SEQUENCE LISTING

<110> Wang, Pin
Yang, Lili
Baltimore, David

<120> TARGETED GENE DELIVERY FOR DENDRITIC CELL VACCINATION

<130> CALTE.035A

<150> U.S. 60/832,497
<151> 2006-07-21

<150> U.S. 60/920,260
<151> 2007-03-27

<160> 11

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 9941
<212> DNA
<213> Artificial Sequence

<220>
<223> Constructed plasmid vector

<400> 1
gtcgacggat cgggagatct cccgatcccc tatggtgcac tctcagtaca atctgctctg 60
atgccgcata gttaagccag tatctgctcc ctgcttgtgt gttggaggtc gctgagtagt 120
gcgcgagcaa aatttaagct acaacaaggc aaggcttgac cgacaattgc atgaagaatc 180
tgcttagggt taggcgtttt gcgctgcttc gcgatgtacg ggccagatat acgcgttgac 240
attgattatt gactagttat taatagtaat caattacggg gtcattagtt catagcccat 300
atatggagtt ccgcgttaca taacttacgg taaatggccc gcctggctga ccgcccaacg 360
acccccgccc attgacgtca ataatgacgt atgttcccat agtaacgcca atagggactt 420
tccattgacg tcaatgggtg gagtatttac ggtaaactgc ccacttggca gtacatcaag 480
tgtatcatat gccaagtacg cccccctattg acgtcaatga cggtaaatgg cccgcctggc 540
attatgccca gtacatgacc ttatgggact ttcctacttg gcagtacatc tacgtattag 600
tcatcgctat taccatggtg atgcggtttt ggcagtacat caatgggcgt ggatagcggt 660
ttgactcacg gggatttcca agtctccacc ccattgacgt caatgggagt ttgttttggc 720
accaaaatca acgggacttt ccaaaatgtc gtaacaactc cgccccattg acgcaaatgg 780
gcggtaggcg tgtacggtgg gaggtctata taagcagcgc gttttgcctg tactgggtct 840
ctctggttag accagatctg agcctgggag ctctctggct aactagggaa cccactgctt 900
aagcctcaat aaagcttgcc ttgagtgctt caagtagtgt gtgcccgtct gttgtgtgac 960
tctggtaact agagatccct cagacccttt tagtcagtgt ggaaaatctc tagcagtggc 1020
gcccgaacag ggacttgaaa gcgaaaggga aaccagagga gctctctcga cgcaggactc 1080
ggcttgctga agcgcgcacg gcaagaggcg aggggcggcg actggtgagt acgccaaaaa 1140
ttttgactag cggaggctag aaggagagag atgggtgcga gagcgtcagt attaagcggg 1200
ggagaattag atcgcgatgg gaaaaaattc ggttaaggcc aggggggaaag aaaaaatata 1260
aattaaaaca tatagtatgg gcaagcaggg agctagaacg attcgcagtt aatcctggcc 1320
tgttagaaac atcagaaggc tgtagacaaa tactgggaca gctacaacca tcccttcaga 1380
caggatcaga agaacttaga tcattatata atacagtagc aaccctctat tgtgtgcatc 1440
aaaggataga gataaaagac accaaggaag ctttagacaa gatagaggaa gagcaaaaca 1500
aaagtaagac caccgcacag caagcggccg ctgatcttca gacctggagg aggagatatg 1560
agggacaatt ggagaagtga attatataaa tataaagtag taaaaattga accattagga 1620
gtagcaccca ccaaggcaaa gagaagagtg gtgcagagag aaaaaagagc agtgggaata 1680
ggagctttgt tccttgggtt cttgggagca gcaggaagca ctatgggcgc agcgtcaatg 1740
acgctgacgg tacaggccag acaattattg tctggtatag tgcagcagca gaacaatttg 1800
ctgagggcta ttgaggcgca acagcatctg ttgcaactca cagtctgggg catcaagcag 1860
ctccaggcaa gaatcctggc tgtggaaaga tacctaaagg atcaacagct cctggggatt 1920
tggggttgct ctggaaaact catttgcacc actgctgtgc cttggaatgc tagttggagt 1980
aataaatctc tggaacagat ttggaatcac acgacctgga tggagtggga cagagaaatt 2040
aacaattaca caagcttaat acactcctta attgaagaat cgcaaaacca gcaagaaaag 2100
aatgaacaag aattattgga attagataaa tgggcaagtt tgtggaattg gtttaacata 2160

acaaattggc tgtggtatat aaaattattc ataatgatag taggaggctt ggtaggttta 2220
agaatagttt ttgctgtact ttctatagtg aatagagtta ggcagggata ttcaccatta 2280
tcgtttcaga cccacctccc aaccccgagg ggacccgaca ggcccgaagg aatagaagaa 2340
gaaggtggag agagagacag agacagatcc attcgattag tgaacggatc ggcactgcgt 2400
gcgccaattc tgcagacaaa tggcagtatt catccacaat tttaaaagaa aaggggggat 2460
tgggggtac agtgcagggg aaagaatagt agacataata gcaacagaca tacaaactaa 2520
agaattacaa aaacaaatta caaaaattca aaattttcgg gtttattaca gggacagcag 2580
agatccagtt tggttaatta agggtgcagc ggcctccgcg ccgggttttg gcgcctcccg 2640
cgggcgcccc cctcctcacg gcgagcgctg ccacgtcaga cgaagggcgc aggagcgttc 2700
ctgatccttc cgcccggacg ctcaggacag cggcccgctg ctcataagac tcggccttag 2760
aaccccagta tcagcagaag gacattttag gacgggactt gggtgactct agggcactgg 2820
ttttctttcc agagagcgga acaggcgagg aaaagtagtc ccttctcggc gattctgcgg 2880
agggatctcc gtggggcggt gaacgccgat gattatataa ggacgcgccg ggtgtggcac 2940
agctagttcc gtcgcagccg ggatttgggt cgcggttctt gtttgtggat cgctgtgatc 3000
gtcacttggt gagttgcggg ctgctgggct ggccggggct ttcgtggccg ccgggccgct 3060
cggtgggacg gaagcgtgtg gagagaccgc caagggctgt agtctgggtc cgcgagcaag 3120
gttgccctga actgggggtt gggggagcg cacaaaatgg cggctgttcc cgagtcttga 3180
atggaagacg cttgtaaggc gggctgtgag gtcgttgaaa caaggtgggg ggcatggtgg 3240
gcggcaagaa cccaaggtct tgaggccttc gctaatgcgg gaaagctctt attcgggtga 3300
gatgggctgg ggcaccatct ggggaccctg acgtgaagtt tgtcactgac tggagaactc 3360
gggtttgtcg tctggttgcg ggggcggcag ttatgcggtg ccgttgggca gtgcacccgt 3420
acctttggga gcgcgcgcct cgtcgtgtcg tgacgtcacc cgttctgttg gcttataatg 3480
cagggtgggg ccacctgccg gtaggtgtgc ggtaggcttt tctccgtcgc aggacgcagg 3540
gttcgggcct agggtaggct ctcctgaatc gacaggcgcc ggacctctgg tgaggggagg 3600
gataagtgag gcgtcagttt ctttggtcgg ttttatgtac ctatcttctt aagtagctga 3660
agctccggtt ttgaactatg cgctcggggt tggcgagtgt gttttgtgaa gtttttagg 3720
caccttttga aatgtaatca tttgggtcaa tatgtaattt tcagtgttag actagtaaag 3780
cttctgcagg tcgactctag aaaattgtcc gctaaattct ggccgttttt ggctttttg 3840
ttagacagga tccccgggta ccggtcgcca ccatggtgag caagggcgag gagctgttca 3900
ccggggtggt gcccatcctg gtcgagctgg acggcgacgt aaacggccac aagttcagcg 3960
tgtccggcga gggcgagggc gatgccacct acggcaagct gaccctgaag ttcatctgca 4020
ccaccggcaa gctgcccgtg ccctggccca ccctcgtgac caccctgacc tacggcgtgc 4080
agtgcttcag ccgctacccc gaccacatga agcagcacga cttcttcaag tccgccatgc 4140
ccgaaggcta cgtccaggag cgcaccatct tcttcaagga cgacggcaac tacaagaccc 4200
gcgccgaggt gaagttcgag ggcgacaccc tggtgaaccg catcgagctg aagggcatcg 4260
acttcaagga ggacggcaac atcctggggc acaagctgga gtacaactac aacagccaca 4320
acgtctatat catggccgac aagcagaaga acggcatcaa ggtgaacttc aagatccgcc 4380
acaacatcga ggacggcagc gtgcagctcg ccgaccacta ccagcagaac accccatcg 4440
gcgacggccc cgtgctgctg cccgacaacc actacctgag cacccagtcc gccctgagca 4500
aagaccccaa cgagaagcgc gatcacatgg tcctgctgga gttcgtgacc gccgccggga 4560
tcactctcgg catggacgag ctgtacaagt aaagcggccg cgactctaga attcgatatc 4620
aagcttatcg ataatcaacc tctggattac aaaatttgtg aaagattgac tggtattctt 4680
aactatgttg ctccttttac gctatgtgga tacgctgctt taatgccttt gtatcatgct 4740
attgcttccc gtatggcttt cattttctcc tccttgtata aatcctggtt gctgtctctt 4800
tatgaggagt tgtggcccgt tgtcaggcaa cgtggcgtgg tgtgcactgt gtttgctgac 4860
gcaaccccca ctggttgggg cattgccacc acctgtcagc tcctttccgg gactttcgct 4920
ttcccctcc ctattgccac ggcggaactc atcgccgcct gccttgcccg ctgctggaca 4980
ggggctcggc tgttgggcac tgacaattcc gtggtgttgt cggggaaatc atcgtccttt 5040
ccttggctgc tcgcctgtgt tgccacctgg attctgcgcg ggacgtcctt ctgctacgtc 5100
ccttcggccc tcaatccagc ggaccttcct tcccgcggcc tgctgccggc tctgcggcct 5160
cttccgcgtc ttcgccttcg ccctcagacg agtcggatct ccctttgggc cgcctccccg 5220
catcgatacc gtcgacctcg agacctagaa aaacatggag caatcacaag tagcaataca 5280
gcagctacca atgctgattg tgcctggcta gaagcacaag aggaggagga ggtgggtttt 5340
ccagtcacac ctcaggtacc tttaagacca atgacttaca aggcagctgt agatcttagc 5400
cacttttaa aagaaaaggg gggactggaa gggctaattc actcccaacg aagacaagat 5460
atccttgatc tgtggatcta ccacacacaa ggctacttcc ctgattggca gaactacaca 5520
ccagggccag ggatcagata tccactgacc tttggatggt gctacaagct agtaccagtt 5580
gagcaagaga aggtagaaga agccaatgaa ggagagaaca cccgcttgtt acaccctgtg 5640
agcctgcatg ggatggatga cccggagaga gaagtattag agtggaggtt tgacagccgc 5700
ctagcatttc atcacatggc ccgagagctg catccggact gtactgggtc tctctggtta 5760
gaccagatct gagcctggga gctctctggc taactaggga acccactgct taagcctcaa 5820
taaagcttgc cttgagtgct tcaagtagtg tgtgcccgtc tgttgtgtga ctctggtaac 5880
tagagatccc tcagaccctt ttagtcagtg tggaaaatct ctagcagggc ccgtttaaac 5940
ccgctgatca gcctcgactg tgccttctag ttgccagcca tctgttgttt gcccctcccc 6000
cgtgccttcc ttgaccctgg aaggtgccac tcccactgtc ctttcctaat aaaatgagga 6060
aattgcatcg cattgtctga gtaggtgtca ttctattctg gggggtgggg tggggcagga 6120
cagcaagggg gaggattggg aagacaatag caggcatgct ggggatgcgg tgggctctat 6180

ggcttctgag gcggaaagaa ccagctgggg ctctaggggg tatccccacg cgccctgtag 6240
cggcgcatta agcgcggcgg gtgtggtggt tacgcgcagc gtgaccgcta cacttgccag 6300
cgccctagcg cccgctcctt tcgctttctt cccttccttt ctcgccacgt tcgccggctt 6360
tccccgtcaa gctctaaatc gggggctccc tttagggttc cgatttagtg ctttacggca 6420
cctcgacccc aaaaaacttg attagggtga tggttcacgt agtgggccat cgccctgata 6480
gacggttttt cgcccctttga cgttggagtc cacgttcttt aatagtggac tcttgttcca 6540
aactggaaca acactcaacc ctatctcggt ctattctttt gatttataag ggattttgcc 6600
gatttcggcc tattggttaa aaaatgagct gatttaacaa aaatttaacg cgaattaatt 6660
ctgtggaatg tgtgtcagtt agggtgtgga aagtccccag gctccccagc aggcagaagt 6720
atgcaaagca tgcatctcaa ttagtcagca accaggtgtg gaaagtcccc aggctcccca 6780
gcaggcagaa gtatgcaaag catgcatctc aattagtcag caaccatagt cccgccccta 6840
actccgccca tcccgccccc aactccgccc agttccgccc attctccgcc ccatggctga 6900
ctaatttttt ttatttatgc agaggccgag gccgcctctg cctctgagct attccagaag 6960
tagtgaggag gctttttttgg aggcctaggc ttttgcaaaa agctcccggg agcttgtata 7020
tccattttcg gatctgatca gcacgtgttg acaattaatc atcggcatag tatatcggca 7080
tagtataata cgacaaggtg aggaactaaa ccatggccaa gttgaccagt gccgttccgg 7140
tgctcaccgc gcgcgacgtc gccggagcgg tcgagttctg gaccgaccgg ctcgggttct 7200
cccgggactt cgtggaggac gacttcgccg gtgtggtccg ggacgacgtg accctgttca 7260
tcagcgcggt ccaggaccag gtggtgccgg acaacaccct ggcctgggtg tgggtgcgcg 7320
gcctggacga gctgtacgcc gagtggtcgg aggtcgtgtc cacgaacttc cgggacgcct 7380
ccgggccggc catgaccgag atcggcgagc agccgtgggg gcgggagttc gccctgcgcg 7440
acccggccgg caactgcgtg cacttcgtgg ccgaggagca ggactgacac gtgctacgag 7500
atttcgattc caccgccgcc ttctatgaaa ggttgggctt cggaatcgtt ttccgggacg 7560
ccggctggat gatcctccag cgcggggatc tcatgctgga gttcttcgcc caccccaact 7620
tgtttattgc agcttataat ggttacaaat aaagcaatag catcacaaat ttcacaaata 7680
aagcattttt ttcactgcat tctagttgtg gtttgtccaa actcatcaat gtatcttatc 7740
atgtctgtat accgtcgacc tctagctaga gcttggcgta atcatggtca tagctgtttc 7800
ctgtgtgaaa ttgttatccg ctcacaattc cacacaacat acgagccgga agcataaagt 7860
gtaaagcctg gggtgcctaa tgagtgagct aactcacatt aattgcgttg cgctcactgc 7920
ccgctttcca gtcgggaaac ctgtcgtgcc agctgcatta atgaatcggc caacgcgcgg 7980
ggagaggcgg tttgcgtatt gggcgctctt ccgcttcctc gctcactgac tcgctgcgct 8040
cggtcgttcg gctgcggcga gcggtatcag ctcactcaaa ggcggtaata cggttatcca 8100
cagaatcagg ggataacgca ggaaagaaca tgtgagcaaa aggccagcaa aaggccagga 8160
accgtaaaaa ggccgcgttg ctggcgtttt tccataggct ccgccccccct gacgagcatc 8220
acaaaaatcg acgctcaagt cagaggtggc gaaacccgac aggactataa agataccagg 8280
cgtttccccc tggaagctcc ctcgtgcgct ctcctgttcc gaccctgccg cttaccggat 8340
acctgtccgc ctttctccct tcgggaagcg tggcgctttc tcatagctca cgctgtaggt 8400
atctcagttc ggtgtaggtc gttcgctcca agctgggctg tgtgcacgaa cccccgttc 8460
agcccgaccg ctgcgcctta tccggtaact atcgtcttga gtccaacccg gtaagacacg 8520
acttatcgcc actggcagca gccactggta acaggattag cagagcgagg tatgtaggcg 8580
gtgctacaga gttcttgaag tggtggccta actacggcta cactagaaga acagtatttg 8640
gtatctgcgc tctgctgaag ccagttacct tcggaaaaag agttggtagc tcttgatccg 8700
gcaaacaaac caccgctggt agcggtggtt tttttgtttg caagcagcag attacgcgca 8760
gaaaaaaagg atctcaagaa gatcctttga tcttttctac ggggtctgac gctcagtgga 8820
acgaaaactc acgttaaggg attttggtca tgagattatc aaaaaggatc ttcacctaga 8880
tccttttaaa ttaaaaatga agttttaaat caatctaaag tatatatgag taaacttggt 8940
ctgacagtta ccaatgctta atcagtgagg cacctatctc agcgatctgt ctatttcgtt 9000
catccatagt tgcctgactc cccgtcgtgt agataactac gatacgggag ggcttaccat 9060
ctggccccag tgctgcaatg ataccgcgag acccacgctc accggctcca gatttatcag 9120
caataaacca gccagccgga agggccgagc gcagaagtgg tcctgcaact ttatccgcct 9180
ccatccagtc tattaattgt tgccgggaag ctagagtaag tagttcgcca gttaatagtt 9240
tgcgcaacgt tgttgccatt gctacaggca tcgtggtgtc acgctcgtcg tttggtatgg 9300
cttcattcag ctccggttcc caacgatcaa ggcgagttac atgatccccc atgttgtgca 9360
aaaaagcggt tagctccttc ggtcctccga tcgttgtcag aagtaagttg gccgcagtgt 9420
tatcactcat ggttatggca gcactgcata attctcttac tgtcatgcca tccgtaagat 9480
gcttttctgt gactggtgag tactcaacca agtcattctg agaatagtgt atgcggcgac 9540
cgagttgctc ttgcccggcg tcaatacggg ataataccgc gccacatagc agaactttaa 9600
aagtgctcat cattggaaaa cgttcttcgg ggcgaaaact ctcaaggatc ttaccgctgt 9660
tgagatccag ttcgatgtaa cccactcgtg cacccaactg atcttcagca tcttttactt 9720
tcaccagcgt ttctgggtga gcaaaaacag gaaggcaaaa tgccgcaaaa aagggaataa 9780
gggcgacacg gaaatgttga atactcatac tcttcctttt tcaatattat tgaagcattt 9840
atcagggtta ttgtctcatg agcggataca tatttgaatg tatttagaaa aataaacaaa 9900
taggggttcc gcgcacattt ccccgaaaag tgccacctga c 9941

