SEQUENCE LISTING

<110> GENENTECH, INC. ET AL.

<120> R-SPONDIN TRANSLOCATIONS AND METHODS USING THE SAME

<130> P4853R1-WO

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<150> 61/674,763
<151> 2012-07-23

<150> 61/597,746
<151> 2012-02-11

<160> 120

<170> PatentIn version 3.5

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<212> DNA
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gccaaaggct gtgagctctg ctctgaagtc aacggctgcc tcaagtgctc acccaagctg 180

ttcatcctgc tggagaggaa cgacatccgc caggtgggcg tctgcttgcc gtcctgccca 240

cctggatact tcgacgcccg caaccccgac atgaacaagt gcatcaaatg caagatcgag 300

cactgtgagg cctgcttcag ccataacttc tgcaccaagt gtaaggaggg cttgtacctg 360

cacaagggcc gctgctatcc agcttgtccc gagggctcct cagctgccaa tggcaccatg 420

gagtgcagta gtcctgcgca atgtgaaatg agcgagtggt ctccgtgggg gccctgctcc 480

aagaagcagc agctctgtgg tttccggagg ggctccgagg agcggacacg cagggtgcta 540

catgcccctg tgggggacca tgctgcctgc tctgacacca aggagacccg gaggtgcaca 600

gtgaggagag tgccgtgtcc tgaggggcag aagaggagga agggaggcca gggccggcgg 660

gagaatgcca acaggaacct ggccaggaag gagagcaagg aggcgggtgc tggctctcga 720

agacgcaagg ggcagcaaca gcagcagcag caagggacag tggggccact cacatctgca 780

gggcctgcct ag 792

<210> 2
<211> 263
<212> PRT
<213> Homo sapiens

<400> 2
Met Arg Leu Gly Leu Cys Val Val Ala Leu Val Leu Ser Trp Thr His
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Leu Thr Ile Ser Ser Arg Gly Ile Lys Gly Lys Arg Gln Arg Arg Ile
20 25 30

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Ser Ala Glu Gly Ser Gln Ala Cys Ala Lys Gly Cys Glu Leu Cys Ser
        35                  40                  45

Glu Val Asn Gly Cys Leu Lys Cys Ser Pro Lys Leu Phe Ile Leu Leu
    50                  55                  60

Glu Arg Asn Asp Ile Arg Gln Val Gly Val Cys Leu Pro Ser Cys Pro
65                  70                  75                  80

Pro Gly Tyr Phe Asp Ala Arg Asn Pro Asp Met Asn Lys Cys Ile Lys
                85                  90                  95

Cys Lys Ile Glu His Cys Glu Ala Cys Phe Ser His Asn Phe Cys Thr
            100                 105                 110

Lys Cys Lys Glu Gly Leu Tyr Leu His Lys Gly Arg Cys Tyr Pro Ala
        115                 120                 125

Cys Pro Glu Gly Ser Ser Ala Ala Asn Gly Thr Met Glu Cys Ser Ser
    130                 135                 140

Pro Ala Gln Cys Glu Met Ser Glu Trp Ser Pro Trp Gly Pro Cys Ser
145                 150                 155                 160

Lys Lys Gln Gln Leu Cys Gly Phe Arg Arg Gly Ser Glu Glu Arg Thr
                165                 170                 175

Arg Arg Val Leu His Ala Pro Val Gly Asp His Ala Ala Cys Ser Asp
            180                 185                 190

Thr Lys Glu Thr Arg Arg Cys Thr Val Arg Arg Val Pro Cys Pro Glu
        195                 200                 205

Gly Gln Lys Arg Arg Lys Gly Gly Gln Gly Arg Arg Glu Asn Ala Asn
    210                 215                 220

Arg Asn Leu Ala Arg Lys Glu Ser Lys Glu Ala Gly Ala Gly Ser Arg
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Arg Arg Lys Gly Gln Gln Gln Gln Gln Gln Gly Thr Val Gly Pro
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Leu Thr Ser Ala Gly Pro Ala
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aagggttgtt tgtcttgttc aaaggacaat gggtgtagcc gatgtcaaca gaagttgttc 180

ttcttccttc gaagagaagg gatgcgccag tatggagagt gcctgcattc ctgcccatcc 240

gggtactatg gacaccgagc cccagatatg aacagatgtg caagatgcag aatagaaaac 300

tgtgattctt gctttagcaa agacttttgt accaagtgca aagtaggctt ttatttgcat 360

agaggccgtt gctttgatga atgtccagat ggttttgcac cattagaaga aaccatggaa 420

tgtgtggaag gatgtgaagt tggtcattgg agcgaatggg gaacttgtag cagaaataat 480

cgcacatgtg gatttaaatg gggtctggaa accagaacac ggcaaattgt taaaaagcca 540

gtgaaagaca caatactgtg tccaaccatt gctgaatcca ggagatgcaa gatgacaatg 600

aggcattgtc caggagggaa gagaacacca aaggcgaagg agaagaggaa caagaaaaag 660

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gctaaccaat aa 732

<210> 4
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<212> PRT
<213> Homo sapiens

