugg aauggcgucu cugucugcag agaaggucac acuggaccaa agggacuaug 600

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