<210> 2

<211> 9206
<212> DNA
<213> Artificial Sequence

<220>
<223> Constructed plasmid vector

<400> 2
gtcgacggat cgggagatct cccgatcccc tatggtgcac tctcagtaca atctgctctg 60
atgccgcata gttaagccag tatctgctcc ctgcttgtgt gttggaggtc gctgagtagt 120
gcgcgagcaa aatttaagct acaacaaggc aaggcttgac cgacaattgc atgaagaatc 180
tgcttagggt taggcgtttt gcgctgcttc gcgatgtacg ggccagatat acgcgttgac 240
attgattatt gactagttat taatagtaat caattacggg gtcattagtt catagcccat 300
atatggagtt ccgcgttaca taacttacgg taaatggccc gcctggctga ccgcccaacg 360
acccccgccc attgacgtca ataatgacgt atgttcccat agtaacgcca atagggactt 420
tccattgacg tcaatgggtg gagtatttac ggtaaactgc ccacttggca gtacatcaag 480
tgtatcatat gccaagtacg ccccctattg acgtcaatga cggtaaatgg cccgcctggc 540
attatgccca gtacatgacc ttatgggact ttcctacttg gcagtacatc tacgtattag 600
tcatcgctat taccatggtg atgcggtttt ggcagtacat caatgggcgt ggatagcggt 660
ttgactcacg gggatttcca agtctccacc ccattgacgt caatgggagt ttgttttggc 720
accaaaatca acgggacttt ccaaaatgtc gtaacaactc cgccccattg acgcaaatgg 780
gcggtaggcg tgtacggtgg gaggtctata taagcagcgc gttttgcctg tactgggtct 840
ctctggttag accagatctg agcctgggag ctctctggct aactagggaa cccactgctt 900
aagcctcaat aaagcttgcc ttgagtgctt caagtagtgt gtgcccgtct gttgtgtgac 960
tctggtaact agagatccct cagacccttt tagtcagtgt ggaaaatctc tagcagtggc 1020
gcccgaacag ggacttgaaa gcgaaaggga aaccagagga gctctctcga cgcaggactc 1080
ggcttgctga agcgcgcacg gcaagaggcg aggggcggcg actggtgagt acgccaaaaa 1140
ttttgactag cggaggctag aaggagagag atgggtgcga gagcgtcagt attaagcggg 1200
ggagaattag atcgcgatgg gaaaaaattc ggttaaggcc aggggaaaag aaaaaatata 1260
aattaaaaca tatagtatgg gcaagcaggg agctagaacg attcgcagtt aatcctggcc 1320
tgttagaaac atcagaaggc tgtagacaaa tactgggaca gctacaacca tcccttcaga 1380
caggatcaga agaacttaga tcattatata atacagtagc aaccctctat tgtgtgcatc 1440
aaaggataga gataaaagac accaaggaag ctttagacaa gatagaggaa gagcaaaaca 1500
aaagtaagac caccgcacag caagcggccg ctgatcttca gacctggagg aggagatatg 1560
agggacaatt ggagaagtga attatataaa tataaagtag taaaaattga accattagga 1620
gtagcaccca ccaaggcaaa gagaagagtg gtgcagagag aaaaaagagc agtgggaata 1680
ggagctttgt tccttgggtt cttgggagca gcaggaagca ctatgggcgc agcgtcaatg 1740
acgctgacgg tacaggccag acaattattg tctggtatag tgcagcagca gaacaatttg 1800
ctgagggcta ttgaggcgca acagcatctg ttgcaactca cagtctgggg catcaagcag 1860
ctccaggcaa gaatcctggc tgtggaaaga tacctaaagg atcaacagct cctggggatt 1920
tggggttgct ctggaaaact catttgcacc actgctgtgc cttggaatgc tagttggagt 1980
aataaatctc tggaacagat ttggaatcac acgacctgga tggagtggga cagagaaatt 2040
aacaattaca caagcttaat acactcctta attgaagaat cgcaaaacca gcaagaaaag 2100
aatgaacaag aattattgga attagataaa tgggcaagtt tgtggaattg gtttaacata 2160
acaaattggc tgtggtatat aaaattattc ataatgatag taggaggctt ggtaggttta 2220
agaatagttt ttgctgtact ttctatagtg aatagagtta ggcagggata ttcaccatta 2280
tcgtttcaga cccacctccc aaccccgagg ggacccgaca ggcccgaagg aatagaagaa 2340
gaaggtggag agagagacag agacagatcc attcgattag tgaacggatc ggcactgcgt 2400
gcgccaattc tgcagacaaa tggcagtatt catccacaat tttaaaagaa aaggggggat 2460
tgggggtac agtgcagggg aaagaatagt agacataata gcaacagaca tacaaactaa 2520
agaattacaa aaacaaatta caaaaattca aaattttcgg gtttattaca gggacagcag 2580
agatccagtt tggttaatta agggtgcagc ggcctccgcg ccgggttttg gcgcctcccg 2640
cgggcgcccc cctcctcacg gcgagcgctg ccacgtcaga cgaagggcgc aggagcgttc 2700
ctgatccttc cgcccggacg ctcaggacag cggcccgctg ctcataagac tcggccttag 2760
aaccccagta tcagcagaag gacattttag gacgggactt gggtgactct agggcactgg 2820
ttttctttcc agagagcgga acaggcgagg aaaagtagtc ccttctcggc gattctgcgg 2880
agggatctcc gtggggcggt gaacgccgat gattatataa ggacgcgccg ggtgtggcac 2940
agctagttcc gtcgcagccg ggatttgggt cgcggttctt gtttgtggat cgctgtgatc 3000
gtcacttggt gagttgcggg ctgctgggct ggccggggct ttcgtggccg ccgggccgct 3060
cggtgggacg gaagcgtgtg gagagaccgc caagggctgt agtctgggtc cgcgagcaag 3120
gttgccctga actgggggtt gggggagcg cacaaaatgg cggctgttcc cgagtcttga 3180
atggaagacg cttgtaaggc gggctgtgag gtcgttgaaa caaggtgggg ggcatggtgg 3240
gcggcaagaa cccaaggtct tgaggccttc gctaatgcgg gaaagctctt attcgggtga 3300
gatgggctgg ggcaccatct ggggaccctg acgtgaagtt tgtcactgac tggagaactc 3360
gggtttgtcg tctggttgcg ggggcggcag ttatgcggtg ccgttgggca gtgcacccgt 3420
acctttggga gcgcgcgcct cgtcgtgtcg tgacgtcacc cgttctgttg gcttataatg 3480
cagggtgggg ccacctgccg gtaggtgtgc ggtaggcttt tctccgtcgc aggacgcagg 3540

gttcgggcct agggtaggct ctcctgaatc gacaggcgcc ggacctctgg tgaggggagg 3600
gataagtgag gcgtcagttt ctttggtcgg ttttatgtac ctatcttctt aagtagctga 3660
agctccggtt ttgaactatg cgctcggggt tggcgagtgt gttttgtgaa gttttttagg 3720
caccttttga aatgtaatca tttgggtcaa tatgtaattt tcagtgttag actagtaaag 3780
cttctgcagg tcgactctag aaaattgtcc gctaaattct ggccgttttt ggctttttg 3840
ttagacagga tccgttaacc tcgagggcgc gccgaattcg atatcaagct tatcgataat 3900
caacctctgg attacaaaat ttgtgaaaga ttgactggta ttcttaacta tgttgctcct 3960
tttacgctat gtggatacgc tgctttaatg cctttgtatc atgctattgc ttcccgtatg 4020
gctttcattt tctcctcctt gtataaatcc tggttgctgt ctctttatga ggagttgtgg 4080
cccgttgtca ggcaacgtgg cgtggtgtgc actgtgtttg ctgacgcaac ccccactggt 4140
tggggcattg ccaccacctg tcagctcctt tccgggactt tcgctttccc cctccctatt 4200
gccacggcgg aactcatcgc cgcctgcctt gcccgctgct ggacaggggc tcggctgttg 4260
ggcactgaca attccgtggt gttgtcgggg aaatcatcgt cctttccttg gctgctcgcc 4320
tgtgttgcca cctggattct gcgcgggacg tccttctgct acgtcccttc ggccctcaat 4380
ccagcggacc ttccttcccg cggcctgctg ccggctctgc ggcctcttcc gcgtcttcgc 4440
cttcgccctc agacgagtcg gatctccctt tgggccgcct ccccgcatcg ataccgtcga 4500
cctcgagacc tagaaaaaca tggagcaatc acaagtagca atacagcagc taccaatgct 4560
gattgtgcct ggctagaagc acaagaggag gaggaggtgg gttttccagt cacacctcag 4620
gtacctttaa gaccaatgac ttacaaggca gctgtagatc ttagccactt tttaaaagaa 4680
aaggggggac tggaagggct aattcactcc caacgaagac aagatatcct tgatctgtgg 4740
atctaccaca cacaaggcta cttccctgat tggcagaact acacaccagg gccagggatc 4800
agatatccac tgacctttgg atggtgctac aagctagtac cagttgagca agagaaggta 4860
gaagaagcca atgaaggaga gaacacccgc ttgttacacc ctgtgagcct gcatgggatg 4920
gatgacccgg agagagaagt attagagtgg aggtttgaca gccgcctagc atttcatcac 4980
atggcccgag agctgcatcc ggactgtact gggtctctct ggttagacca gatctgagcc 5040
tgggagctct ctggctaact agggaaccca ctgcttaagc ctcaataaag cttgccttga 5100
gtgcttcaag tagtgtgtgc ccgtctgttg tgtgactctg gtaactagag atccctcaga 5160
cccttttagt cagtgtggaa aatctctagc agggcccgtt taaacccgct gatcagcctc 5220
gactgtgcct tctagttgcc agccatctgt tgtttgcccc tcccccgtgc cttccttgac 5280
cctggaaggt gccactccca ctgtcctttc ctaataaaat gaggaaattg catcgcattg 5340
tctgagtagg tgtcattcta ttctgggggg tggggtgggg caggacagca agggggagga 5400
ttgggaagac aatagcaggc atgctgggga tgcggtgggc tctatggctt ctgaggcgga 5460
aagaaccagc tggggctcta gggggtatcc ccacgcgccc tgtagcggcg cattaagcgc 5520
ggcgggtgtg gtggttacgc gcagcgtgac cgctacactt gccagcgccc tagcgcccgc 5580
tcctttcgct ttcttccctt cctttctcgc cacgttcgcc ggctttcccc gtcaagctct 5640
aaatcggggg ctccctttag ggttccgatt tagtgcttta cggcacctcg accccaaaaa 5700
acttgattag ggtgatggtt cacgtagtgg gccatcgccc tgatagacgg tttttcgccc 5760
tttgacgttg gagtccacgt tctttaatag tggactcttg ttccaaactg gaacaacact 5820
caaccctatc tcggtctatt cttttgattt ataagggatt ttgccgattt cggcctattg 5880
gttaaaaaat gagctgattt aacaaaaatt taacgcgaat taattctgtg gaatgtgtgt 5940
cagttagggt gtggaaagtc cccaggctcc ccagcaggca gaagtatgca aagcatgcat 6000
ctcaattagt cagcaaccag gtgtggaaag tccccaggct ccccagcagg cagaagtatg 6060
caaagcatgc atctcaatta gtcagcaacc atagtcccgc ccctaactcc gcccatcccg 6120
cccctaactc cgcccagttc cgcccattct ccgccccatg gctgactaat ttttttatt 6180
tatgcagagg ccgaggccgc ctctgcctct gagctattcc agaagtagtg aggaggcttt 6240
tttggaggcc taggcttttg caaaaagctc ccgggagctt gtatatccat tttcggatct 6300
gatcagcacg tgttgacaat taatcatcgg catagtatat cggcatagta taatacgaca 6360
aggtgaggaa ctaaaccatg gccaagttga ccagtgccgt tccggtgctc accgcgcgcg 6420
acgtcgccgg agcggtcgag ttctggaccg accggctcgg gttctcccgg gacttcgtgg 6480
aggacgactt cgccggtgtg gtccgggacg acgtgaccct gttcatcagc gcggtccagg 6540
accaggtggt gccggacaac accctggcct gggtgtgggt gcgcggcctg gacgagctgt 6600
acgccgagtg gtcggaggtc gtgtccacga acttccggga cgcctccggg ccggccatga 6660
ccgagatcgg cgagcagccg tgggggcggg agttcgccct gcgcgacccg gccggcaact 6720
gcgtgcactt cgtggccgag gagcaggact gacacgtgct acgagatttc gattccaccg 6780
ccgccttcta tgaaaggttg ggcttcggaa tcgttttccg ggacgccggc tggatgatcc 6840
tccagcgcgg ggatctcatg ctggagttct tcgcccaccc caacttgttt attgcagctt 6900
ataatggtta caaataaagc aatagcatca caaatttcac aaataaagca ttttttttcac 6960
tgcattctag ttgtggtttg tccaaactca tcaatgtatc ttatcatgtc tgtataccgt 7020
cgacctctag ctagagcttg gcgtaatcat ggtcatagct gtttcctgtg tgaaattgtt 7080
atccgctcac aattccacac aacatacgag ccggaagcat aaagtgtaaa gcctggggtg 7140
cctaatgagt gagctaactc acattaattg cgttgcgctc actgcccgct ttccagtcgg 7200
gaaacctgtc gtgccagctg cattaatgaa tcggccaacg cgcggggaga ggcggtttgc 7260
gtattgggcg ctcttccgct tcctcgctca ctgactcgct gcgctcggtc gttcggctgc 7320
ggcgagcggt atcagctcac tcaaaggcgg taatacggtt atccacagaa tcaggggata 7380
acgcaggaaa gaacatgtga gcaaaaggcc agcaaaaggc caggaaccgt aaaaaggccg 7440
cgttgctggc gtttttccat aggctccgcc cccctgacga gcatcacaaa aatcgacgct 7500
caagtcagag gtggcgaaac ccgacaggac tataaagata ccaggcgttt cccccctggaa 7560

```
gctccctcgt gcgctctcct gttccgaccc tgccgcttac cggatacctg tccgcctttc 7620
tcccttcggg aagcgtggcg ctttctcata gctcacgctg taggtatctc agttcggtgt 7680
aggtcgttcg ctccaagctg ggctgtgtgc acgaaccccc cgttcagccc gaccgctgcg 7740
ccttatccgg taactatcgt cttgagtcca acccggtaag acacgactta tcgccactgg 7800
cagcagccac tggtaacagg attagcagag cgaggtatgt aggcggtgct acagagttct 7860
tgaagtggtg gcctaactac ggctacacta gaagaacagt atttggtatc tgcgctctgc 7920
tgaagccagt taccttcgga aaaagagttg gtagctcttg atccggcaaa caaaccaccg 7980
ctggtagcgg tggttttttt gtttgcaagc agcagattac gcgcagaaaa aaaggatctc 8040
aagaagatcc tttgatcttt tctacggggt ctgacgctca gtggaacgaa aactcacgtt 8100
aagggatttt ggtcatgaga ttatcaaaaa ggatcttcac ctagatcctt ttaaattaaa 8160
aatgaagttt taaatcaatc taaagtatat atgagtaaac ttggtctgac agttaccaat 8220
gcttaatcag tgaggcacct atctcagcga tctgtctatt tcgttcatcc atagttgcct 8280
gactccccgt cgtgtagata actacgatac gggagggctt accatctggc cccagtgctg 8340
caatgatacc gcgagaccca cgctcaccgg ctccagattt atcagcaata aaccagccag 8400
ccggaagggc cgagcgcaga agtggtcctg caactttatc cgcctccatc cagtctatta 8460
attgttgccg ggaagctaga gtaagtagtt cgccagttaa tagtttgcgc aacgttgttg 8520
ccattgctac aggcatcgtg gtgtcacgct cgtcgtttgg tatggcttca ttcagctccg 8580
gttcccaacg atcaaggcga gttacatgat ccccatgtt gtgcaaaaaa gcggttagct 8640
ccttcggtcc tccgatcgtt gtcagaagta agttggccgc agtgttatca ctcatggtta 8700
tggcagcact gcataattct cttactgtca tgccatccgt aagatgcttt tctgtgactg 8760
gtgagtactc aaccaagtca ttctgagaat agtgtatgcg gcgaccgagt tgctcttgcc 8820
cggcgtcaat acgggataat accgcgccac atagcagaac tttaaaagtg ctcatcattg 8880
gaaaacgttc ttcggggcga aaactctcaa ggatcttacc gctgttgaga tccagttcga 8940
tgtaacccac tcgtgcaccc aactgatctt cagcatcttt tactttcacc agcgtttctg 9000
ggtgagcaaa aacaggaagg caaaatgccg caaaaaaggg aataagggcg acacggaaat 9060
gttgaatact catactcttc ctttttcaat attattgaag catttatcag ggttattgtc 9120
tcatgagcgg atacatattt gaatgtattt agaaaaataa acaaataggg gttccgcgca 9180
catttccccg aaaagtgcca cctgac                                      9206
```