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20 25 30

Ser Tyr Val Ser Asn Pro Ile Cys Lys Gly Cys Leu Ser Cys Ser Lys
35 40 45

Asp Asn Gly Cys Ser Arg Cys Gln Gln Lys Leu Phe Phe Phe Leu Arg
50 55 60

Arg Glu Gly Met Arg Gln Tyr Gly Glu Cys Leu His Ser Cys Pro Ser
65 70 75 80

Gly Tyr Tyr Gly His Arg Ala Pro Asp Met Asn Arg Cys Ala Arg Cys
85 90 95

Arg Ile Glu Asn Cys Asp Ser Cys Phe Ser Lys Asp Phe Cys Thr Lys
100 105 110

Cys Lys Val Gly Phe Tyr Leu His Arg Gly Arg Cys Phe Asp Glu Cys
115 120 125

Pro Asp Gly Phe Ala Pro Leu Glu Glu Thr Met Glu Cys Val Glu Gly
130 135 140

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Cys Glu Val Gly His Trp Ser Glu Trp Gly Thr Cys Ser Arg Asn Asn
145                 150                 155                 160

Arg Thr Cys Gly Phe Lys Trp Gly Leu Glu Thr Arg Thr Arg Gln Ile
                165                 170                 175

Val Lys Lys Pro Val Lys Asp Thr Ile Leu Cys Pro Thr Ile Ala Glu
            180                 185                 190

Ser Arg Arg Cys Lys Met Thr Met Arg His Cys Pro Gly Gly Lys Arg
        195                 200                 205

Thr Pro Lys Ala Lys Glu Lys Arg Asn Lys Lys Lys Lys Arg Lys Leu
    210                 215                 220

Ile Glu Arg Ala Gln Glu Gln His Ser Val Phe Leu Ala Thr Asp Arg
225                 230                 235                 240

Ala Asn Gln
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<212> DNA
<213> Homo sapiens

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tgccaaggag gctgtgcaac atgctcagat tacaatggat gtttgtcatg taagcccaga 180

ctatttttg ctctggaaag aattggcatg aagcagattg gagtatgtct ctcttcatgt 240

ccaagtggat attatggaac tcgatatcca gatataaata agtgtacaaa atgcaaagct 300

gactgtgata cctgtttcaa caaaaatttc tgcacaaaat gtaaaagtgg attttactta 360

caccttggaa agtgccttga caattgccca gaagggttgg aagccaacaa ccatactatg 420

gagtgtgtca gtattgtgca ctgtgaggtc agtgaatgga atccttggag tccatgcacg 480

aagaagggaa aaacatgtgg cttcaaaaga gggactgaaa cacgggtccg agaaataata 540

cagcatcctt cagcaaaggg taacctgtgt cccccaacaa atgagacaag aaagtgtaca 600

gtgcaaagga agaagtgtca gaagggagaa cgaggaaaaa aaggaaggga gaggaaaaga 660

aaaaaaccta ataaaggaga aagtaaagaa gcaatacctg acagcaaaag tctggaatcc 720

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gataaacaga aatcggtatc agtcagcact gtacactag 819

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<213> Homo sapiens

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20 25 30

Met His Pro Asn Val Ser Gln Gly Cys Gln Gly Gly Cys Ala Thr Cys
35 40 45

Ser Asp Tyr Asn Gly Cys Leu Ser Cys Lys Pro Arg Leu Phe Phe Ala
50 55 60

Leu Glu Arg Ile Gly Met Lys Gln Ile Gly Val Cys Leu Ser Ser Cys
65 70 75 80

Pro Ser Gly Tyr Tyr Gly Thr Arg Tyr Pro Asp Ile Asn Lys Cys Thr
85 90 95

Lys Cys Lys Ala Asp Cys Asp Thr Cys Phe Asn Lys Asn Phe Cys Thr
100 105 110

Lys Cys Lys Ser Gly Phe Tyr Leu His Leu Gly Lys Cys Leu Asp Asn
115 120 125

Cys Pro Glu Gly Leu Glu Ala Asn Asn His Thr Met Glu Cys Val Ser
130 135 140

Ile Val His Cys Glu Val Ser Glu Trp Asn Pro Trp Ser Pro Cys Thr
145 150 155 160

Lys Lys Gly Lys Thr Cys Gly Phe Lys Arg Gly Thr Glu Thr Arg Val
165 170 175

Arg Glu Ile Ile Gln His Pro Ser Ala Lys Gly Asn Leu Cys Pro Pro
180 185 190

Thr Asn Glu Thr Arg Lys Cys Thr Val Gln Arg Lys Lys Cys Gln Lys
195 200 205

Gly Glu Arg Gly Lys Lys Gly Arg Glu Arg Lys
210 215

<210> 7
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<212> DNA
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tgctcagagg agaacggctg ttccacctgc cagcagaggc tcttcctgtt catccgccgg 180