<210> 3
<211> 8435
<212> DNA
<213> Artificial Sequence

<220>
<223> Constructed plasmid vector

<400> 3

```
tcaatattgg ccattagcca tattattcat tggttatata gcataaatca atattggcta 60
ttggccattg catacgttgt atctatatca taatatgtac atttatattg gctcatgtcc 120
aatatgaccg ccatgttggc attgattatt gactagttat taatagtaat caattacggg 180
gtcattagtt catagcccat atatggagtt ccgcgttaca taacttacgg taaatggccc 240
gcctggctga ccgcccaacg acccccgccc attgacgtca ataatgacgt atgttcccat 300
agtaacgcca atagggactt tccattgacg tcaatgggtg gagtatttac ggtaaactgc 360
ccacttggca gtacatcaag tgtatcatat gccaagtccg ccccctattg acgtcaatga 420
cggtaaatgg cccgcctggc attatgccca gtacatgacc ttacgggact ttcctacttg 480
gcagtacatc tacgtattag tcatcgctat taccatggtg atgcggtttt ggcagtacac 540
caatgggcgt ggatagcggt ttgactcacg gggatttcca agtctccacc ccattgacgt 600
caatgggagt ttgttttggc accaaaatca acgggacttt ccaaaatgtc gtaacaactg 660
cgatcgcccg ccccgttgac gcaaatgggc ggtaggcgtg tacggtggga ggtctatata 720
agcagagctc gtttagtgaa ccgtcagatc actagaagct ttattgcggt agtttatcac 780
agttaaattg ctaacgcagt cagtgcttct gacacaacag tctcgaactt aagctgcagt 840
gactctctta aggtagcctt gcagaagttg gtcgtgaggc actgggcagg taagtatcaa 900
ggttacaaga caggtttaag gagaccaata gaaactgggc ttgtcgagac agagaagact 960
cttgcgtttc tgataggcac ctattggtct tactgacatc cactttgcct ttctctccac 1020
aggtgtccac tcccagttca attacagctc ttaaggctag agtacttaat acgactcact 1080
ataggctagc ctcgagctta agcttggatc cgccgccacc atgtccgcag caccactggt 1140
cacggcaatg tgtttgctcg gaaatgtgag cttcccatgc gaccgcccgc ccacatgcta 1200
tacccgcgaa ccttccagag ccctcgacat ccttgaagag aacgtgaacc atgaggccta 1260
cgataccctg ctcaatgcca tattgcggtg cggatcgtct ggcagcgtca ttgacgactt 1320
taccctgacc agcccctact tgggcacatg ctcgtactgc caccatactg taccgtgctt 1380
cagccctgtt aagatcgagc aggtctggga cgaagcggac gataacacca tacgcataca 1440
gacttccgcc cagtttggat acgaccaaag cggagcagca agcgcaaaca agtaccgcta 1500
catgtcgctt aagcagatgt acccatacga tgttccagat tacgctaccg ttaaagaagg 1560
caccatggat gacatcaaga ttagcacctc aggaccgtgt agaaggctta gctacaaagg 1620
```

atactttctc ctcgcaaaat gccctccagg ggacagcgta acggttagca tagtgagtag 1680
caactcagca acgtcatgta cactggcccg caagataaaa ccaaaattcg tgggacggga 1740
aaaatatgat ctacctcccg ttcacggtaa aaaaattcct tgcacagtgt acgaccgtct 1800
ggccgctaca actgcaggct acatcactat gcacaggccg agaccgcacg cttatacatc 1860
ctacctggaa gaatcatcag ggaaagttta cgcaaagccg ccatctggga agaacattac 1920
gtatgagtgc aagtgcggcg actacaagac cggaaccgtt tcgacccgca ccgaaatcac 1980
tggttgcacc gccatcaagc agtgcgtcgc ctataagagc gaccaaacga agtgggtctt 2040
caactcaccg gacttgatca gacatgacga ccacacggcc caagggaaat tgcatttgcc 2100
tttcaagttg atcccgagta cctgcatggt ccctgttgcc cacgcgccga atgtaataca 2160
tggctttaaa cacatcagcc tccaattaga tacagaccac ttgacattgc tcaccaccag 2220
gagactaggg gcaaacccgg aaccaaccac tgaatggatc gtcggaaaga cggtcagaaa 2280
cttcaccgtc gaccgagatg gcctggaata catatgggga aatcatgagc cagtgagggt 2340
ctatgcccaa gagtcagcac caggagaccc tcacggatgg ccacacgaaa tagtacagca 2400
ttactaccat cgccatcctg tgtacaccat cttagccgtc gcatcagcta ccgtggcgat 2460
gatgattggc gtaactgttg cagtgttatg tgcctgtaaa gcgcgccgtg agtgcctgac 2520
gccatacgcc ctggccccaa acgccgtaat cccaacttcg ctggcactct tgtgctgcgt 2580
taggtcggcc aatgctgaaa cgttcaccga gaccatgagt tacttgtggt cgaacagtca 2640
gccgttcttc tgggtccagt tgtgcatacc tttggccgct ttcatcgttc taatgcgctg 2700
ctgctcctgc tgcctgcctt ttttagtggt tgccggcgcc tacctggcga aggtagacgc 2760
ctacgaacat gcgaccactg ttccaaatgt gccacagata ccgtataagg cacttgttga 2820
aagggcaggg tatgccccgc tcaatttgga gatcactgtc atgtcctcgg aggttttgcc 2880
ttccaccaac caagagtaca ttacctgcaa attcaccact gtggtcccct ccccaaaaat 2940
caaatgctgc ggctccttgg aatgtcagcc ggccgctcat gcaggctata cctgcaaggt 3000
cttcggaggg gtctaccccct ttatgtgggg aggagcgcaa tgtttttgcg acagtgagaa 3060
cagccagatg agtgaggcgt acgtcgaatt gtcagcagat tgcgcgtctg accacgcgca 3120
ggcgattaag gtgcacactg ccgcgatgaa agtaggactg cgtattgtgt acgggaacac 3180
taccagtttc ctagatgtgt acgtgaacgg agtcacacca ggaacgtcta aagacttgaa 3240
agtcatagct ggaccaattt cagcatcgtt tacgccattc gatcataagg tcgttatcca 3300
tcgcggcctg gtgtacaact atgacttccc ggaatatgga gcgatgaaac caggagcgtt 3360
tggagacatt caagctacct ccttgactag caaggatctc atcgccagca cagacattag 3420
gctactcaag ccttccgcca agaacgtgca tgtcccgtac acgcaggcct catcaggatt 3480
tgagatgtgg aaaaacaact caggccgccc actgcaggaa accgcacctt tcgggtgtaa 3540
gattgcagta aatccgctcc gagcggtgga ctgttcatac gggaacattc ccatttctat 3600
tgacatcccg aacgctgcct ttatcaggac atcagatgca ccactggtct caacagtcaa 3660
atgtgaagtc agtgagtgca cttattcagc agacttcggc gggatggcca ccctgcagta 3720
tgtatccgac cgcgaaggtc aatgccccgt acattcgcat tcgagcacag caactctcca 3780
agagtcgaca gtacatgtcc tggagaaagg agcggtgaca gtacacttta gcaccgcgag 3840
tccacaggcg aactttatcg tatcgctgtg tgggaagaag acaacatgca atgcagaatg 3900
taaaccacca gctgaccata tcgtgagcac cccgcacaaa aatgaccaag aatttcaagc 3960
cgccatctca aaaacatcat ggagttggct gtttgccctt ttcggcggcg cctcgtcgct 4020
attaattata ggacttatga tttttgcttg cagcatgatg ctgactagca cacgaagatg 4080
aggatccgaa ttggccgctt ccctttagtg agggttaatg cttcgagcag acatgataag 4140
atacattgat gagtttggac aaaccacaac tagaatgcag tgaaaaaaat gctttatttg 4200
tgaaatttgt gatgctattg ctttatttgt aaccattata agctgcaata aacaagttaa 4260
caacaacaat tgcattcatt ttatgtttca ggttcagggg gagatgtggg aggtttttta 4320
aagcaagtaa aacctctaca aatgtggtaa aatccgataa ggatcgatcc gggctggcgt 4380
aatagcgaag aggcccgcac cgatcgccct tcccaacagt tgcgcagcct gaatggcgaa 4440
tggacgcgcc ctgtagcggc gcattaagcg cggcgggtgt ggtggttacg cgcagcgtga 4500
ccgctacact tgccagcgcc ctagcgcccg ctcctttcgc tttcttccct tcctttctcg 4560
ccacgttcgc cggctttccc cgtcaagctc taaatcgggg gctcccttta gggttccgat 4620
ttagagcttt acggcacctc gaccgcaaaa aacttgattt gggtgatggt tcacgtagtg 4680
ggccatcgcc ctgatagacg gtttttcgcc ctttgacgtt ggagtccacg ttctttaata 4740
gtggactctt gttccaaact ggaacaacac tcaaccctat ctcggtctat tcttttgatt 4800
tataagggat tttgccgatt tcggcctatt ggttaaaaaa tgagctgatt taacaaatat 4860
ttaacgcgaa ttttaacaaa atattaacgt ttacaatttc gcctgatgcg gtattttctc 4920
cttacgcatc tgtgcggtat ttcacaccgc atacgcggat ctgcgcagca ccatggcctg 4980
aaataacctc tgaaagagga acttggttag gtaccttctg aggcggaaag aaccagctgt 5040
ggaatgtgtg tcagttaggg tgtggaaagt ccccaggctc cccagcaggc agaagtatgc 5100
aaagcatgca tctcaattag tcagcaacca ggtgtggaaa gtccccaggc tccccagcag 5160
gcagaagtat gcaaagcatg catctcaatt agtcagcaac catagtcccg cccctaactc 5220
cgcccatccc gcccctaact ccgcccagtt ccgcccattc tccgccccat ggctgactaa 5280
ttttttttat ttatgcagag gccgaggccg cctcggcctc tgagctattc cagaagtagt 5340
gaggaggctt ttttggaggc ctaggctttt gcaaaaagct tgattcttct gacacaacag 5400
tctcgaactt aaggctagag ccaccatgat tgaacaagat ggattgcacg caggttctcc 5460
ggccgcttgg gtggagaggc tattcggcta tgactgggca caacagacaa tcggctgctc 5520
tgatgccgcc gtgttccggc tgtcagcgca ggggcgcccg gttcttttttg tcaagaccga 5580
cctgtccggt gccctgaatg aactgcagga cgaggcagcg cggctatcgt ggctggccac 5640

```
gacgggcgtt ccttgcgcag ctgtgctcga cgttgtcact gaagcgggaa gggactggct 5700
gctattgggc gaagtgccgg ggcaggatct cctgtcatct caccttgctc ctgccgagaa 5760
agtatccatc atggctgatg caatgcggcg gctgcatacg cttgatccgg ctacctgccc 5820
attcgaccac caagcgaaac atcgcatcga gcgagcacgt actcggatgg aagccggtct 5880
tgtcgatcag gatgatctgg acgaagagca tcaggggctc gcgccagccg aactgttcgc 5940
caggctcaag gcgcgcatgc ccgacggcga ggatctcgtc gtgacccatg gcgatgcctg 6000
cttgccgaat atcatggtgg aaaatggccg cttttctgga ttcatcgact gtggccggct 6060
gggtgtggcg gaccgctatc aggacatagc gttggctacc cgtgatattg ctgaagagct 6120
tggcggcgaa tgggctgacc gcttcctcgt gctttacggt atcgccgctc ccgattcgca 6180
gcgcatcgcc ttctatcgcc ttcttgacga gttcttctga gcgggactct ggggttcgaa 6240
atgaccgacc aagcgacgcc caacctgcca tcacgatggc cgcaataaaa tatctttatt 6300
ttcattacat ctgtgtgttg gttttttgtg tgaatcgata gcgataagga tccgcgtatg 6360
gtgcactctc agtacaatct gctctgatgc cgcatagtta agccagcccc gacacccgcc 6420
aacacccgct gacgcgccct gacgggcttg tctgctcccg gcatccgctt acagacaagc 6480
tgtgaccgtc tccgggagct gcatgtgtca gaggttttca ccgtcatcac cgaaacgcgc 6540
gagacgaaag ggcctcgtga tacgcctatt tttataggtt aatgtcatga taataatggt 6600
ttcttagacg tcaggtggca cttttcgggg aaatgtgcgc ggaacccta tttgtttatt 6660
tttctaaata cattcaaata tgtatccgct catgagacaa taaccctgat aaatgcttca 6720
ataatattga aaaaggaaga gtatgagtat tcaacatttc cgtgtcgccc ttattccctt 6780
ttttgcggca ttttgccttc ctgtttttgc tcacccagaa acgctggtga aagtaaaaga 6840
tgctgaagat cagttgggtg cacgagtggg ttacatcgaa ctggatctca acagcggtaa 6900
gatccttgag agttttcgcc ccgaagaacg ttttccaatg atgagcactt ttaaagttct 6960
gctatgtggc gcggtattat cccgtattga cgccgggcaa gagcaactcg gtcgccgcat 7020
acactattct cagaatgact tggttgagta ctcaccagtc acagaaaagc atcttacgga 7080
tggcatgaca gtaagagaat tatgcagtgc tgccataacc atgagtgata acactgcggc 7140
caacttactt ctgacaacga tcggaggacc gaaggagcta accgcttttt tgcacaacat 7200
gggggatcat gtaactcgcc ttgatcgttg ggaaccggag ctgaatgaag ccataccaaa 7260
cgacgagcgt gacaccacga tgcctgtagc aatggcaaca acgttgcgca aactattaac 7320
tggcgaacta cttactctag cttcccggca acaattaata gactggatgg aggcggataa 7380
agttgcagga ccacttctgc gctcggccct tccggctggc tggtttattg ctgataaatc 7440
tggagccggt gagcgtgggt ctcgcggtat cattgcagca ctggggccag atggtaagcc 7500
ctcccgtatc gtagttatct acacgacggg gagtcaggca actatggatg aacgaaatag 7560
acagatcgct gagataggtg cctcactgat taagcattgg taactgtcag accaagttta 7620
ctcatatata ctttagattg atttaaaact tcatttttaa tttaaaagga tctaggtgaa 7680
gatccttttt gataatctca tgaccaaaat cccttaacgt gagttttcgt tccactgagc 7740
gtcagacccc gtagaaaaga tcaaaggatc ttcttgagat cctttttttc tgcgcgtaat 7800
ctgctgcttg caaacaaaaa aaccaccgct accagcggtg gtttgtttgc cggatcaaga 7860
gctaccaact ctttttccga aggtaactgg cttcagcaga gcgcagatac caaatactgt 7920
ccttctagtg tagccgtagt taggccacca cttcaagaac tctgtagcac cgcctacata 7980
cctcgctctg ctaatcctgt taccagtggc tgctgccagt ggcgataagt cgtgtcttac 8040
cgggttggac tcaagacgat agttaccgga taaggcgcag cggtcgggct gaacgggggg 8100
ttcgtgcaca cagcccagct tggagcgaac gacctacacc gaactgagat acctacagcg 8160
tgagctatga gaaagcgcca cgcttcccga agggagaaag gcggacaggt atccggtaag 8220
cggcagggtc ggaacaggag agcgcacgag ggagcttcca gggggaaacg cctggtatct 8280
ttatagtcct gtcgggtttc gccacctctg acttgagcgt cgatttttgt gatgctcgtc 8340
aggggggcgg agcctatgga aaaacgccag caacgcggcc tttttacggt tcctggcctt 8400
ttgctggcct tttgctcaca tggctcgaca gatct                          8435
```