gaaggcatcc gccagtacgg caagtgcctg cacgactgtc cccctgggta cttcggcatc 240

cgcggccagg aggtcaacag gtgcaaaaaa tgtggggcca cttgtgagag ctgcttcagc 300

caggacttct gcatccggtg caagaggcag ttttacttgt acaaggggaa gtgtctgccc 360

acctgcccgc cgggcacttt ggcccaccag aacacacggg agtgccaggg ggagtgtgaa 420

ctgggtccct ggggcggctg gagcccctgc acacacaatg gaaagacctg cggctcggct 480

tggggcctgg agagccgggt acgagaggct ggccgggctg ggcatgagga ggcagccacc 540

tgccaggtgc tttctgagtc aaggaaatgt cccatccaga ggccctgccc aggagagagg 600

agccccggcc agaagaaggg caggaaggac cggcgcccac gcaaggacag gaagctggac 660

cgcaggctgg acgtgaggcc gcgccagccc ggcctgcagc cctga 705

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<212> PRT
<213> Homo sapiens

<400> 8

Met Arg Ala Pro Leu Cys Leu Leu Leu Leu Val Ala His Ala Val Asp
1 5 10 15

Met Leu Ala Leu Asn Arg Arg Lys Lys Gln Val Gly Thr Gly Leu Gly
20 25 30

Gly Asn Cys Thr Gly Cys Ile Ile Cys Ser Glu Glu Asn Gly Cys Ser
35 40 45

Thr Cys Gln Gln Arg Leu Phe Leu Phe Ile Arg Arg Glu Gly Ile Arg
50 55 60

Gln Tyr Gly Lys Cys Leu His Asp Cys Pro Pro Gly Tyr Phe Gly Ile
65 70 75 80

Arg Gly Gln Glu Val Asn Arg Cys Lys Lys Cys Gly Ala Thr Cys Glu
85 90 95

Ser Cys Phe Ser Gln Asp Phe Cys Ile Arg Cys Lys Arg Gln Phe Tyr
100 105 110

Leu Tyr Lys Gly Lys Cys Leu Pro Thr Cys Pro Pro Gly Thr Leu Ala
115 120 125

His Gln Asn Thr Arg Glu Cys Gln Gly Glu Cys Glu Leu Gly Pro Trp
130 135 140

Gly Gly Trp Ser Pro Cys Thr His Asn Gly Lys Thr Cys Gly Ser Ala
145 150 155 160

Trp Gly Leu Glu Ser Arg Val Arg Glu Ala Gly Arg Ala Gly His Glu

165 170 175

Glu Ala Ala Thr Cys Gln Val Leu Ser Glu Ser Arg Lys Cys Pro Ile
180 185 190

Gln Arg Pro Cys Pro Gly Glu Arg Ser Pro Gly Gln Lys Lys Gly Arg
195 200 205

Lys Asp Arg Arg Pro Arg Lys Asp Arg Lys Leu Asp Arg Arg Leu Asp
210 215 220

Val Arg Pro Arg Gln Pro Gly Leu Gln Pro
225 230

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

<220>
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<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

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1 5 10 15

Lys Ser Pro Leu Arg Gly Lys Glu Lys Asn Thr Leu Pro Leu Asn Gly
20 25 30

Gly Leu Lys Met Thr Leu Ile Tyr Lys Glu Lys Thr Glu Gly Gly Asp
35 40 45

Thr Asp Ser Glu Ile Leu
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<210> 10
<211> 74
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<213> Artificial Sequence

<220>
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<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 10
Met Met Ala His Leu Asp Phe Phe Leu Thr Tyr Lys Trp Arg Ala Pro
1 5 10 15

Lys Ser Lys Ser Leu Asp Gln Leu Ser Pro Asn Phe Leu Leu Arg Gly
20 25 30

Arg Ser Glu Thr Lys Ser Pro Leu Arg Gly Lys Glu Lys Asn Thr Leu
35 40 45

Pro Leu Asn Gly Gly Leu Lys Met Thr Leu Ile Tyr Lys Glu Lys Thr
50 55 60

Glu Gly Gly Asp Thr Asp Ser Glu Ile Leu
65 70

<210> 11
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic primer"

<400> 11
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<210> 12
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<212> DNA
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<220>
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<400> 12
actactcgca tcgcgcact 19

<210> 13
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<210> 14
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<212> DNA
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<400> 14
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<210> 15
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<210> 16
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<210> 17
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<212> DNA
<213> Artificial Sequence

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<223> /note="Description of Artificial Sequence: Synthetic primer"

<400> 17
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<210> 18
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<212> DNA
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<400> 18
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<210> 19
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<400> 19
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<210> 20

<211> 20
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<213> Artificial Sequence

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<400> 24
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<210> 25
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<210> 26
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<210> 28
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<210> 29
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<400> 29

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<210> 30
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<210> 31
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<210> 33
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<210> 35
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<210> 36
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<210> 37
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<223> /note="Description of Artificial Sequence: Synthetic primer"

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<210> 40
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<400> 41
gggaggactc agagggagac 20

<210> 42
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<210> 45
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<220>
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<223> /note="Description of Artificial Sequence: Synthetic primer"

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<210> 46
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<213> Artificial Sequence

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<400> 46
tgacaccata atggattcct g 21