<210> 4
<211> 11092
<212> DNA
<213> Artificial Sequence

<220>
<223> Constructed plasmid vector

<400> 4

```
gtcgacggat cgggagatct cccgatcccc tatggtgcac tctcagtaca atctgctctg 60
atgccgcata gttaagccag tatctgctcc ctgcttgtgt gttggaggtc gctgagtagt 120
gcgcgagcaa aatttaagct acaacaaggc aaggcttgac cgacaattgc atgaagaatc 180
tgcttagggt taggcgtttt gcgctgcttc gcgatgtacg ggccagatat acgcgttgac 240
attgattatt gactagttat taatagtaat caattacggg gtcattagtt catagcccat 300
atatggagtt ccgcgttaca taacttacgg taaatggccc gcctggctga ccgcccaacg 360
acccccgccc attgacgtca ataatgacgt atgttcccat agtaacgcca atagggactt 420
tccattgacg tcaatgggtg gagtatttac ggtaaactgc ccacttggca gtacatcaag 480
```

tgtatcatat gccaagtacg ccccctattg acgtcaatga cggtaaatgg cccgcctggc 540
attatgccca gtacatgacc ttatgggact ttcctacttg gcagtacatc tacgtattag 600
tcatcgctat taccatggtg atgcggtttt ggcagtacat caatgggcgt ggatagcggt 660
ttgactcacg gggatttcca agtctccacc ccattgacgt caatgggagt ttgttttggc 720
accaaaatca acgggacttt ccaaaatgtc gtaacaactc cgccccattg acgcaaatgg 780
gcggtaggcg tgtacggtgg gaggtctata taagcagcgc gttttgcctg tactgggtct 840
ctctggttag accagatctg agcctgggag ctctctggct aactagggaa cccactgctt 900
aagcctcaat aaagcttgcc ttgagtgctt caagtagtgt gtgcccgtct gttgtgtgac 960
tctggtaact agagatccct cagacccttt tagtcagtgt ggaaaatctc tagcagtggc 1020
gcccgaacag ggacttgaaa gcgaaaggga aaccagagga gctctctcga cgcaggactc 1080
ggcttgctga agcgcgcacg gcaagaggcg aggggcggcg actggtgagt acgccaaaaa 1140
ttttgactag cggaggctag aaggagagag atgggtgcga gagcgtcagt attaagcggg 1200
ggagaattag atcgcgatgg gaaaaaattc ggttaaggcc agggggaaag aaaaaatata 1260
aattaaaaca tatagtatgg gcaagcaggg agctagaacg attcgcagtt aatcctggcc 1320
tgttagaaac atcagaaggc tgtagacaaa tactgggaca gctacaacca tcccttcaga 1380
caggatcaga agaacttaga tcattatata atacagtagc aaccctctat tgtgtgcatc 1440
aaaggataga gataaaagac accaaggaag ctttagacaa gatagaggaa gagcaaaaca 1500
aaagtaagac caccgcacag caagcggccg ctgatcttca gacctggagg aggagatatg 1560
agggacaatt ggagaagtga attatataaa tataaagtag taaaaattga accattagga 1620
gtagcaccca ccaaggcaaa gagaagagtg gtgcagagag aaaaaagagc agtgggaata 1680
ggagctttgt tccttgggtt cttgggagca gcaggaagca ctatgggcgc agcgtcaatg 1740
acgctgacgg tacaggccag acaattattg tctggtatag tgcagcagca gaacaatttg 1800
ctgagggcta ttgaggcgca acagcatctg ttgcaactca cagtctgggg catcaagcag 1860
ctccaggcaa gaatcctggc tgtggaaaga tacctaaagg atcaacagct cctggggatt 1920
tggggttgct ctggaaaact catttgcacc actgctgtgc cttggaatgc tagttggagt 1980
aataaatctc tggaacagat ttggaatcac acgacctgga tggagtggga cagagaaatt 2040
aacaattaca caagcttaat acactcctta attgaagaat cgcaaaacca gcaagaaaag 2100
aatgaacaag aattattgga attagataaa tgggcaagtt tgtggaattg gtttaacata 2160
acaaattggc tgtggtatat aaaattattc ataatgatag taggaggctt ggtaggttta 2220
agaatagttt ttgctgtact ttctatagtg aatagagtta ggcagggata ttcaccatta 2280
tcgtttcaga cccacctccc aaccccgagg ggacccgaca ggcccgaagg aatagaagaa 2340
gaaggtggag agagagacag agacagatcc attcgattag tgaacggatc ggcactgcgt 2400
gcgccaattc tgcagacaaa tggcagtatt catccacaat tttaaaagaa aaggggggat 2460
tgggggtac agtgcagggg aaagaatagt agacataata gcaacagaca tacaaactaa 2520
agaattacaa aaacaaatta caaaaattca aaattttcgg gtttattaca gggacagcag 2580
agatccagtt tggttaatta agggtgcagc ggcctccgcg ccgggttttg gcgcctcccg 2640
cgggcgcccc cctcctcacg gcgagcgctg ccacgtcaga cgaagggcgc aggagcgttc 2700
ctgatccttc cgcccggacg ctcaggacag cggcccgctg ctcataagac tcggccttag 2760
aaccccagta tcagcagaag gacattttag gacgggactt gggtgactct agggcactgg 2820
ttttctttcc agagagcgga acaggcgagg aaaagtagtc ccttctcggc gattctgcgg 2880
agggatctcc gtggggcggt gaacgccgat gattatataa ggacgcgccg ggtgtggcac 2940
agctagttcc gtcgcagccg ggatttgggt cgcggttctt gtttgtggat cgctgtgatc 3000
gtcacttggt gagttgcggg ctgctgggct ggccggggct ttcgtggccg ccgggccgct 3060
cggtgggacg gaagcgtgtg gagagaccgc caagggctgt agtctgggtc cgcgagcaag 3120
gttgccctga actgggggtt gggggggagcg cacaaaatgg cggctgttcc cgagtcttga 3180
atggaagacg cttgtaaggc gggctgtgag gtcgttgaaa caaggtgggg ggcatggtgg 3240
gcggcaagaa cccaaggtct tgaggccttc gctaatgcgg gaaagctctt attcgggtga 3300
gatgggctgg ggcaccatct ggggaccctg acgtgaagtt tgtcactgac tggagaactc 3360
gggtttgtcg tctggttgcg ggggcggcag ttatgcggtg ccgttgggca gtgcacccgt 3420
acctttggga gcgcgcgcct cgtcgtgtcg tgacgtcacc cgttctgttg gcttataatg 3480
cagggtgggg ccacctgccg gtaggtgtgc ggtaggcttt tctccgtcgc aggacgcagg 3540
gttcgggcct agggtaggct ctcctgaatc gacaggcgcc ggacctctgg tgaggggagg 3600
gataagtgag gcgtcagttt ctttggtcgg ttttatgtac ctatcttctt aagtagctga 3660
agctccggtt ttgaactatg cgctcggggt tggcgagtgt gttttgtgaa gtttttagg 3720
caccttttga aatgtaatca tttgggtcaa tatgtaattt tcagtgttag actagtaaag 3780
cttctgcagg tcgactctag aaaattgtcc gctaaattct ggccgttttt ggctttttg 3840
ttagacagga tctggcctcg gcggccaagc ttggcaatcc ggtactgttg gtaaagccac 3900
catggaagat gccaaaaaca ttaagaaggg cccagcgcca ttctacccac tcgaagacgg 3960
gaccgccggc gagcagctgc acaaagccat gaagcgctac gccctggtgc ccggcaccat 4020
cgcctttacc gacgcacata tcgaggtgga cattacctac gccgagtact tcgagatgag 4080
cgttcggctg gcagaagcta tgaagcgcta tgggctgaat acaaaccatc ggatcgtggt 4140
gtgcagcgag aatagcttgc agttcttcat gcccgtgttg ggtgccctgt tcatcggtgt 4200
ggctgtggcc ccagctaacg acatctacaa cgagcgcgag ctgctgaaca gcatgggcat 4260
cagccagccc accgtcgtat tcgtgagcaa gaaagggctg caaaagatcc tcaacgtgca 4320
aaagaagcta ccgatcatac aaaagatcat catcatggat agcaagaccg actaccaggg 4380
cttccaaagc atgtacacct tcgtgacttc ccatttgcca cccggcttca acgagtacga 4440
cttcgtgccc gagagcttcg accgggacaa aaccatcgcc ctgatcatga acagtagtgg 4500

cagtaccgga ttgcccaagg gcgtagccct accgcaccgc accgcttgtg tccgattcag 4560
tcatgcccgc gaccccatct tcggcaacca gatcatcccc gacaccgcta tcctcagcgt 4620
ggtgccattt caccacggct tcggcatgtt caccacgctg ggctacttga tctgcggctt 4680
tcgggtcgtg ctcatgtacc gcttcgagga ggagctattc ttgcgcagct tgcaagacta 4740
taagattcaa tctgccctgc tggtgcccac actatttagc ttcttcgcta agagcactct 4800
catcgacaag tacgacctaa gcaacttgca cgagatcgcc agcggcgggg cgccgctcag 4860
caaggaggta ggtgaggccg tggccaaacg cttccaccta ccaggcatcc gccagggcta 4920
cggcctgaca gaaacaacca gcgccattct gatcaccccc gaaggggacg acaagcctgg 4980
cgcagtaggc aaggtggtgc ccttcttcga ggctaaggtg gtggacttgg acaccggtaa 5040
gacactgggt gtgaaccagc gcggcgagct gtgcgtccgt ggccccatga tcatgagcgg 5100
ctacgttaac aaccccgagg ctacaaacgc tctcatcgac aaggacggct ggctgcacag 5160
cggcgacatc gcctactggg acgaggacga gcacttcttc atcgtggacc ggctgaagag 5220
cctgatcaaa tacaagggct accaggtagc cccagccgaa ctggagagca tcctgctgca 5280
acaccccaac atcttcgacg ccggggtcgc cggcctgccc gacgacgatg ccggcgagct 5340
gcccgccgca gtcgtcgtgc tggaacacgg taaaaccatg accgagaagg agatcgtgga 5400
ctatgtggcc agccaggtta caaccgccaa gaagctgcgc ggtggtgttg tgttcgtgga 5460
cgaggtgcct aaaggactga ccggcaagtt ggacgcccgc aagatccgcg agattctcat 5520
taaggccaag aagggcggca agatcgccgt gaattctgct tgcaagaact ggttcagtag 5580
cttaagccac tttgtgatcc accttaacag ccacggcttc cctcccgagg tggaggagca 5640
ggccgccggc accctgccca tgagctgcgc ccaggagagc ggcatggata gacaccctgc 5700
tgcttgcgcc agcgccagga tcaacgtcta actgcagtct agaacctcga gggcgcgccg 5760
aattcgatat caagcttatc gataatcaac ctctggatta caaaatttgt gaaagattga 5820
ctggtattct taactatgtt gctcctttta cgctatgtgg atacgctgct ttaatgcctt 5880
tgtatcatgc tattgcttcc cgtatggctt tcattttctc ctccttgtat aaatcctggt 5940
tgctgtctct ttatgaggag ttgtggcccg ttgtcaggca acgtggcgtg gtgtgcactg 6000
tgtttgctga cgcaacccccc actggttggg gcattgccac cacctgtcag ctcctttccg 6060
ggactttcgc tttccccctc cctattgcca cggcggaact catcgccgcc tgccttgccc 6120
gctgctggac aggggctcgg ctgttgggca ctgacaattc cgtggtgttg tcggggaaat 6180
catcgtcctt tccttggctg ctcgcctgtg ttgccacctg gattctgcgc gggacgtcct 6240
tctgctacgt cccttcggcc ctcaatccag cggaccttcc ttcccgcggc ctgctgccgg 6300
ctctgcggcc tcttccgcgt cttcgccttc gccctcagac gagtcggatc tccctttggg 6360
ccgcctcccc gcatcgatac cgtcgacctc gagacctaga aaaacatgga gcaatcacaa 6420
gtagcaatac agcagctacc aatgctgatt gtgcctggct agaagcacaa gaggaggagg 6480
aggtgggttt tccagtcaca cctcaggtac ctttaagacc aatgacttac aaggcagctg 6540
tagatcttag ccacttttta aaagaaaagg ggggactgga agggctaatt cactcccaac 6600
gaagacaaga tatccttgat ctgtggatct accacacaca aggctacttc cctgattggc 6660
agaactacac accagggcca gggatcagat atccactgac ctttggatgg tgctacaagc 6720
tagtaccagt tgagcaagag aaggtagaag aagccaatga aggagagaac acccgcttgt 6780
tacaccctgt gagcctgcat gggatggatg acccggagag agaagtatta gagtggaggt 6840
ttgacagccg cctagcattt catcacatgg cccgagagct gcatccggac tgtactgggt 6900
ctctctggtt agaccagatc tgagcctggg agctctctgg ctaactaggg aacccactgc 6960
ttaagcctca ataaagcttg ccttgagtgc ttcaagtagt gtgtgcccgt ctgttgtgtg 7020
actctggtaa ctagagatcc ctcagaccct tttagtcagt gtggaaaatc tctagcaggg 7080
cccgtttaaa cccgctgatc agcctcgact gtgccttcta gttgccagcc atctgttgtt 7140
tgcccctccc ccgtgccttc cttgaccctg gaaggtgcca ctcccactgt cctttcctaa 7200
taaaatgagg aaattgcatc gcattgtctg agtaggtgtc attctattct gggggggtggg 7260
gtggggcagg acagcaaggg ggaggattgg gaagacaata gcaggcatgc tggggatgcg 7320
gtgggctcta tggcttctga ggcggaaaga accagctggg gctctagggg gtatccccac 7380
gcgccctgta gcggcgcatt aagcgcggcg ggtgtggtgg ttacgcgcag cgtgaccgct 7440
acacttgcca gcgccctagc gcccgctcct ttcgctttct tcccttcctt tctcgccacg 7500
ttcgccggct ttccccgtca agctctaaat cgggggctcc ctttagggtt ccgatttagt 7560
gctttacggc acctcgaccc caaaaaactt gattagggtg atggttcacg tagtgggcca 7620
tcgccctgat agacggtttt tcgccctttg acgttggagt ccacgttctt taatagtgga 7680
ctcttgttcc aaactggaac aacactcaac cctatctcgg tctattcttt tgatttataa 7740
gggattttgc cgatttcggc ctattggtta aaaaatgagc tgatttaaca aaaatttaac 7800
gcgaattaat tctgtggaat gtgtgtcagt tagggtgtgg aaagtcccca ggctccccag 7860
caggcagaag tatgcaaagc atgcatctca attagtcagc aaccaggtgt ggaaagtccc 7920
caggctcccc agcaggcaga agtatgcaaa gcatgcatct caattagtca gcaaccatag 7980
tcccgccccc aactccgccc atcccgcccc taactccgcc cagttccgcc cattctccgc 8040
cccatggctg actaattttt tttatttatg cagaggccga ggccgcctct gcctctgagc 8100
tattccagaa gtagtgagga ggcttttttg gaggcctagg cttttgcaaa aagctcccgg 8160
gagcttgtat atccattttc ggatctgatc agcacgtgtt gacaattaat catcggcata 8220
gtatatcggc atagtataat acgacaaggt gaggaactaa accatggcca agttgaccag 8280
tgccgttccg gtgctcaccg cgcgcgacgt cgccggagcg gtcgagttct ggaccgaccg 8340
gctcgggttc tcccgggact tcgtggagga cgacttcgcc ggtgtggtcc gggacgacgt 8400
gaccctgttc atcagcgcgg tccaggacca ggtggtgccg gacaacaccc tggcctgggt 8460
gtgggtgcgc ggcctggacg agctgtacgc cgagtggtcg gaggtcgtgt ccacgaactt 8520

ccgggacgcc tccgggccgg ccatgaccga gatcggcgag cagccgtggg ggcgggagtt 8580
cgccctgcgc gacccggccg gcaactgcgt gcacttcgtg gccgaggagc aggactgaca 8640
cgtgctacga gatttcgatt ccaccgccgc cttctatgaa aggttgggct tcggaatcgt 8700
tttccgggac gccggctgga tgatcctcca gcgcggggat ctcatgctgg agttcttcgc 8760
ccaccccaac ttgtttattg cagcttataa tggttacaaa taaagcaata gcatcacaaa 8820
tttcacaaat aaagcatttt tttcactgca ttctagttgt ggtttgtcca aactcatcaa 8880
tgtatcttat catgtctgta taccgtcgac ctctagctag agcttggcgt aatcatggtc 8940
atagctgttt cctgtgtgaa attgttatcc gctcacaatt ccacacaaca tacgagccgg 9000
aagcataaag tgtaaagcct ggggtgccta atgagtgagc taactcacat taattgcgtt 9060
gcgctcactg cccgctttcc agtcgggaaa cctgtcgtgc cagctgcatt aatgaatcgg 9120
ccaacgcgcg gggagaggcg gtttgcgtat tgggcgctct tccgcttcct cgctcactga 9180
ctcgctgcgc tcggtcgttc ggctgcggcg agcggtatca gctcactcaa aggcggtaat 9240
acggttatcc acagaatcag gggataacgc aggaaagaac atgtgagcaa aaggccagca 9300
aaaggccagg aaccgtaaaa aggccgcgtt gctggcgttt ttccataggc tccgcccccc 9360
tgacgagcat cacaaaaatc gacgctcaag tcagaggtgg cgaaacccga caggactata 9420
aagataccag gcgtttcccc ctggaagctc cctcgtgcgc tctcctgttc cgaccctgcc 9480
gcttaccgga tacctgtccg cctttctccc ttcgggaagc gtggcgcttt ctcatagctc 9540
acgctgtagg tatctcagtt cggtgtaggt cgttcgctcc aagctgggct gtgtgcacga 9600
acccccccgtt cagcccgacc gctgcgcctt atccggtaac tatcgtcttg agtccaaccc 9660
ggtaagacac gacttatcgc cactggcagc agccactggt aacaggatta gcagagcgag 9720
gtatgtaggc ggtgctacag agttcttgaa gtggtggcct aactacggct acactagaag 9780
aacagtattt ggtatctgcg ctctgctgaa gccagttacc ttcggaaaaa gagttggtag 9840
ctcttgatcc ggcaaacaaa ccaccgctgg tagcggtggt ttttttgttt gcaagcagca 9900
gattacgcgc agaaaaaaag gatctcaaga agatcctttg atcttttcta cggggtctga 9960
cgctcagtgg aacgaaaact cacgttaagg gattttggtc atgagattat caaaaaggat 10020
cttcacctag atccttttaa attaaaaatg aagttttaaa tcaatctaaa gtatatatga 10080
gtaaacttgg tctgacagtt accaatgctt aatcagtgag gcacctatct cagcgatctg 10140
tctatttcgt tcatccatag ttgcctgact ccccgtcgtg tagataacta cgatacggga 10200
gggcttacca tctggcccca gtgctgcaat gataccgcga gacccacgct caccggctcc 10260
agatttatca gcaataaacc agccagccgg aagggccgag cgcagaagtg gtcctgcaac 10320
tttatccgcc tccatccagt ctattaattg ttgccgggaa gctagagtaa gtagttcgcc 10380
agttaatagt ttgcgcaacg ttgttgccat tgctacaggc atcgtggtgt cacgctcgtc 10440
gtttggtatg gcttcattca gctccggttc ccaacgatca aggcgagtta catgatcccc 10500
catgttgtgc aaaaaagcgg ttagctcctt cggtcctccg atcgttgtca gaagtaagtt 10560
ggccgcagtg ttatcactca tggttatggc agcactgcat aattctctta ctgtcatgcc 10620
atccgtaaga tgcttttctg tgactggtga gtactcaacc aagtcattct gagaatagtg 10680
tatgcggcga ccgagttgct cttgcccggc gtcaatacgg gataataccg cgccacatag 10740
cagaacttta aaagtgctca tcattggaaa acgttcttcg gggcgaaaac tctcaaggat 10800
cttaccgctg ttgagatcca gttcgatgta acccactcgt gcacccaact gatcttcagc 10860
atcttttact ttcaccagcg tttctgggtg agcaaaaaca ggaaggcaaa atgccgcaaa 10920
aaagggaata agggcgacac ggaaatgttg aatactcata ctcttccttt ttcaatatta 10980
ttgaagcatt tatcagggtt attgtctcat gagcggatac atatttgaat gtatttagaa 11040
aaataaacaa atagggggttc cgcgcacatt tccccgaaaa gtgccacctg ac 11092

<210> 5
<211> 10401
<212> DNA
<213> Artificial Sequence

<220>
<223> Constructed plasmid vector

<400> 5
gtcgacggat cgggagatct cccgatcccc tatggtgcac tctcagtaca atctgctctg 60
atgccgcata gttaagccag tatctgctcc ctgcttgtgt gttggaggtc gctgagtagt 120
gcgcgagcaa aatttaagct acaacaaggc aaggcttgac cgacaattgc atgaagaatc 180
tgcttagggt taggcgtttt gcgctgcttc gcgatgtacg ggccagatat acgcgttgac 240
attgattatt gactagttat taatagtaat caattacggg gtcattagtt catagcccat 300
atatggagtt ccgcgttaca taacttacgg taaatggccc gcctggctga ccgcccaacg 360
acccccgccc attgacgtca ataatgacgt atgttcccat agtaacgcca atagggactt 420
tccattgacg tcaatgggtg gagtatttac ggtaaactgc ccacttggca gtacatcaag 480
tgtatcatat gccaagtacg ccccctattg acgtcaatga cggtaaatgg cccgcctggc 540
attatgccca gtacatgacc ttatgggact ttcctacttg gcagtacatc tacgtattag 600
tcatcgctat taccatggtg atgcggtttt ggcagtacat caatgggcgt ggatagcggt 660
ttgactcacg gggatttcca agtctccacc ccattgacgt caatgggagt ttgttttggc 720

accaaaatca acgggacttt ccaaaatgtc gtaacaactc cgccccattg acgcaaatgg 780
gcggtaggcg tgtacggtgg gaggtctata taagcagcgc gttttgcctg tactgggtct 840
ctctggttag accagatctg agcctgggag ctctctggct aactagggaa cccactgctt 900
aagcctcaat aaagcttgcc ttgagtgctt caagtagtgt gtgcccgtct gttgtgtgac 960
tctggtaact agagatccct cagacccttt tagtcagtgt ggaaaatctc tagcagtggc 1020
gcccgaacag ggacttgaaa gcgaaaggga aaccagagga gctctctcga cgcaggactc 1080
ggcttgctga agcgcgcacg gcaagaggcg aggggcggcg actggtgagt acgccaaaaa 1140
ttttgactag cggaggctag aaggagagag atgggtgcga gagcgtcagt attaagcggg 1200
ggagaattag atcgcgatgg gaaaaaattc ggttaaggcc aggggaaaag aaaaaatata 1260
aattaaaaca tatagtatgg gcaagcaggg agctagaacg attcgcagtt aatcctggcc 1320
tgttagaaac atcagaaggc tgtagacaaa tactgggaca gctacaacca tcccttcaga 1380
caggatcaga agaacttaga tcattatata atacagtagc aaccctctat tgtgtgcatc 1440
aaaggataga gataaaagac accaaggaag ctttagacaa gatagaggaa gagcaaaaca 1500
aaagtaagac caccgcacag caagcggccg ctgatcttca gacctggagg aggagatatg 1560
agggacaatt ggagaagtga attatataaa tataaagtag taaaaattga accattagga 1620
gtagcaccca ccaaggcaaa gagaagagtg gtgcagagag aaaaaagagc agtgggaata 1680
ggagctttgt tccttgggtt cttgggagca gcaggaagca ctatgggcgc agcgtcaatg 1740
acgctgacgg tacaggccag acaattattg tctggtatag tgcagcagca gaacaatttg 1800
ctgagggcta ttgaggcgca acagcatctg ttgcaactca cagtctgggg catcaagcag 1860
ctccaggcaa gaatcctggc tgtggaaaga tacctaaagg atcaacagct cctggggatt 1920
tggggttgct ctggaaaact catttgcacc actgctgtgc cttggaatgc tagttggagt 1980
aataaatctc tggaacagat ttggaatcac acgacctgga tggagtggga cagagaaatt 2040
aacaattaca caagcttaat acactcctta attgaagaat cgcaaaacca gcaagaaaag 2100
aatgaacaag aattattgga attagataaa tgggcaagtt tgtggaattg gtttaacata 2160
acaaattggc tgtggtatat aaaattattc ataatgatag taggaggctt ggtaggttta 2220
agaatagttt ttgctgtact ttctatagtg aatagagtta ggcagggata ttcaccatta 2280
tcgtttcaga cccacctccc aaccccgagg ggacccgaca ggcccgaagg aatagaagaa 2340
gaaggtggag agagagacag agacagatcc attcgattag tgaacggatc ggcactgcgt 2400
gcgccaattc tgcagacaaa tggcagtatt catccacaat tttaaaagaa aaggggggat 2460
tgggggtac agtgcagggg aaagaatagt agacataata gcaacagaca tacaaactaa 2520
agaattacaa aaacaaatta caaaaattca aaattttcgg gtttattaca gggacagcag 2580
agatccagtt tggttaatta agggtgcagc ggcctccgcg ccgggttttg gcgcctcccg 2640
cgggcgcccc cctcctcacg gcgagcgctg ccacgtcaga cgaagggcgc aggagcgttc 2700
ctgatccttc cgcccggacg ctcaggacag cggcccgctg ctcataagac tcggccttag 2760
aaccccagta tcagcagaag gacattttag gacgggactt gggtgactct agggcactgg 2820
ttttctttcc agagagcgga acaggcgagg aaaagtagtc ccttctcggc gattctgcgg 2880
agggatctcc gtggggcggt gaacgccgat gattatataa ggacgcgccg ggtgtggcac 2940
agctagttcc gtcgcagccg ggatttgggt cgcggttctt gtttgtggat cgctgtgatc 3000
gtcacttggt gagttgcggg ctgctgggct ggccggggct ttcgtggccg ccgggccgct 3060
cggtgggacg gaagcgtgtg gagagaccgc caagggctgt agtctgggtc cgcgagcaag 3120
gttgccctga actgggggtt gggggagcg cacaaaatgg cggctgttcc cgagtcttga 3180
atggaagacg cttgtaaggc gggctgtgag gtcgttgaaa caaggtgggg ggcatggtgg 3240
gcggcaagaa cccaaggtct tgaggccttc gctaatgcgg gaaagctctt attcgggtga 3300
gatgggctgg ggcaccatct ggggaccctg acgtgaagtt tgtcactgac tggagaactc 3360
gggtttgtcg tctggttgcg ggggcggcag ttatgcggtg ccgttgggca gtgcacccgt 3420
acctttggga gcgcgcgcct cgtcgtgtcg tgacgtcacc cgttctgttg gcttataatg 3480
cagggtgggg ccacctgccg gtaggtgtgc ggtaggcttt tctccgtcgc aggacgcagg 3540
gttcgggcct agggtaggct ctcctgaatc gacaggcgcc ggacctctgg tgaggggagg 3600
gataagtgag gcgtcagttt ctttggtcgg ttttatgtac ctatcttctt aagtagctga 3660
agctccggtt ttgaactatg cgctcggggt tggcgagtgt gttttgtgaa gttttttagg 3720
caccttttga aatgtaatca tttgggtcaa tatgtaattt tcagtgttag actagtaaag 3780
cttctgcagg tcgactctag aaaattgtcc gctaaattct ggccgttttt ggcttttttg 3840
ttagacagga tccatgagtg actccaagga accaagactg cagcagctgg gcctcctgga 3900
ggaggaacag ctgagaggcc ttggattccg acagactcga ggatacaaga gcttagcagg 3960
gtgtcttggc catggtcccc tggtgctgca actcctctcc ttcacgctct tggctgggct 4020
ccttgtccaa gtgtccaagg tccccagctc cataagtcag gaacaatcca ggcaagacgc 4080
gatctaccag aacctgaccc agcttaaagc tgcagtgggt gagctctcag agaaatccaa 4140
gctgcaggag atctaccagg agctgaccca gctgaaggct gcagtgggtg agcttccaga 4200
gaaatctaag ctgcaggaga tctaccagga gctgacccga ctgaaggctg cagtgggtga 4260
gcttccagag aaatctaagc tgcaggagat ctaccaggag ctgacctggc tgaaggctgc 4320
agtgggtgag cttccagaga aatctaagat gcaggagatc taccaggagc tgactcggct 4380
gaaggctgca gtgggtgagc ttccagagaa atctaagcag caggagatct accaggagct 4440
gacccggctg aaggctgcag tgggtgagct tccagagaaa tctaagcagc aggagatcta 4500
ccaggagctg acccggctga aggctgcagt gggtgagctt ccagagaaat ctaagcagca 4560
ggagatctac caggagctga cccagctgaa ggctgcagtg gaacgcctgt gccacccctg 4620
tccctgggaa tggacattct tccaaggaaa ctgttacttc atgtctaact cccagcggaa 4680
ctggcacgac tccatcaccg cctgcaaaga agtgggggcc cagctcgtcg taatcaaaag 4740

tgctgaggag cagaacttcc tacagctgca gtcttccaga agtaaccgct tcacctggat 4800
gggactttca gatctaaatc aggaaggcac gtggcaatgg gtggacggct cacctctgtt 4860
gcccagcttc aagcagtatt ggaacagagg agagcccaac aacgttgggg aggaagactg 4920
cgcggaattt agtggcaatg gctggaacga cgacaaatgt aatcttgcca aattctggat 4980
ctgcaaaaag tccgcagcct cctgctccag ggatgaagaa cagtttcttt ctccagcccc 5040
tgccacccca aacccccctc ctgcgtagga attcgatatc aagcttatcg ataatcaacc 5100
tctggattac aaaatttgtg aaagattgac tggtattctt aactatgttg ctccttttac 5160
gctatgtgga tacgctgctt taatgccttt gtatcatgct attgcttccc gtatggcttt 5220
cattttctcc tccttgtata aatcctggtt gctgtctctt tatgaggagt tgtggcccgt 5280
tgtcaggcaa cgtggcgtgg tgtgcactgt gtttgctgac gcaacccccа ctggttgggg 5340
cattgccacc acctgtcagc tcctttccgg gactttcgct ttcccctctcc ctattgccac 5400
ggcggaactc atcgccgcct gccttgcccg ctgctggaca ggggctcggc tgttgggcac 5460
tgacaattcc gtggtgttgt cggggaaatc atcgtccttt ccttggctgc tcgcctgtgt 5520
tgccacctgg attctgcgcg ggacgtcctt ctgctacgtc ccttcggccc tcaatccagc 5580
ggaccttcct tcccgcggcc tgctgccggc tctgcggcct cttccgcgtc ttcgccttcg 5640
ccctcagacg agtcggatct ccctttgggc cgcctccccg catcgatacc gtcgacctcg 5700
agacctagaa aaacatggag caatcacaag tagcaataca gcagctacca atgctgattg 5760
tgcctggcta gaagcacaag aggaggagga ggtgggtttt ccagtcacac ctcaggtacc 5820
tttaagacca atgacttaca aggcagctgt agatcttagc cacttttaa aagaaaaggg 5880
gggactggaa gggctaattc actcccaacg aagacaagat atccttgatc tgtggatcta 5940
ccacacacaa ggctacttcc ctgattggca gaactacaca ccagggccag ggatcagata 6000
tccactgacc tttggatggt gctacaagct agtaccagtt gagcaagaga aggtagaaga 6060
agccaatgaa ggagagaaca cccgcttgtt acaccctgtg agcctgcatg ggatggatga 6120
cccggagaga gaagtattag agtggaggtt tgacagccgc ctagcatttc atcacatggc 6180
ccgagagctg catccggact gtactgggtc tctctggtta gaccagatct gagcctggga 6240
gctctctggc taactaggga acccactgct taagcctcaa taaagcttgc cttgagtgct 6300
tcaagtagtg tgtgcccgtc tgttgtgtga ctctggtaac tagagatccc tcagaccctt 6360
ttagtcagtg tggaaaatct ctagcagggc ccgtttaaac ccgctgatca gcctcgactg 6420
tgccttctag ttgccagcca tctgttgttt gcccctcccc cgtgccttcc ttgaccctgg 6480
aaggtgccac tcccactgtc ctttcctaat aaaatgagga aattgcatcg cattgtctga 6540
gtaggtgtca ttctattctg gggggtgggg tggggcagga cagcaagggg gaggattggg 6600
aagacaatag caggcatgct ggggatgcgg tgggctctat ggcttctgag gcggaaagaa 6660
ccagctgggg ctctaggggg tatccccacg cgccctgtag cggcgcatta agcgcggcgg 6720
gtgtggtggt tacgcgcagc gtgaccgcta cacttgccag cgccctagcg cccgctcctt 6780
tcgctttctt cccttccttt ctcgccacgt tcgccggctt tccccgtcaa gctctaaatc 6840
gggggctccc tttagggttc cgatttagtg ctttacggca cctcgacccc aaaaaacttg 6900
attagggtga tggttcacgt agtgggccat cgccctgata gacggttttt cgccctttga 6960
cgttggagtc cacgttcttt aatagtggac tcttgttcca aactggaaca acactcaacc 7020
ctatctcggt ctattctttt gatttataag ggattttgcc gatttcggcc tattggttaa 7080
aaaatgagct gatttaacaa aaatttaacg cgaattaatt ctgtggaatg tgtgtcagtt 7140
agggtgtgga aagtccccag gctccccagc aggcagaagt atgcaaagca tgcatctcaa 7200
ttagtcagca accaggtgtg gaaagtcccc aggctcccca gcaggcagaa gtatgcaaag 7260
catgcatctc aattagtcag caaccatagt cccgccccta actccgccca tcccgccccт 7320
aactccgccc agttccgccc attctccgcc ccatggctga ctaatttttt ttatttatgc 7380
agaggccgag gccgcctctg cctctgagct attccagaag tagtgaggag gctttttgg 7440
aggcctaggc ttttgcaaaa agctcccggg agcttgtata tccattttcg gatctgatca 7500
gcacgtgttg acaattaatc atcggcatag tatatcggca tagtataata cgacaaggtg 7560
aggaactaaa ccatggccaa gttgaccagt gccgttccgg tgctcaccgc gcgcgacgtc 7620
gccggagcgg tcgagttctg gaccgaccgg ctcgggttct cccgggactt cgtggaggac 7680
gacttcgccg gtgtggtccg ggacgacgtg accctgttca tcagcgcggt ccaggaccag 7740
gtggtgccgg acaacaccct ggcctgggtg tgggtgcgcg gcctggacga gctgtacgcc 7800
gagtggtcgg aggtcgtgtc cacgaacttc cgggacgcct ccgggccggc catgaccgag 7860
atcggcgagc agccgtgggg gcgggagttc gccctgcgcg acccggccgg caactgcgtg 7920
cacttcgtgg ccgaggagca ggactgacac gtgctacgag atttcgattc caccgccgcc 7980
ttctatgaaa ggttgggctt cggaatcgtt ttccgggacg ccggctggat gatcctccag 8040
cgcggggatc tcatgctgga gttcttcgcc caccccaact tgtttattgc agcttataat 8100
ggttacaaat aaagcaatag catcacaaat ttcacaaata aagcattttt ttcactgcat 8160
tctagttgtg gtttgtccaa actcatcaat gtatcttatc atgtctgtat accgtcgacc 8220
tctagctaga gcttggcgta atcatggtca tagctgtttc ctgtgtgaaa ttgttatccg 8280
ctcacaattc cacacaacat acgagccgga agcataaagt gtaaagcctg gggtgcctaa 8340
tgagtgagct aactcacatt aattgcgttg cgctcactgc ccgctttcca gtcgggaaac 8400
ctgtcgtgcc agctgcatta atgaatcggc caacgcgcgg ggagaggcgg tttgcgtatt 8460
gggcgctctt ccgcttcctc gctcactgac tcgctgcgct cggtcgttcg gctgcggcga 8520
gcggtatcag ctcactcaaa ggcggtaata cggttatcca cagaatcagg ggataacgca 8580
ggaaagaaca tgtgagcaaa aggccagcaa aaggccagga accgtaaaaa ggccgcgttg 8640
ctggcgtttt tccataggct ccgcccccct gacgagcatc acaaaaatcg acgctcaagt 8700
cagaggtggc gaaacccgac aggactataa agataccagg cgtttccccc tggaagctcc 8760

```
ctcgtgcgct ctcctgttcc gaccctgccg cttaccggat acctgtccgc ctttctccct 8820
tcgggaagcg tggcgctttc tcatagctca cgctgtaggt atctcagttc ggtgtaggtc 8880
gttcgctcca agctgggctg tgtgcacgaa cccccgttc agcccgaccg ctgcgcctta 8940
tccggtaact atcgtcttga gtccaacccg gtaagacacg acttatcgcc actggcagca 9000
gccactggta acaggattag cagagcgagg tatgtaggcg gtgctacaga gttcttgaag 9060
tggtggccta actacggcta cactagaaga acagtatttg gtatctgcgc tctgctgaag 9120
ccagttacct tcggaaaaag agttggtagc tcttgatccg gcaaacaaac caccgctggt 9180
agcggtggtt tttttgtttg caagcagcag attacgcgca gaaaaaaagg atctcaagaa 9240
gatcctttga tcttttctac ggggtctgac gctcagtgga acgaaaactc acgttaaggg 9300
attttggtca tgagattatc aaaaaggatc ttcacctaga tccttttaaa ttaaaaatga 9360
agttttaaat caatctaaag tatatatgag taaacttggt ctgacagtta ccaatgctta 9420
atcagtgagg cacctatctc agcgatctgt ctatttcgtt catccatagt tgcctgactc 9480
cccgtcgtgt agataactac gatacgggag ggcttaccat ctggccccag tgctgcaatg 9540
ataccgcgag acccacgctc accggctcca gatttatcag caataaacca gccagccgga 9600
agggccgagc gcagaagtgg tcctgcaact ttatccgcct ccatccagtc tattaattgt 9660
tgccgggaag ctagagtaag tagttcgcca gttaatagtt tgcgcaacgt tgttgccatt 9720
gctacaggca tcgtggtgtc acgctcgtcg tttggtatgg cttcattcag ctccggttcc 9780
caacgatcaa ggcgagttac atgatccccc atgttgtgca aaaaagcggt tagctccttc 9840
ggtcctccga tcgttgtcag aagtaagttg gccgcagtgt tatcactcat ggttatggca 9900
gcactgcata attctcttac tgtcatgcca tccgtaagat gcttttctgt gactggtgag 9960
tactcaacca agtcattctg agaatagtgt atgcggcgac cgagttgctc ttgcccggcg 10020
tcaatacggg ataataccgc gccacatagc agaactttaa aagtgctcat cattggaaaa 10080
cgttcttcgg ggcgaaaact ctcaaggatc ttaccgctgt tgagatccag ttcgatgtaa 10140
cccactcgtg cacccaactg atcttcagca tcttttactt tcaccagcgt ttctgggtga 10200
gcaaaaacag gaaggcaaaa tgccgcaaaa aagggaataa gggcgacacg gaaatgttga 10260
atactcatac tcttcctttt tcaatattat tgaagcattt atcagggtta ttgtctcatg 10320
agcggataca tatttgaatg tatttagaaa aataaacaaa taggggttcc gcgcacattt 10380
ccccgaaaag tgccacctga c                                          10401
```