<210> 47
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<210> 50
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<210> 56
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<400> 56
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<210> 57
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tccccatatt tctgcactcc 20

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<400> 61
acgaaggctt cctcacagaa 20

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<210> 63
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<400> 63

tcccaaaggc ttcttcttga 20

<210> 64
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic primer"

<400> 64
gtcgtgtacc ccagaggct 19

<210> 65
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic primer"

<400> 65
gtgcaggaat tgggctatgt 20

<210> 66
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic primer"

<400> 66
agcagggaag cctcctagtc 20

<210> 67
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic primer"

<400> 67
ggtcagccag tgaggtcttc 20

<210> 68
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic primer"

<400> 68
caaagcagac tttccaacgc 20

<210> 69
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic primer"

<400> 69
cttctgatcg aagctttccg 20

<210> 70
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic primer"

<400> 70
cactctcatc tctgggctcc 20

<210> 71
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic oligonucleotide"

<400> 71
tgtaaaggag gttcgtggcg 20

<210> 72
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic oligonucleotide"

<400> 72
ttctccgcag tgcatcctaa 20

<210> 73
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<221> source

<223> /note="Description of Artificial Sequence: Synthetic oligonucleotide"

<400> 73
aaatgtgcag tgcatcctaa 20

<210> 74
<211> 1019
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 74
gagcacagac tccctttct ttggcaagat ggcggagtac gacttgacta ctcgcatcgc 60

gcacttttg gatcggcatc tagtctttcc gcttcttgaa tttctctctg taaaggaggt 120

tcgtggcgga gagatgctga tcgcgctgaa ctgaccggtg cggcccgggg gtgagtggcg 180

agtctccctc tgagtcctcc ccagcagcgc ggccggcgcc ggctctttgg gcgaaccctc 240

cagttcctag actttgagag gcgtctctcc cccgcccgac cgcccagatg cagtttcgcc 300

ttttctcctt tgccctcatc attctgaact gcatggatta cagccactgc caaggcaacc 360

gatggagacg cagtaagcga gctagttatg tatcaaatcc catttgcaag ggttgtttgt 420

cttgttcaaa ggacaatggg tgtagccgat gtcaacagaa gttgttcttc ttccttcgaa 480

gagaagggat gcgccagtat ggagagtgcc tgcattcctg cccatccggg tactatggac 540

accgagcccc agatatgaac agatgtgcaa gatgcagaat agaaaactgt gattcttgct 600

ttagcaaaga cttttgtacc aagtgcaaag taggctttta tttgcataga ggccgttgct 660

ttgatgaatg tccagatggt tttgcaccat tagaagaaac catggaatgt gtggaaggat 720

gtgaagttgg tcattggagc gaatggggaa cttgtagcag aaataatcgc acatgtggat 780

ttaaatgggg tctggaaacc agaacacggc aaattgttaa aaagccagtg aaagacacaa 840

tactgtgtcc aaccattgct gaatccagga gatgcaagat gacaatgagg cattgtccag 900

gagggaagag aacaccaaag gcgaaggaga agaggaacaa gaaaaagaaa aggaagctga 960

tagaaagggc ccaggagcaa cacagcgtct tcctagctac agacagagct aaccaataa 1019

<210> 75
<211> 284
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 75
Met Ala Glu Tyr Asp Leu Thr Thr Arg Ile Ala His Phe Leu Asp Arg
1 5 10 15

```
His Leu Val Phe Pro Leu Leu Glu Phe Leu Ser Val Lys Glu Val Arg
            20                  25                  30

Gly Gly Glu Met Leu Ile Ala Leu Asn Met Gln Phe Arg Leu Phe Ser
        35                  40                  45

Phe Ala Leu Ile Ile Leu Asn Cys Met Asp Tyr Ser His Cys Gln Gly
    50                  55                  60

Asn Arg Trp Arg Arg Ser Lys Arg Ala Ser Tyr Val Ser Asn Pro Ile
65                  70                  75                  80

Cys Lys Gly Cys Leu Ser Cys Ser Lys Asp Asn Gly Cys Ser Arg Cys
                85                  90                  95

Gln Gln Lys Leu Phe Phe Phe Leu Arg Arg Glu Gly Met Arg Gln Tyr
            100                 105                 110

Gly Glu Cys Leu His Ser Cys Pro Ser Gly Tyr Tyr Gly His Arg Ala
        115                 120                 125

Pro Asp Met Asn Arg Cys Ala Arg Cys Arg Ile Glu Asn Cys Asp Ser
    130                 135                 140

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

His Arg Gly Arg Cys Phe Asp Glu Cys Pro Asp Gly Phe Ala Pro Leu
                165                 170                 175

Glu Glu Thr Met Glu Cys Val Glu Gly Cys Glu Val Gly His Trp Ser
            180                 185                 190

Glu Trp Gly Thr Cys Ser Arg Asn Asn Arg Thr Cys Gly Phe Lys Trp
        195                 200                 205

Gly Leu Glu Thr Arg Thr Arg Gln Ile Val Lys Lys Pro Val Lys Asp
    210                 215                 220

Thr Ile Leu Cys Pro Thr Ile Ala Glu Ser Arg Arg Cys Lys Met Thr
225                 230                 235                 240

Met Arg His Cys Pro Gly Gly Lys Arg Thr Pro Lys Ala Lys Glu Lys
                245                 250                 255

Arg Asn Lys Lys Lys Lys Arg Lys Leu Ile Glu Arg Ala Gln Glu Gln
            260                 265                 270

His Ser Val Phe Leu Ala Thr Asp Arg Ala Asn Gln
        275                 280
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<210> 76
<211> 822
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 76
atggatacga ctgcggcggc ggcgctgcct gcttttgtgg cgctcttgct cctctctcct 60

tggcctctcc tgggatcggc ccaaggccag ttctccgcag tgcatcctaa cgttagtcaa 120

ggctgccaag gaggctgtgc aacatgctca gattacaatg gatgtttgtc atgtaagccc 180

agactatttt ttgctctgga aagaattggc atgaagcaga ttggagtatg tctctcttca 240

tgtccaagtg gatattatgg aactcgatat ccagatataa ataagtgtac aaaatgcaaa 300

gctgactgtg atacctgttt caacaaaaat ttctgcacaa aatgtaaaag tggattttac 360

ttacaccttg gaaagtgcct tgacaattgc ccagaagggt tggaagccaa caaccatact 420

atggagtgtg tcagtattgt gcactgtgag gtcagtgaat ggaatccttg gagtccatgc 480

acgaagaagg gaaaaacatg tggcttcaaa agagggactg aaacacgggt ccgagaaata 540

atacagcatc cttcagcaaa gggtaacctg tgtcccccaa caaatgagac aagaaagtgt 600

acagtgcaaa ggaagaagtg tcagaaggga gaacgaggaa aaaaaggaag ggagaggaaa 660

agaaaaaaac ctaataaagg agaaagtaaa gaagcaatac ctgacagcaa aagtctggaa 720

tccagcaaag aaatcccaga gcaacgagaa aacaaacagc agcagaagaa gcgaaaagtc 780

caagataaac agaaatcggt atcagtcagc actgtacact ag 822

<210> 77
<211> 217
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 77
Met Asp Thr Thr Ala Ala Ala Ala Leu Pro Ala Phe Val Ala Leu Leu
1 5 10 15

Leu Leu Ser Pro Trp Pro Leu Leu Gly Ser Ala Gln Gly Gln Phe Ser
20 25 30

Ala Val His Pro Asn Val Ser Gln Gly Cys Gln Gly Gly Cys Ala Thr
35 40 45

Cys Ser Asp Tyr Asn Gly Cys Leu Ser Cys Lys Pro Arg Leu Phe Phe
50 55 60

Ala Leu Glu Arg Ile Gly Met Lys Gln Ile Gly Val Cys Leu Ser Ser

65 70 75 80

Cys Pro Ser Gly Tyr Tyr Gly Thr Arg Tyr Pro Asp Ile Asn Lys Cys
85 90 95

Thr Lys Cys Lys Ala Asp Cys Asp Thr Cys Phe Asn Lys Asn Phe Cys
100 105 110

Thr Lys Cys Lys Ser Gly Phe Tyr Leu His Leu Gly Lys Cys Leu Asp
115 120 125

Asn Cys Pro Glu Gly Leu Glu Ala Asn Asn His Thr Met Glu Cys Val
130 135 140

Ser Ile Val His Cys Glu Val Ser Glu Trp Asn Pro Trp Ser Pro Cys
145 150 155 160

Thr Lys Lys Gly Lys Thr Cys Gly Phe Lys Arg Gly Thr Glu Thr Arg
165 170 175

Val Arg Glu Ile Ile Gln His Pro Ser Ala Lys Gly Asn Leu Cys Pro
180 185 190

Pro Thr Asn Glu Thr Arg Lys Cys Thr Val Gln Arg Lys Lys Cys Gln
195 200 205

Lys Gly Glu Arg Gly Lys Lys Gly Arg
210 215

<210> 78
<211> 1884
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 78
atggatacga ctgcggcggc ggcgctgcct gcttttgtgg cgctcttgct cctctctcct 60

tggcctctcc tgggatcggc ccaaggccag ttctccgcag gtggctgtac ttttgatgat 120

ggtccagggg cctgtgatta ccaccaggat ctgtatgatg actttgaatg ggtgcatgtt 180

agtgctcaag agcctcatta tctaccaccc gagatgcccc aaggttccta tatgatagtg 240

gactcttcag atcacgaccc tggagaaaaa gccagacttc agctgcctac aatgaaggag 300

aacgacactc actgcattga tttcagttac ctattatata gccagaaagg actgaatcct 360

ggcactttga acatattagt tagggtgaat aaaggacctc ttgccaatcc aatttggaat 420

gtgactggat tcacgggtag agattggctt cgggctgagc tagcagtgag caccttttgg 480

cccaatgaat atcaggtaat atttgaagct gaagtctcag gagggagaag tggttatatt 540

gccattgatg acatccaagt actgagttat ccttgtgata aatctcctca tttcctccgt 600

ctaggggatg tagaggtgaa tgcagggcaa aacgctacat ttcagtgcat tgccacaggg 660

agagatgctg tgcataacaa gttatggctc cagagacgaa atggagaaga tataccagta 720

gcccagacta agaacatcaa tcatagaagg tttgccgctt ccttcagatt gcaagaagtg 780

acaaaaactg accaggattt gtatcgctgt gtaactcagt cagaacgagg ttccggtgtg 840

tccaattttg ctcaacttat tgtgagagaa ccgccaagac ccattgctcc tcctcagctt 900

cttggtgttg ggcctacata tttgctgatc caactaaatg ccaactcgat cattggcgat 960

ggtcctatca tcctgaaaga agtagagtac cgaatgacat caggatcctg gacagaaacc 1020

catgcagtca atgctccaac ttacaaatta tggcatttag atccagatac cgaatatgag 1080

atccgagttc tacttacaag acctggtgaa ggtggaacgg ggctcccagg acctccacta 1140

atcaccagaa caaaatgtgc agtgcatcct aacgttagtc aaggctgcca aggaggctgt 1200

gcaacatgct cagattacaa tggatgtttg tcatgtaagc ccagactatt ttttgctctg 1260

gaaagaattg gcatgaagca gattggagta tgtctctctt catgtccaag tggatattat 1320

ggaactcgat atccagatat aaataagtgt acaaaatgca aagctgactg tgatacctgt 1380

ttcaacaaaa atttctgcac aaaatgtaaa agtggatttt acttacacct tggaaagtgc 1440

cttgacaatt gcccagaagg gttggaagcc aacaaccata ctatggagtg tgtcagtatt 1500

gtgcactgtg aggtcagtga atggaatcct tggagtccat gcacgaagaa gggaaaaaca 1560

tgtggcttca aaagagggac tgaaacacgg gtccgagaaa taatacagca tccttcagca 1620

aagggtaacc tgtgtccccc aacaaatgag acaagaaagt gtacagtgca aaggaagaag 1680

tgtcagaagg gagaacgagg aaaaaaagga agggagagga aaagaaaaaa acctaataaa 1740

ggagaaagta aagaagcaat acctgacagc aaaagtctgg aatccagcaa agaaatccca 1800

gagcaacgag aaaacaaaca gcagcagaag aagcgaaaag tccaagataa acagaaatcg 1860

gtatcagtca gcactgtaca ctag 1884

<210> 79
<211> 627
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 79
Met Asp Thr Thr Ala Ala Ala Ala Leu Pro Ala Phe Val Ala Leu Leu
1 5 10 15

Leu Leu Ser Pro Trp Pro Leu Leu Gly Ser Ala Gln Gly Gln Phe Ser
20 25 30

Ala Gly Gly Cys Thr Phe Asp Asp Gly Pro Gly Ala Cys Asp Tyr His
35 40 45