<210> 6
<211> 9903
<212> DNA
<213> Artificial Sequence

<220>
<223> Constructed plasmid vector

<400> 6

```
gtcgacggat cgggagatct cccgatcccc tatggtgcac tctcagtaca atctgctctg 60
atgccgcata gttaagccag tatctgctcc ctgcttgtgt gttggaggtc gctgagtagt 120
gcgcgagcaa aatttaagct acaacaaggc aaggcttgac cgacaattgc atgaagaatc 180
tgcttagggt taggcgtttt gcgctgcttc gcgatgtacg ggccagatat acgcgttgac 240
attgattatt gactagttat taatagtaat caattacggg gtcattagtt catagcccat 300
atatggagtt ccgcgttaca taacttacgg taaatggccc gcctggctga ccgcccaacg 360
acccccgccc attgacgtca ataatgacgt atgttcccat agtaacgcca atagggactt 420
tccattgacg tcaatgggtg gagtatttac ggtaaactgc ccacttggca gtacatcaag 480
tgtatcatat gccaagtacg ccccctattg acgtcaatga cggtaaatgg cccgcctggc 540
attatgccca gtacatgacc ttatgggact ttcctacttg gcagtacatc tacgtattag 600
tcatcgctat taccatggtg atgcggtttt ggcagtacat caatgggcgt ggatagcggt 660
ttgactcacg gggatttcca agtctccacc ccattgacgt caatgggagt ttgttttggc 720
accaaaatca acgggacttt ccaaaatgtc gtaacaactc cgccccattg acgcaaatgg 780
gcggtaggcg tgtacggtgg gaggtctata taagcagcgc gttttgcctg tactgggtct 840
ctctggttag accagatctg agcctgggag ctctctggct aactagggaa cccactgctt 900
aagcctcaat aaagcttgcc ttgagtgctt caagtagtgt gtgcccgtct gttgtgtgac 960
tctggtaact agagatccct cagacccttt tagtcagtgt ggaaaatctc tagcagtggc 1020
gcccgaacag ggacttgaaa gcgaaaggga aaccagagga gctctctcga cgcaggactc 1080
ggcttgctga agcgcgcacg gcaagaggcg aggggcggcg actggtgagt acgccaaaaa 1140
ttttgactag cggaggctag aaggagagag atgggtgcga gagcgtcagt attaagcggg 1200
ggagaattag atcgcgatgg gaaaaaattc ggttaaggcc aggggggaaag aaaaaatata 1260
aattaaaaca tatagtatgg gcaagcaggg agctagaacg attcgcagtt aatcctggcc 1320
tgttagaaac atcagaaggc tgtagacaaa tactgggaca gctacaacca tcccttcaga 1380
caggatcaga agaacttaga tcattatata atacagtagc aaccctctat tgtgtgcatc 1440
aaaggataga gataaaagac accaaggaag ctttagacaa gatagaggaa gagcaaaaca 1500
aaagtaagac caccgcacag caagcggccg ctgatcttca gacctggagg aggagatatg 1560
agggacaatt ggagaagtga attatataaa tataaagtag taaaaattga accattagga 1620
```

gtagcaccca ccaaggcaaa gagaagagtg gtgcagagag aaaaaagagc agtgggaata 1680
ggagctttgt tccttgggtt cttgggagca gcaggaagca ctatgggcgc agcgtcaatg 1740
acgctgacgg tacaggccag acaattattg tctggtatag tgcagcagca gaacaatttg 1800
ctgagggcta ttgaggcgca acagcatctg ttgcaactca cagtctgggg catcaagcag 1860
ctccaggcaa gaatcctggc tgtggaaaga tacctaaagg atcaacagct cctggggatt 1920
tggggttgct ctggaaaact catttgcacc actgctgtgc cttggaatgc tagttggagt 1980
aataaatctc tggaacagat ttggaatcac acgacctgga tggagtggga cagagaaatt 2040
aacaattaca caagcttaat acactcctta attgaagaat cgcaaaacca gcaagaaaag 2100
aatgaacaag aattattgga attagataaa tgggcaagtt tgtggaattg gtttaacata 2160
acaaattggc tgtggtatat aaaattattc ataatgatag taggaggctt ggtaggttta 2220
agaatagttt ttgctgtact ttctatagtg aatagagtta ggcagggata ttcaccatta 2280
tcgtttcaga cccacctccc aaccccgagg ggacccgaca ggcccgaagg aatagaagaa 2340
gaaggtggag agagagacag agacagatcc attcgattag tgaacggatc ggcactgcgt 2400
gcgccaattc tgcagacaaa tggcagtatt catccacaat tttaaaagaa aaggggggat 2460
tgggggtac agtgcagggg aaagaatagt agacataata gcaacagaca tacaaactaa 2520
agaattacaa aaacaaatta caaaaattca aaattttcgg gtttattaca gggacagcag 2580
agatccagtt tggttaatta agggtgcagc ggcctccgcg ccgggttttg gcgcctcccg 2640
cgggcgcccc cctcctcacg gcgagcgctg ccacgtcaga cgaagggcgc aggagcgttc 2700
ctgatccttc cgcccggacg ctcaggacag cggcccgctg ctcataagac tcggccttag 2760
aaccccagta tcagcagaag gacattttag gacgggactt gggtgactct agggcactgg 2820
ttttctttcc agagagcgga acaggcgagg aaaagtagtc ccttctcggc gattctgcgg 2880
agggatctcc gtggggcggt gaacgccgat gattatataa ggacgcgccg ggtgtggcac 2940
agctagttcc gtcgcagccg ggatttgggt cgcggttctt gtttgtggat cgctgtgatc 3000
gtcacttggt gagttgcggg ctgctgggct ggccggggct ttcgtggccg ccgggccgct 3060
cggtgggacg gaagcgtgtg gagagaccgc caagggctgt agtctgggtc cgcgagcaag 3120
gttgccctga actgggggtt gggggagcg cacaaaatgg cggctgttcc cgagtcttga 3180
atggaagacg cttgtaaggc gggctgtgag gtcgttgaaa caaggtgggg ggcatggtgg 3240
gcggcaagaa cccaaggtct tgaggccttc gctaatgcgg gaaagctctt attcgggtga 3300
gatgggctgg ggcaccatct ggggacccctg acgtgaagtt tgtcactgac tggagaactc 3360
gggtttgtcg tctggttgcg ggggcggcag ttatgcggtg ccgttgggca gtgcacccgt 3420
acctttggga gcgcgcgcct cgtcgtgtcg tgacgtcacc cgttctgttg gcttataatg 3480
cagggtgggg ccacctgccg gtaggtgtgc ggtaggcttt tctccgtcgc aggacgcagg 3540
gttcgggcct agggtaggct ctcctgaatc gacaggcgcc ggacctctgg tgaggggagg 3600
gataagtgag gcgtcagttt ctttggtcgg ttttatgtac ctatcttctt aagtagctga 3660
agctccggtt ttgaactatg cgctcggggt tggcgagtgt gttttgtgaa gttttttagg 3720
caccttttga aatgtaatca tttgggtcaa tatgtaattt tcagtgttag actagtaaag 3780
cttctgcagg tcgactctag aaaattgtcc gctaaattct ggccgttttt ggctttttg 3840
ttagacagga tccatgagtg attctaagga aatggggaag aggcagcttc gccctctgga 3900
tgaggaactg ctgacatcca gccacaccag gcactccatc aaaggctttg gcttccaaac 3960
aaattctgga ttcagtagct tcacagggtg cctggtccac agtcaagtcc ccttggcact 4020
gcaggtgctc ttcctagctg tttgttctgt gctgctggtt gtcatccttg tcaaagtcta 4080
caaaatacc agttctcagg aagaaaacaa tcagatgaat gtctaccaag aactgaccca 4140
gttgaaggct ggcgtagatc gactgtgccg ctcctgcccc tgggactgga cgcacttcca 4200
aggaagctgt tacttcttct ctgtggccca gaagtcctgg aatgattctg ccactgcctg 4260
ccacaatgtg ggggctcaac ttgtggtcat caagagtgat gaagagcaga actttctaca 4320
acaaacttct aagaagagag gctacacttg gatggggctc attgacatga gcaaggagtc 4380
tacatggtac tgggtagatg gttcacctct gactctcagt ttcatgaagt attggagtaa 4440
aggagaacct aacaacctgg gagaggaaga ctgtgcagag ttcagagatg acggctggaa 4500
tgacaccaaa tgtactaaca agaaattctg gatctgcaaa aagctttcaa cttcctgccc 4560
tagcaagtga gaattcgata tcaagcttat cgataatcaa cctctggatt acaaaatttg 4620
tgaaagattg actggtattc ttaactatgt tgctcctttt acgctatgtg gatacgctgc 4680
tttaatgcct ttgtatcatg ctattgcttc ccgtatggct ttcattttct cctccttgta 4740
taaatcctgg ttgctgtctc tttatgagga gttgtggccc gttgtcaggc aacgtggcgt 4800
ggtgtgcact gtgtttgctg acgcaacccc cactggttgg ggcattgcca ccacctgtca 4860
gctcctttcc gggactttcg ctttcccccc ccctattgcc acggcggaac tcatcgccgc 4920
ctgccttgcc cgctgctgga caggggctcg gctgttgggc actgacaatt ccgtggtgtt 4980
gtcggggaaa tcatcgtcct ttccttggct gctcgcctgt gttgccacct ggattctgcg 5040
cgggacgtcc ttctgctacg tcccttcggc cctcaatcca gcggaccttc cttcccgcgg 5100
cctgctgccg gctctgcggc ctcttccgcg tcttcgcctt cgccctcaga cgagtcggat 5160
ctccctttgg gccgcctccc cgcatcgata ccgtcgacct cgagacctag aaaaacatgg 5220
agcaatcaca agtagcaata cagcagctac caatgctgat tgtgcctggc tagaagcaca 5280
agaggaggag gaggtgggtt ttccagtcac acctcaggta cctttaagac caatgactta 5340
caaggcagct gtagatctta gccacttttt aaaagaaaag gggggactgg aagggctaat 5400
tcactcccaa cgaagacaag atatccttga tctgtggatc taccacacac aaggctactt 5460
ccctgattgg cagaactaca caccagggcc agggatcaga tatccactga cctttggatg 5520
gtgctacaag ctagtaccag ttgagcaaga gaaggtagaa gaagccaatg aaggagagaa 5580
cacccgcttg ttacaccctg tgagcctgca tgggatggat gacccggaga gagaagtatt 5640

agagtggagg tttgacagcc gcctagcatt tcatcacatg gcccgagagc tgcatccgga 5700
ctgtactggg tctctctggt tagaccagat ctgagcctgg gagctctctg gctaactagg 5760
gaacccactg cttaagcctc aataaagctt gccttgagtg cttcaagtag tgtgtgcccg 5820
tctgttgtgt gactctggta actagagatc cctcagaccc ttttagtcag tgtggaaaat 5880
ctctagcagg gcccgtttaa acccgctgat cagcctcgac tgtgccttct agttgccagc 5940
catctgttgt ttgcccctcc cccgtgcctt ccttgaccct ggaaggtgcc actcccactg 6000
tcctttccta ataaaatgag gaaattgcat cgcattgtct gagtaggtgt cattctattc 6060
tgggggggtgg ggtggggcag gacagcaagg gggaggattg ggaagacaat agcaggcatg 6120
ctggggatgc ggtgggctct atggcttctg aggcggaaag aaccagctgg ggctctaggg 6180
ggtatcccca cgcgccctgt agcggcgcat taagcgcggc gggtgtggtg gttacgcgca 6240
gcgtgaccgc tacacttgcc agcgccctag cgcccgctcc tttcgctttc ttcccttcct 6300
ttctcgccac gttcgccggc tttccccgtc aagctctaaa tcgggggctc cctttagggt 6360
tccgatttag tgctttacgg cacctcgacc ccaaaaaact tgattagggt gatggttcac 6420
gtagtgggcc atcgccctga tagacggttt ttcgcccttt gacgttggag tccacgttct 6480
ttaatagtgg actcttgttc caaactggaa caacactcaa ccctatctcg gtctattctt 6540
ttgatttata agggattttg ccgatttcgg cctattggtt aaaaaatgag ctgatttaac 6600
aaaaatttaa cgcgaattaa ttctgtggaa tgtgtgtcag ttagggtgtg gaaagtcccc 6660
aggctcccca gcaggcagaa gtatgcaaag catgcatctc aattagtcag caaccaggtg 6720
tggaaagtcc ccaggctccc cagcaggcag aagtatgcaa agcatgcatc tcaattagtc 6780
agcaaccata gtcccgcccc taactccgcc catcccgccc ctaactccgc ccagttccgc 6840
ccattctccg ccccatggct gactaatttt ttttatttat gcagaggccg aggccgcctc 6900
tgcctctgag ctattccaga agtagtgagg aggcttttt ggaggcctag gcttttgcaa 6960
aaagctcccg ggagcttgta tatccatttt cggatctgat cagcacgtgt tgacaattaa 7020
tcatcggcat agtatatcgg catagtataa tacgacaagg tgaggaacta aaccatggcc 7080
aagttgacca gtgccgttcc ggtgctcacc gcgcgcgacg tcgccggagc ggtcgagttc 7140
tggaccgacc ggctcgggtt ctcccgggac ttcgtggagg acgacttcgc cggtgtggtc 7200
cgggacgacg tgaccctgtt catcagcgcg gtccaggacc aggtggtgcc ggacaacacc 7260
ctggcctggg tgtgggtgcg cggcctggac gagctgtacg ccgagtggtc ggaggtcgtg 7320
tccacgaact tccgggacgc ctccgggccg gccatgaccg agatcggcga gcagccgtgg 7380
gggcgggagt tcgccctgcg cgacccggcc ggcaactgcg tgcacttcgt ggccgaggag 7440
caggactgac acgtgctacg agatttcgat tccaccgccg ccttctatga aaggttgggc 7500
ttcggaatcg ttttccggga cgccggctgg atgatcctcc agcgcgggga tctcatgctg 7560
gagttcttcg cccaccccaa cttgtttatt gcagcttata atggttacaa ataaagcaat 7620
agcatcacaa atttcacaaa taaagcattt ttttcactgc attctagttg tggtttgtcc 7680
aaactcatca atgtatctta tcatgtctgt ataccgtcga cctctagcta gagcttggcg 7740
taatcatggt catagctgtt tcctgtgtga aattgttatc cgctcacaat tccacacaac 7800
atacgagccg gaagcataaa gtgtaaagcc tggggtgcct aatgagtgag ctaactcaca 7860
ttaattgcgt tgcgctcact gcccgctttc cagtcgggaa acctgtcgtg ccagctgcat 7920
taatgaatcg gccaacgcgc ggggagaggc ggtttgcgta ttgggcgctc ttccgcttcc 7980
tcgctcactg actcgctgcg ctcggtcgtt cggctgcggc gagcggtatc agctcactca 8040
aaggcggtaa tacggttatc cacagaatca ggggataacg caggaaagaa catgtgagca 8100
aaaggccagc aaaaggccag gaaccgtaaa aaggccgcgt tgctggcgtt tttccatagg 8160
ctccgccccc ctgacgagca tcacaaaaat cgacgctcaa gtcagaggtg gcgaaacccg 8220
acaggactat aaagatacca ggcgtttccc cctggaagct ccctcgtgcg ctctcctgtt 8280
ccgaccctgc cgcttaccgg atacctgtcc gcctttctcc cttcgggaag cgtggcgctt 8340
tctcatagct cacgctgtag gtatctcagt tcggtgtagg tcgttcgctc caagctgggc 8400
tgtgtgcacg aacccccccgt tcagcccgac cgctgcgcct tatccggtaa ctatcgtctt 8460
gagtccaacc cggtaagaca cgacttatcg ccactggcag cagccactgg taacaggatt 8520
agcagagcga ggtatgtagg cggtgctaca gagttcttga agtggtggcc taactacggc 8580
tacactagaa gaacagtatt tggtatctgc gctctgctga agccagttac cttcggaaaa 8640
agagttggta gctcttgatc cggcaaacaa accaccgctg gtagcggtgg ttttttgtt 8700
tgcaagcagc agattacgcg cagaaaaaaa ggatctcaag aagatccttt gatcttttct 8760
acggggtctg acgctcagtg gaacgaaaac tcacgttaag ggattttggt catgagatta 8820
tcaaaaagga tcttcaccta gatcctttta aattaaaaat gaagttttaa atcaatctaa 8880
agtatatatg agtaaacttg gtctgacagt taccaatgct taatcagtga ggcacctatc 8940
tcagcgatct gtctatttcg ttcatccata gttgcctgac tccccgtcgt gtagataact 9000
acgatacggg agggcttacc atctggcccc agtgctgcaa tgataccgcg agacccacgc 9060
tcaccggctc cagatttatc agcaataaac cagccagccg gaagggccga gcgcagaagt 9120
ggtcctgcaa ctttatccgc ctccatccag tctattaatt gttgccggga agctagagta 9180
agtagttcgc cagttaatag tttgcgcaac gttgttgcca ttgctacagg catcgtggtg 9240
tcacgctcgt cgtttggtat ggcttcattc agctccggtt cccaacgatc aaggcgagtt 9300
acatgatccc ccatgttgtg caaaaaagcg gttagctcct tcggtcctcc gatcgttgtc 9360
agaagtaagt tggccgcagt gttatcactc atggttatgg cagcactgca taattctctt 9420
actgtcatgc catccgtaag atgcttttct gtgactggtg agtactcaac caagtcattc 9480
tgagaatagt gtatgcggcg accgagttgc tcttgcccgg cgtcaatacg ggataatacc 9540
gcgccacata gcagaacttt aaaagtgctc atcattggaa aacgttcttc ggggcgaaaa 9600
ctctcaagga tcttaccgct gttgagatcc agttcgatgt aacccactcg tgcacccaac 9660

tgatcttcag catcttttac tttcaccagc gtttctgggt gagcaaaaac aggaaggcaa 9720
aatgccgcaa aaaagggaat aagggcgaca cggaaatgtt gaatactcat actcttcctt 9780
tttcaatatt attgaagcat ttatcagggt tattgtctca tgagcggata catatttgaa 9840
tgtatttaga aaaataaaca aatagggggtt ccgcgcacat ttccccgaaa agtgccacct 9900
gac 9903