```
Gln Asp Leu Tyr Asp Asp Phe Glu Trp Val His Val Ser Ala Gln Glu
    50                  55                  60

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

Asp Ser Ser Asp His Asp Pro Gly Glu Lys Ala Arg Leu Gln Leu Pro
                85                  90                  95

Thr Met Lys Glu Asn Asp Thr His Cys Ile Asp Phe Ser Tyr Leu Leu
            100                 105                 110

Tyr Ser Gln Lys Gly Leu Asn Pro Gly Thr Leu Asn Ile Leu Val Arg
        115                 120                 125

Val Asn Lys Gly Pro Leu Ala Asn Pro Ile Trp Asn Val Thr Gly Phe
    130                 135                 140

Thr Gly Arg Asp Trp Leu Arg Ala Glu Leu Ala Val Ser Thr Phe Trp
145                 150                 155                 160

Pro Asn Glu Tyr Gln Val Ile Phe Glu Ala Glu Val Ser Gly Gly Arg
                165                 170                 175

Ser Gly Tyr Ile Ala Ile Asp Asp Ile Gln Val Leu Ser Tyr Pro Cys
            180                 185                 190

Asp Lys Ser Pro His Phe Leu Arg Leu Gly Asp Val Glu Val Asn Ala
        195                 200                 205

Gly Gln Asn Ala Thr Phe Gln Cys Ile Ala Thr Gly Arg Asp Ala Val
    210                 215                 220

His Asn Lys Leu Trp Leu Gln Arg Arg Asn Gly Glu Asp Ile Pro Val
225                 230                 235                 240

Ala Gln Thr Lys Asn Ile Asn His Arg Arg Phe Ala Ala Ser Phe Arg
                245                 250                 255

Leu Gln Glu Val Thr Lys Thr Asp Gln Asp Leu Tyr Arg Cys Val Thr
            260                 265                 270

Gln Ser Glu Arg Gly Ser Gly Val Ser Asn Phe Ala Gln Leu Ile Val
        275                 280                 285

Arg Glu Pro Pro Arg Pro Ile Ala Pro Pro Gln Leu Leu Gly Val Gly
    290                 295                 300

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

```
Gly Pro Ile Ile Leu Lys Glu Val Glu Tyr Arg Met Thr Ser Gly Ser
                325                 330                 335

Trp Thr Glu Thr His Ala Val Asn Ala Pro Thr Tyr Lys Leu Trp His
            340                 345                 350

Leu Asp Pro Asp Thr Glu Tyr Glu Ile Arg Val Leu Leu Thr Arg Pro
        355                 360                 365

Gly Glu Gly Gly Thr Gly Leu Pro Gly Pro Pro Leu Ile Thr Arg Thr
    370                 375                 380

Lys Cys Ala Val His Pro Asn Val Ser Gln Gly Cys Gln Gly Gly Cys
385                 390                 395                 400

Ala Thr Cys Ser Asp Tyr Asn Gly Cys Leu Ser Cys Lys Pro Arg Leu
                405                 410                 415

Phe Phe Ala Leu Glu Arg Ile Gly Met Lys Gln Ile Gly Val Cys Leu
            420                 425                 430

Ser Ser Cys Pro Ser Gly Tyr Tyr Gly Thr Arg Tyr Pro Asp Ile Asn
        435                 440                 445

Lys Cys Thr Lys Cys Lys Ala Asp Cys Asp Thr Cys Phe Asn Lys Asn
    450                 455                 460

Phe Cys Thr Lys Cys Lys Ser Gly Phe Tyr Leu His Leu Gly Lys Cys
465                 470                 475                 480

Leu Asp Asn Cys Pro Glu Gly Leu Glu Ala Asn Asn His Thr Met Glu
                485                 490                 495

Cys Val Ser Ile Val His Cys Glu Val Ser Glu Trp Asn Pro Trp Ser
            500                 505                 510

Pro Cys Thr Lys Lys Gly Lys Thr Cys Gly Phe Lys Arg Gly Thr Glu
        515                 520                 525

Thr Arg Val Arg Glu Ile Ile Gln His Pro Ser Ala Lys Gly Asn Leu
    530                 535                 540

Cys Pro Pro Thr Asn Glu Thr Arg Lys Cys Thr Val Gln Arg Lys Lys
545                 550                 555                 560

Cys Gln Lys Gly Glu Arg Gly Lys Lys Gly Arg Glu Arg Lys Arg Lys
                565                 570                 575

Lys Pro Asn Lys Gly Glu Ser Lys Glu Ala Ile Pro Asp Ser Lys Ser
            580                 585                 590
```

Leu Glu Ser Ser Lys Glu Ile Pro Glu Gln Arg Glu Asn Lys Gln Gln
595 600 605

Gln Lys Lys Arg Lys Val Gln Asp Lys Gln Lys Ser Val Ser Val Ser
610 615 620

Thr Val His
625

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

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 80
Lys Trp Tyr Gly Trp Leu
1 5

<210> 81
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 81
Gly Glu Ile Val Leu Trp Ser Asp Ile Pro Gly
1 5 10

<210> 82
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic oligonucleotide"

<400> 82
tcccatttgc aagggttgt 19

<210> 83
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic oligonucleotide"

<400> 83
agctgactgt gatacctgt 19

<210> 84
<211> 10
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic oligonucleotide"

<400> 84
ggacaacaca 10

<210> 85
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic oligonucleotide"

<400> 85
atttctctct gtaaaggagg ttcgtggcgg agagatgctg atcgcgctga actgaccggt 60

gcggcccggg ggtga 75

<210> 86
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic oligonucleotide"

<400> 86
ttccgcttct tgaatttctc tctgtaaagg aggttcgtgg cggagagatg ctgatcgcgc 60

tgaactgacc ggtgc 75

<210> 87
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic oligonucleotide"

<400> 87
ccgcttcttg aatttctctc tgtaaaggag gttcgtggcg gagagatgct gatcgcgctg 60

aactgaccgg tgcgg 75

<210> 88
<211> 75

<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
oligonucleotide"

<400> 88
tcggcatcta gtctttccgc ttcttgaatt tctctctgta aaggaggttc gtggcggaga 60

gatgctgatc gcgct 75

<210> 89
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
oligonucleotide"

<400> 89
ctttccgctt cttgaatttc tctctgtaaa ggaggttcgt ggcggagaga tgctgatcgc 60

gctgaactga ccggt 75

<210> 90
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
oligonucleotide"

<400> 90
aatttctctc tgtaaaggag gttcgtggcg gagagatgct gatcgcgctg aactgaccgg 60

tgcggcccgg ggggg 75

<210> 91
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
oligonucleotide"

<400> 91
cgcacttttt ggatcggcat ctagtctttc cgcttcttga atttctctct gtaaaggagg 60

ttcgtggcgg agaga 75

<210> 92
<211> 75
<212> DNA
<213> Artificial Sequence

<220>

<221> source
<223> /note="Description of Artificial Sequence: Synthetic
oligonucleotide"

<400> 92
ctttccgctt cttgaatttc tctctgtaaa ggaggttcgt ggcggagaga tgctgatcgc 60

gctgaactgc ccggt 75

<210> 93
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
oligonucleotide"