<210> 7
<211> 11586
<212> DNA
<213> Artificial Sequence

<220>
<223> Constructed plasmid vector

<220>
<221> misc_feature
<222> 3907
<223> n=a, t, c or g

<400> 7
gtcgacggat cgggagatct cccgatcccc tatggtgcac tctcagtaca atctgctctg 60
atgccgcata gttaagccag tatctgctcc ctgcttgtgt gttggaggtc gctgagtagt 120
gcgcgagcaa aatttaagct acaacaaggc aaggcttgac cgacaattgc atgaagaatc 180
tgcttagggt taggcgtttt gcgctgcttc gcgatgtacg ggccagatat acgcgttgac 240
attgattatt gactagttat taatagtaat caattacggg gtcattagtt catagcccat 300
atatggagtt ccgcgttaca taacttacgg taaatggccc gcctggctga ccgcccaacg 360
acccccgccc attgacgtca ataatgacgt atgttcccat agtaacgcca atagggactt 420
tccattgacg tcaatgggtg gagtatttac ggtaaactgc ccacttggca gtacatcaag 480
tgtatcatat gccaagtacg ccccctattg acgtcaatga cggtaaatgg cccgcctggc 540
attatgccca gtacatgacc ttatgggact ttcctacttg gcagtacatc tacgtattag 600
tcatcgctat taccatggtg atgcggtttt ggcagtacat caatgggcgt ggatagcggt 660
ttgactcacg gggatttcca agtctccacc ccattgacgt caatgggagt ttgttttggc 720
accaaaatca acgggacttt ccaaaatgtc gtaacaactc cgccccattg acgcaaatgg 780
gcggtaggcg tgtacggtgg gaggtctata taagcagcgc gttttgcctg tactgggtct 840
ctctggttag accagatctg agcctgggag ctctctggct aactagggaa cccactgctt 900
aagcctcaat aaagcttgcc ttgagtgctt caagtagtgt gtgcccgtct gttgtgtgac 960
tctggtaact agagatccct cagacccttt tagtcagtgt ggaaaatctc tagcagtggc 1020
gcccgaacag ggacttgaaa gcgaaaggga aaccagagga gctctctcga cgcaggactc 1080
ggcttgctga agcgcgcacg gcaagaggcg aggggcggcg actggtgagt acgccaaaaa 1140
ttttgactag cggaggctag aaggagagag atgggtgcga gagcgtcagt attaagcggg 1200
ggagaattag atcgcgatgg gaaaaaattc ggttaaggcc agggggaaag aaaaaatata 1260
aattaaaaca tatagtatgg gcaagcaggg agctagaacg attcgcagtt aatcctggcc 1320
tgttagaaac atcagaaggc tgtagacaaa tactgggaca gctacaacca tcccttcaga 1380
caggatcaga agaacttaga tcattatata atacagtagc aaccctctat tgtgtgcatc 1440
aaaggataga gataaaagac accaaggaag ctttagacaa gatagaggaa gagcaaaaca 1500
aaagtaagac caccgcacag caagcggccg ctgatcttca gacctggagg aggagatatg 1560
agggacaatt ggagaagtga attatataaa tataaagtag taaaaattga accattagga 1620
gtagcaccca ccaaggcaaa gagaagagtg gtgcagagag aaaaaagagc agtgggaata 1680
ggagctttgt tccttgggtt cttgggagca gcaggaagca ctatgggcgc agcgtcaatg 1740
acgctgacgg tacaggccag acaattattg tctggtatag tgcagcagca gaacaatttg 1800
ctgagggcta ttgaggcgca acagcatctg ttgcaactca cagtctgggg catcaagcag 1860
ctccaggcaa gaatcctggc tgtggaaaga tacctaaagg atcaacagct cctggggatt 1920
tggggttgct ctggaaaact catttgcacc actgctgtgc cttggaatgc tagttggagt 1980
aataaatctc tggaacagat ttggaatcac acgacctgga tggagtggga cagagaaatt 2040
aacaattaca caagcttaat acactcctta attgaagaat cgcaaaacca gcaagaaaag 2100
aatgaacaag aattattgga attagataaa tgggcaagtt tgtggaattg gtttaacata 2160
acaaattggc tgtggtatat aaaattattc ataatgatag taggaggctt ggtaggttta 2220
agaatagttt ttgctgtact ttctatagtg aatagagtta ggcagggata ttcaccatta 2280
tcgtttcaga cccacctccc aaccccgagg ggacccgaca ggcccgaagg aatagaagaa 2340
gaaggtggag agagagacag agacagatcc attcgattag tgaacggatc ggcactgcgt 2400
gcgccaattc tgcagacaaa tggcagtatt catccacaat tttaaaagaa aaggggggat 2460
tgggggggtac agtgcagggg aaagaatagt agacataata gcaacagaca tacaaactaa 2520
agaattacaa aaacaaatta caaaaattca aaattttcgg gtttattaca gggacagcag 2580
agatccagtt tggttaatta agggtgcagc ggcctccgcg ccgggttttg gcgcctcccg 2640
cgggcgcccc cctcctcacg gcgagcgctg ccacgtcaga cgaagggcgc aggagcgttc 2700

ctgatccttc cgcccggacg ctcaggacag cggcccgctg ctcataagac tcggccttag 2760
aaccccagta tcagcagaag gacattttag gacgggactt gggtgactct agggcactgg 2820
ttttctttcc agagagcgga acaggcgagg aaaagtagtc ccttctcggc gattctgcgg 2880
agggatctcc gtggggcggt gaacgccgat gattatataa ggacgcgccg ggtgtggcac 2940
agctagttcc gtcgcagccg ggatttgggt cgcggttctt gtttgtggat cgctgtgatc 3000
gtcacttggt gagttgcggg ctgctgggct ggccggggct ttcgtggccg ccgggccgct 3060
cggtgggacg gaagcgtgtg gagagaccgc caagggctgt agtctgggtc cgcgagcaag 3120
gttgccctga actgggggtt gggggagcg cacaaaatgg cggctgttcc cgagtcttga 3180
atggaagacg cttgtaaggc gggctgtgag gtcgttgaaa caaggtgggg ggcatggtgg 3240
gcggcaagaa cccaaggtct tgaggccttc gctaatgcgg gaaagctctt attcgggtga 3300
gatgggctgg ggcaccatct ggggacccctg acgtgaagtt tgtcactgac tggagaactc 3360
gggtttgtcg tctggttgcg ggggcggcag ttatgcggtg ccgttgggca gtgcacccgt 3420
acctttggga gcgcgcgcct cgtcgtgtcg tgacgtcacc cgttctgttg gcttataatg 3480
cagggtgggg ccacctgccg gtaggtgtgc ggtaggcttt tctccgtcgc aggacgcagg 3540
gttcgggcct agggtaggct ctcctgaatc gacaggcgcc ggacctctgg tgaggggagg 3600
gataagtgag gcgtcagttt ctttggtcgg ttttatgtac ctatcttctt aagtagctga 3660
agctccggtt ttgaactatg cgctcggggt tggcgagtgt gttttgtgaa gtttttagg 3720
caccttttga aatgtaatca tttgggtcaa tatgtaattt tcagtgttag actagtaaag 3780
cttctgcagg tcgactctag aaaattgtcc gctaaattct ggccgttttt ggctttttg 3840
ttagacagga tctctcgagg ttaacgaatt caaagacaac tcagagttca ccatgggctc 3900
catcggngca gcaagcatgg aattttgttt tgatgtattc aaggagctca aagtccacca 3960
tgccaatgag aacatcttct actgccccat tgccatcatg tcagctctag ccatggtata 4020
cctgggtgca aaagacagca ccaggacaca aataaataag gttgttcgct ttgataaact 4080
tccaggattc ggagacagta ttgaagctca gtgtggcaca tctgtaaacg ttcactcttc 4140
acttagagac atcctcaacc aaatcaccaa accaaatgat gtttattcgt tcagccttgc 4200
cagtagactt tatgctgaag agagataccc aatcctgcca gaatacttgc agtgtgtgaa 4260
ggaactgtat agaggaggct tggaacctat caactttcaa acagctgcag atcaagccag 4320
agagctcatc aattcctggg tagaaagtca gacaaatgga attatcagaa atgtccttca 4380
gccaagctcc gtggattctc aaactgcaat ggttctggtt aatgccattg tcttcaaagg 4440
actgtgggag aaaacattta aggatgaaga cacacaagca atgcctttca gagtgactga 4500
gcaagaaagc aaacctgtgc agatgatgta ccagattggt ttatttagag tggcatcaat 4560
ggcttctgag aaaatgaaga tcctggagct tccatttgcc agtgggacaa tgagcatgtt 4620
ggtgctgttg cctgatgaag tctcaggcct tgagcagctt gagagtataa tcaactttga 4680
aaaactgact gaatggacca gttctaatgt tatggaagag aggaagatca aagtgtactt 4740
acctcgcatg aagatggagg aaaaatacaa cctcacatct gtcttaatgg ctatgggcat 4800
tactgacgtg tttagctctt cagccaatct gtctggcatc tcctcagcag agagcctgaa 4860
gatatctcaa gctgtccatg cagcacatgc agaaatcaat gaagcaggca gagaggtggt 4920
agggtcagca gaggctggag tggatgctgc aagcgtctct gaagaattta gggctgacca 4980
tccattcctc ttctgtatca agcacatcgc aaccaacgcc gttctcttct ttggcagatg 5040
tgtttccccct taaaaagaag aaagctgaaa aactctgtcc cttccaacaa gacccagagc 5100
actgtagtat caggggtaaa atgaaaagta tgttctctgc tgcatccaga cttcataaaa 5160
gctggagctt aatctagact cgagcggccg ccactgtgct ggatatctgc agaattccgc 5220
ccctctccct ccccccccc taacgttact ggccgaagcc gcttggaata aggccggtgt 5280
gcgtttgtct atatgttatt ttccaccata ttgccgtctt ttggcaatgt gagggcccgg 5340
aaacctggcc ctgtcttctt gacgagcatt cctaggggtc tttcccctct cgccaaagga 5400
atgcaaggtc tgttgaatgt cgtgaaggaa gcagttcctc tggaagcttc ttgaagacaa 5460
acaacgtctg tagcgaccct ttgcaggcag cggaacccc cacctggcga caggtgcctc 5520
tgcggccaaa agccacgtgt ataagataca cctgcaaagg cggcacaacc ccagtgccac 5580
gttgtgagtt ggatagttgt ggaaagagtc aaatggctct cctcaagcgt attcaacaag 5640
gggctgaagg atgcccagaa ggtaccccat tgtatgggat ctgatctggg gcctcggtgc 5700
acatgcttta catgtgttta gtcgaggtta aaaaacgtct aggccccccg aaccacgggg 5760
acgtggtttt cctttgaaaa acacgatgat aatatggcca caaccatgtg gctgcagaat 5820
ttacttttcc tgggcattgt ggtctacagc ctctcagcac ccacccgctc acccatcact 5880
gtcacccggc cttggaagca tgtagaggcc atcaaagaag ccctgaacct cctggatgac 5940
atgcctgtca cgttgaatga agaggtagaa gtcgtctcta acgagttctc cttcaagaag 6000
ctaacatgtg tgcagacccg cctgaagata ttcgagcagg gtctacgggg caatttcacc 6060
aaactcaagg gcgccttgaa catgacagcc agctactacc agacatactg ccccccaact 6120
ccggaaacgg actgtgaaac acaagttacc acctatgcgg atttcataga cagccttaaa 6180
acctttctga ctgatatccc ctttgaatgc aaaaaaccag gccaaaaatg agtcgaaacc 6240
tcgagggcgc gccgaattcg atatcaagct tatcgataat caacctctgg attacaaaat 6300
ttgtgaaaga ttgactggta ttcttaacta tgttgctcct tttacgctat gtggatacgc 6360
tgctttaatg cctttgtatc atgctattgc ttcccgtatg gctttcattt tctcctcctt 6420
gtataaatcc tggttgctgt ctctttatga ggagttgtgg cccgttgtca ggcaacgtgg 6480
cgtggtgtgc actgtgtttg ctgacgcaac ccccactggt tggggcattg ccaccacctg 6540
tcagctcctt tccgggactt tcgctttccc cctccctatt gccacggcgg aactcatcgc 6600
cgcctgcctt gcccgctgct ggacaggggc tcggctgttg ggcactgaca attccgtggt 6660
gttgtcgggg aaatcatcgt cctttccttg gctgctcgcc tgtgttgcca cctggattct 6720