<400> 93
tctcctggga tcggcccaag gccagttctc cgcagtgcat cctaacgtta gtcaaggctg 60

ccaaggaggc tgtgc 75

<210> 94
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
oligonucleotide"

<400> 94
ctcctgggat cggcccaagg ccagttctcc gcagtgcatc ctaacgttag tcaaggctgc 60

caaggaggct gtgca 75

<210> 95
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
oligonucleotide"

<400> 95
tcctgggatc ggcccaaggc cagttctccg cagtgcatcc taacgttagt caaggctgcc 60

aaggaggctg tgcaa 75

<210> 96
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
oligonucleotide"

<400> 96
cctgggatcg gcccaaggcc agttctccgc agtgcatcct aacgttagtc aaggctgcca 60

aggaggctgt gcaac 75

<210> 97
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic oligonucleotide"

<400> 97
ctgggatcgg cccaaggaca gttctccgca gtgcatccta acgttagtca aggctgccaa 60

ggaggctgtg caaca 75

<210> 98
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic oligonucleotide"

<400> 98
atcggcccaa ggccagttct ccgcagtgca tcctaacgtt agtcaaggct gccaaggagg 60

ctgtgcaaca tgctc 75

<210> 99
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic oligonucleotide"

<400> 99
tcggcccaag gccagttctc cgcagtgcat cctaacgtta gtcaaggctg ccaaggaggc 60

tgtgcaacat gctca 75

<210> 100
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic oligonucleotide"

<400> 100
ccaggacctc cactaatcac cagaacaaaa tgtgcagtgc atcctaacgt tagtcaaggc 60

tgccaaggag gctgt 75

<210> 101
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
oligonucleotide"

<400> 101
caggacctcc actaatcacc agaacaaaat gtgcagtgca tcctaacgtt agtcaaggct 60

gccaaggagg ctgtg 75

<210> 102
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
oligonucleotide"

<400> 102
aggacctcca ctaatcacca gaacaaaatg tgcagtgcat cctaacgtta gtcaaggctg 60

ccaaggaggc tgtgc 75

<210> 103
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
oligonucleotide"

<400> 103
gccctccact aatcaccaga acaaaatgtg cagtgcatcc taacgttagt caaggctgcc 60

aaggaggctg tgcaa 75

<210> 104
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
oligonucleotide"

<400> 104
ctaatcacca gaacaaaatg tgcagtgcat cctaacgtta gtcaaggctg ccaaggaggc 60

tgtgcaacat gccca 75

<210> 105
<211> 100

<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
polynucleotide"

<400> 105
ttggcataac ttgatatttc ttgttctcgc tttgtcacct aagctggagt gcagtggcac 60

aatcttagct cattacagcc ctgactttct ggttaaggtt 100

<210> 106
<211> 100
<212> DNA
<213> Artificial Sequence

<220>
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<400> 106
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tgactttctg gttaaggttt aaggatgtcg ccaggcgcag 100

<210> 107
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<220>
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polynucleotide"

<400> 107
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ccctgacttt ctggttaagg tttaaggatg tcgccaggcg 100

<210> 108
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
oligonucleotide"

<400> 108
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gcgcagtgg 69

<210> 109
<211> 56
<212> DNA
<213> Artificial Sequence

<220>

<221> source
<223> /note="Description of Artificial Sequence: Synthetic
oligonucleotide"

<400> 109
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<210> 110
<211> 100
<212> DNA
<213> Artificial Sequence

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polynucleotide"

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gtgtggccaa aaacctgcat ttctaacaag ctctcccagg 100

<210> 111
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<212> DNA
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polynucleotide"

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ggaccactta acagttttga ttaagtaggt ctggtgtgtg gccaa 105

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

<220>
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<400> 112
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<210> 113
<211> 100
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<220>
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polynucleotide"

<400> 113
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ctgagagtta agagaatggt tagatgtttt aaagaatggg 100

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<212> DNA
<213> Artificial Sequence

<220>
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<400> 114
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ctgagagtta agagaatggt tagat 85

<210> 115
<211> 100
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
polynucleotide"

<400> 115
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aacggcattt aatgttaact ccacgattac tgtttctttc 100

<210> 116
<211> 107
<212> DNA
<213> Artificial Sequence

<220>
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<400> 116
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atcaacggca tttaatgtta actccacgat tactgtttct ttcctca 107

<210> 117
<211> 100
<212> DNA
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polynucleotide"

<400> 117
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gattatttta ccctatttga tggagcagat gaaagcaaaa 100

<210> 118
<211> 118

<212> DNA
<213> Artificial Sequence

<220>
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<400> 118
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tggagcagat gaaagcaaaa tgcttctccc cattttaaga cattaaactt ctgtaaga 118

<210> 119
<211> 100
<212> DNA
<213> Artificial Sequence

<220>
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<400> 119
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cattaaatta ggtgtgcttt gattctccaa aataaagaat 100

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

<220>
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<400> 120
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agttgtgtct ccattaaatt aggtgtgctt tgattctcca aaataaagaa tttt 114