gcgcgggacg tccttctgct acgtcccttc ggccctcaat ccagcggacc ttccttcccg 6780
cggcctgctg ccggctctgc ggcctcttcc gcgtcttcgc cttcgccctc agacgagtcg 6840
gatctccctt tgggccgcct ccccgcatcg ataccgtcga cctcgagacc tagaaaaaca 6900
tggagcaatc acaagtagca atacagcagc taccaatgct gattgtgcct ggctagaagc 6960
acaagaggag gaggaggtgg gttttccagt cacacctcag gtacctttaa gaccaatgac 7020
ttacaaggca gctgtagatc ttagccactt tttaaaagaa aaggggggac tggaagggct 7080
aattcactcc caacgaagac aagatatcct tgatctgtgg atctaccaca cacaaggcta 7140
cttccctgat tggcagaact acacaccagg gccagggatc agatatccac tgacctttgg 7200
atggtgctac aagctagtac cagttgagca agagaaggta gaagaagcca atgaaggaga 7260
gaacacccgc ttgttacacc ctgtgagcct gcatgggatg gatgacccgg agagagaagt 7320
attagagtgg aggtttgaca gccgcctagc atttcatcac atggcccgag agctgcatcc 7380
ggactgtact gggtctctct ggttagacca gatctgagcc tgggagctct ctggctaact 7440
agggaaccca ctgcttaagc ctcaataaag cttgccttga gtgcttcaag tagtgtgtgc 7500
ccgtctgttg tgtgactctg gtaactagag atccctcaga ccctttttagt cagtgtggaa 7560
aatctctagc agggcccgtt taaacccgct gatcagcctc gactgtgcct tctagttgcc 7620
agccatctgt tgtttgcccc tcccccgtgc cttccttgac cctggaaggt gccactccca 7680
ctgtcctttc ctaataaaat gaggaaattg catcgcattg tctgagtagg tgtcattcta 7740
ttctgggggg tggggtgggg caggacagca agggggagga ttgggaagac aatagcaggc 7800
atgctgggga tgcggtgggc tctatggctt ctgaggcgga aagaaccagc tggggctcta 7860
gggggtatcc ccacgcgccc tgtagcggcg cattaagcgc ggcgggtgtg gtggttacgc 7920
gcagcgtgac cgctacactt gccagcgccc tagcgcccgc tcctttcgct ttcttccctt 7980
cctttctcgc cacgttcgcc ggctttcccc gtcaagctct aaatcggggg ctccctttag 8040
ggttccgatt tagtgcttta cggcacctcg accccaaaaa acttgattag ggtgatggtt 8100
cacgtagtgg gccatcgccc tgatagacgg tttttcgccc tttgacgttg gagtccacgt 8160
tctttaatag tggactcttg ttccaaactg gaacaacact caaccctatc tcggtctatt 8220
cttttgattt ataagggatt ttgccgattt cggcctattg gttaaaaaat gagctgattt 8280
aacaaaaatt taacgcgaat taattctgtg gaatgtgtgt cagttagggt gtggaaagtc 8340
cccaggctcc ccagcaggca gaagtatgca aagcatgcat ctcaattagt cagcaaccag 8400
gtgtggaaag tccccaggct ccccagcagg cagaagtatg caaagcatgc atctcaatta 8460
gtcagcaacc atagtcccgc ccctaactcc gcccatcccg cccctaactc cgcccagttc 8520
cgcccattct ccgccccatg gctgactaat ttttttttatt tatgcagagg ccgaggccgc 8580
ctctgcctct gagctattcc agaagtagtg aggaggcttt tttggaggcc taggcttttg 8640
caaaaagctc ccgggagctt gtatatccat tttcggatct gatcagcacg tgttgacaat 8700
taatcatcgg catagtatat cggcatagta taatacgaca aggtgaggaa ctaaaccatg 8760
gccaagttga ccagtgccgt tccggtgctc accgcgcgcg acgtcgccgg agcggtcgag 8820
ttctggaccg accggctcgg gttctcccgg gacttcgtgg aggacgactt cgccggtgtg 8880
gtccgggacg acgtgaccct gttcatcagc gcggtccagg accaggtggt gccggacaac 8940
accctggcct gggtgtgggt gcgcggcctg gacgagctgt acgccgagtg gtcggaggtc 9000
gtgtccacga acttccggga cgcctccggg ccggccatga ccgagatcgg cgagcagccg 9060
tgggggcggg agttcgccct gcgcgacccg gccggcaact gcgtgcactt cgtggccgag 9120
gagcaggact gacacgtgct acgagatttc gattccaccg ccgccttcta tgaaaggttg 9180
ggcttcggaa tcgttttccg ggacgccggc tggatgatcc tccagcgcgg ggatctcatg 9240
ctggagttct tcgcccaccc caacttgttt attgcagctt ataatggtta caaataaagc 9300
aatagcatca caaatttcac aaataaagca ttttttttcac tgcattctag ttgtggtttg 9360
tccaaactca tcaatgtatc ttatcatgtc tgtataccgt cgacctctag ctagagcttg 9420
gcgtaatcat ggtcatagct gtttcctgtg tgaaattgtt atccgctcac aattccacac 9480
aacatacgag ccggaagcat aaagtgtaaa gcctggggtg cctaatgagt gagctaactc 9540
acattaattg cgttgcgctc actgcccgct ttccagtcgg gaaacctgtc gtgccagctg 9600
cattaatgaa tcggccaacg cgcggggaga ggcggtttgc gtattgggcg ctcttccgct 9660
tcctcgctca ctgactcgct gcgctcggtc gttcggctgc ggcgagcggt atcagctcac 9720
tcaaaggcgg taatacggtt atccacagaa tcaggggata acgcaggaaa gaacatgtga 9780
gcaaaaggcc agcaaaaggc caggaaccgt aaaaaggccg cgttgctggc gtttttccat 9840
aggctccgcc cccctgacga gcatcacaaa aatcgacgct caagtcagag gtggcgaaac 9900
ccgacaggac tataaagata ccaggcgttt cccccctggaa gctccctcgt gcgctctcct 9960
gttccgaccc tgccgcttac cggatacctg tccgcctttc tcccttcggg aagcgtggcg 10020
ctttctcata gctcacgctg taggtatctc agttcggtgt aggtcgttcg ctccaagctg 10080
ggctgtgtgc acgaaccccc cgttcagccc gaccgctgcg ccttatccgg taactatcgt 10140
cttgagtcca acccggtaag acacgactta tcgccactgg cagcagccac tggtaacagg 10200
attagcagag cgaggtatgt aggcggtgct acagagttct tgaagtggtg gcctaactac 10260
ggctacacta gaagaacagt atttggtatc tgcgctctgc tgaagccagt taccttcgga 10320
aaaagagttg gtagctcttg atccggcaaa caaaccaccg ctggtagcgg tggttttttt 10380
gtttgcaagc agcagattac gcgcagaaaa aaaggatctc aagaagatcc tttgatcttt 10440
tctacggggt ctgacgctca gtggaacgaa aactcacgtt aagggatttt ggtcatgaga 10500
ttatcaaaaa ggatcttcac ctagatcctt ttaaattaaa aatgaagttt taaatcaatc 10560
taaagtatat atgagtaaac ttggtctgac agttaccaat gcttaatcag tgaggcacct 10620
atctcagcga tctgtctatt tcgttcatcc atagttgcct gactccccgt cgtgtagata 10680
actacgatac gggagggctt accatctggc cccagtgctg caatgatacc gcgagaccca 10740

cgctcaccgg ctccagattt atcagcaata aaccagccag ccggaagggc cgagcgcaga 10800
agtggtcctg caactttatc cgcctccatc cagtctatta attgttgccg ggaagctaga 10860
gtaagtagtt cgccagttaa tagtttgcgc aacgttgttg ccattgctac aggcatcgtg 10920
gtgtcacgct cgtcgtttgg tatggcttca ttcagctccg gttcccaacg atcaaggcga 10980
gttacatgat cccccatgtt gtgcaaaaaa gcggttagct ccttcggtcc tccgatcgtt 11040
gtcagaagta agttggccgc agtgttatca ctcatggtta tggcagcact gcataattct 11100
cttactgtca tgccatccgt aagatgcttt tctgtgactg gtgagtactc aaccaagtca 11160
ttctgagaat agtgtatgcg gcgaccgagt tgctcttgcc cggcgtcaat acgggataat 11220
accgcgccac atagcagaac tttaaaagtg ctcatcattg gaaaacgttc ttcggggcga 11280
aaactctcaa ggatcttacc gctgttgaga tccagttcga tgtaacccac tcgtgcaccc 11340
aactgatctt cagcatcttt tactttcacc agcgtttctg ggtgagcaaa aacaggaagg 11400
caaaatgccg caaaaaaggg aataagggcg acacggaaat gttgaatact catactcttc 11460
ctttttcaat attattgaag catttatcag ggttattgtc tcatgagcgg atacatattt 11520
gaatgtattt agaaaaataa acaaataggg gttccgcgca catttccccg aaaagtgcca 11580
cctgac 11586

<210> 8
<211> 11893
<212> DNA
<213> Artificial Sequence

<220>
<223> Constructed plasmid vector

<400> 8
gtcgacggat cgggagatct cccgatcccc tatggtgcac tctcagtaca atctgctctg 60
atgccgcata gttaagccag tatctgctcc ctgcttgtgt gttggaggtc gctgagtagt 120
gcgcgagcaa aatttaagct acaacaaggc aaggcttgac cgacaattgc atgaagaatc 180
tgcttagggt taggcgtttt gcgctgcttc gcgatgtacg ggccagatat acgcgttgac 240
attgattatt gactagttat taatagtaat caattacggg gtcattagtt catagcccat 300
atatggagtt ccgcgttaca taacttacgg taaatggccc gcctggctga ccgcccaacg 360
acccccgccc attgacgtca ataatgacgt atgttcccat agtaacgcca atagggactt 420
tccattgacg tcaatgggtg gagtatttac ggtaaactgc ccacttggca gtacatcaag 480
tgtatcatat gccaagtacg ccccctattg acgtcaatga cggtaaatgg cccgcctggc 540
attatgccca gtacatgacc ttatgggact ttcctacttg gcagtacatc tacgtattag 600
tcatcgctat taccatggtg atgcggtttt ggcagtacat caatgggcgt ggatagcggt 660
ttgactcacg gggatttcca agtctccacc ccattgacgt caatgggagt ttgttttggc 720
accaaaatca acgggacttt ccaaaatgtc gtaacaactc cgccccattg acgcaaatgg 780
gcggtaggcg tgtacggtgg gaggtctata taagcagcgc gttttgcctg tactgggtct 840
ctctggttag accagatctg agcctgggag ctctctggct aactagggaa cccactgctt 900
aagcctcaat aaagcttgcc ttgagtgctt caagtagtgt gtgcccgtct gttgtgtgac 960
tctggtaact agagatccct cagacccttt tagtcagtgt ggaaaatctc tagcagtggc 1020
gcccgaacag ggacttgaaa gcgaaaggga aaccagagga gctctctcga cgcaggactc 1080
ggcttgctga agcgcgcacg gcaagaggcg aggggcggcg actggtgagt acgccaaaaa 1140
ttttgactag cggaggctag aaggagagag atgggtgcga gagcgtcagt attaagcggg 1200
ggagaattag atcgcgatgg gaaaaaattc ggttaaggcc aggggggaaag aaaaaatata 1260
aattaaaaca tatagtatgg gcaagcaggg agctagaacg attcgcagtt aatcctggcc 1320
tgttagaaac atcagaaggc tgtagacaaa tactgggaca gctacaacca tcccttcaga 1380
caggatcaga agaacttaga tcattatata atacagtagc aaccctctat tgtgtgcatc 1440
aaaggataga gataaaagac accaaggaag ctttagacaa gatagaggaa gagcaaaaca 1500
aaagtaagac caccgcacag caagcggccg ctgatcttca gacctggagg aggagatatg 1560
agggacaatt ggagaagtga attatataaa tataaagtag taaaaattga accattagga 1620
gtagcaccca ccaaggcaaa gagaagagtg gtgcagagag aaaaaagagc agtgggaata 1680
ggagctttgt tccttgggtt cttgggagca gcaggaagca ctatgggcgc agcgtcaatg 1740
acgctgacgg tacaggccag acaattattg tctggtatag tgcagcagca gaacaatttg 1800
ctgagggcta ttgaggcgca acagcatctg ttgcaactca cagtctgggg catcaagcag 1860
ctccaggcaa gaatcctggc tgtggaaaga tacctaaagg atcaacagct cctggggatt 1920
tggggttgct ctggaaaact catttgcacc actgctgtgc cttggaatgc tagttggagt 1980
aataaatctc tggaacagat ttggaatcac acgacctgga tggagtggga cagagaaatt 2040
aacaattaca caagcttaat acactcctta attgaagaat cgcaaaacca gcaagaaaag 2100
aatgaacaag aattattgga attagataaa tgggcaagtt tgtggaattg gtttaacata 2160
acaaattggc tgtggtatat aaaattattc ataatgatag taggaggctt ggtaggttta 2220
agaatagttt ttgctgtact ttctatagtg aatagagtta ggcagggata ttcaccatta 2280
tcgtttcaga cccacctccc aaccccgagg ggacccgaca ggcccgaagg aatagaagaa 2340
gaaggtggag agagagacag agacagatcc attcgattag tgaacggatc ggcactgcgt 2400

gcgccaattc tgcagacaaa tggcagtatt catccacaat tttaaaagaa aaggggggat 2460
tgggggtac agtgcagggg aaagaatagt agacataata gcaacagaca tacaaactaa 2520
agaattacaa aaacaaatta caaaaattca aaattttcgg gtttattaca gggacagcag 2580
agatccagtt tggttaatta agggtgcagc ggcctccgcg ccgggttttg gcgcctcccg 2640
cgggcgcccc cctcctcacg gcgagcgctg ccacgtcaga cgaagggcgc aggagcgttc 2700
ctgatccttc cgcccggacg ctcaggacag cggcccgctg ctcataagac tcggccttag 2760
aaccccagta tcagcagaag gacattttag gacgggactt gggtgactct agggcactgg 2820
ttttctttcc agagagcgga acaggcgagg aaaagtagtc ccttctcggc gattctgcgg 2880
agggatctcc gtggggcggt gaacgccgat gattatataa ggacgcgccg ggtgtggcac 2940
agctagttcc gtcgcagccg ggatttgggt cgcggttctt gtttgtggat cgctgtgatc 3000
gtcacttggt gagttgcggg ctgctgggct ggccggggct ttcgtggccg ccgggccgct 3060
cggtgggacg gaagcgtgtg gagagaccgc caagggctgt agtctgggtc cgcgagcaag 3120
gttgccctga actgggggtt gggggggagcg cacaaaatgg cggctgttcc cgagtcttga 3180
atggaagacg cttgtaaggc gggctgtgag gtcgttgaaa caaggtgggg ggcatggtgg 3240
gcggcaagaa cccaaggtct tgaggccttc gctaatgcgg gaaagctctt attcgggtga 3300
gatgggctgg ggcaccatct ggggaccctg acgtgaagtt tgtcactgac tggagaactc 3360
gggtttgtcg tctggttgcg ggggcggcag ttatgcggtg ccgttgggca gtgcacccgt 3420
acctttggga gcgcgcgcct cgtcgtgtcg tgacgtcacc cgttctgttg gcttataatg 3480
cagggtgggg ccacctgccg gtaggtgtgc ggtaggcttt tctccgtcgc aggacgcagg 3540
gttcgggcct agggtaggct ctcctgaatc gacaggcgcc ggacctctgg tgaggggagg 3600
gataagtgag gcgtcagttt ctttggtcgg ttttatgtac ctatcttctt aagtagctga 3660
agctccggtt ttgaactatg cgctcggggt tggcgagtgt gttttgtgaa gtttttagg 3720
cacctttga aatgtaatca tttgggtcaa tatgtaattt tcagtgttag actagtaaag 3780
cttctgcagg tcgactctag aaaattgtcc gctaaattct ggccgttttt ggctttttg 3840
ttagacagga tctctcgagg ttaacgaatt catgcccatg gggtctctgc aaccgctggc 3900
caccttgtac ctgctgggga tgctggtcgc ttccgtgcta gcctggggca acctgtgggt 3960
gaccgtgtac tacggcgtgc ccgtgtggaa ggaggccaag accaccctgt tctgcgccag 4020
cgacgccaag agctacgaga aggaggtgca caacgtgtgg gccacccacg cctgcgtgcc 4080
caccgacccc aacccccagg agatcgtgct gggcaacgtg accgagaact tcaacatgtg 4140
gaagaacgac atggtggacc agatgcacga ggacatcatc agcctgtggg accagagcct 4200
gaagccctgc gtgaagctga ccccccctgtg cgtgaccctg aactgcaccg aggtgaacgt 4260
gacccgcaac gtgaacaaca gcgtggtgaa caacaccacc aacgtgaaca acagcatgaa 4320
cggcgacatg aagaactgca gcttcaacat caccaccgag ctgaaggaca agaagaagaa 4380
cgtgtacgcc ctgttctaca agctggacat cgtgagcctg aacgagaccg acgacagcga 4440
gaccggcaac agcagcaagt actaccgcct gatcaactgc aacaccagcg ccctgaccca 4500
ggcctgcccc aaggtgagct tcgaccccat ccccatccac tactgcgccc ccgccggcta 4560
cgccatcctg aagtgcaaca acaagacctt caacggcacc ggcccctgcc acaacgtgag 4620
caccgtgcag tgcacccacg gcatcaagcc cgtggtgagc acccagctgc tgctgaacgg 4680
cagcctggcc gaggagggca tcatcatccg cagcgagaac ctgaccaaca acgtcaagac 4740
catcatcgtg cacctgaacc gcagcatcga gatcgtgtgc gtgcgcccca acaacaacac 4800
ccgccagagc atccgcatcg gccccggcca gaccttctac gccaccggcg acatcatcgg 4860
cgacatccgc caggcccact gcaacatcag ccgcaccaac tggaccaaga ccctgcgcga 4920
ggtgcgcaac aagctgcgcg agcacttccc caacaagaac atcaccttca agcccagcag 4980
cggcggcgac ctggagatca ccacccacag cttcaactgc cgcggcgagt tcttctactg 5040
caacaccagc ggcctgttca gcatcaacta caccgagaac aacaccgacg gcaccccat 5100
caccctgccc tgccgcatcc gccagatcat caacatgtgg caggaggtgg gccgcgccat 5160
gtacgccccc cccatcgagg gcaacatcgc ctgcaagagc gacatcaccg gcctgctgct 5220
ggtgcgcgac ggcggcagca ccaacgacag caccaacaac aacaccgaga tcttccgccc 5280
cgccggcggc gacatgcgcg acaactggcg cagcgagctg tacaagtaca aggtggtgga 5340
gatcaagccc ctgggcatcg cccccaccgt gtctattgcc tctttttct ttatcatagg 5400
gttaatcatt ggactattct tggttctccg agttggtatc catctttgca ttaaattaaa 5460
gcacaccaag aaaagacaga tttatacaga catagagatg aaccgacttg gaaagtaaga 5520
attccgcccc tctccctccc ccccccctaa cgttactggc cgaagccgct tggaataagg 5580
ccggtgtgcg tttgtctata tgttattttc caccatattg ccgtcttttg gcaatgtgag 5640
ggcccggaaa cctggccctg tcttcttgac gagcattcct aggggtcttt cccctctcgc 5700
caaaggaatg caaggtctgt tgaatgtcgt gaaggaagca gttcctctgg aagcttcttg 5760
aagacaaaca acgtctgtag cgacccttg caggcagcgg aacccccac ctggcgacag 5820
gtgcctctgc ggccaaaagc cacgtgtata agatacacct gcaaaggcgg cacaacccca 5880
gtgccacgtt gtgagttgga tagttgtgga aagagtcaaa tggctctcct caagcgtatt 5940
caacaagggg ctgaaggatg cccagaaggt accccattgt atgggatctg atctggggcc 6000
tcggtgcaca tgctttacat gtgtttagtc gaggttaaaa aacgtctagg ccccccgaac 6060
cacggggacg tggttttcct ttgaaaaaca cgatgataat atggccacaa ccatgtggct 6120
gcagaattta cttttcctgg gcattgtggt ctacagcctc tcagcaccca cccgctcacc 6180
catcactgtc acccggcctt ggaagcatgt agaggccatc aaagaagccc tgaacctcct 6240
ggatgacatg cctgtcacgt tgaatgaaga ggtagaagtc gtctctaacg agttctcctt 6300
caagaagcta acatgtgtgc agacccgcct gaagatattc gagcagggtc tacggggcaa 6360
tttcaccaaa ctcaagggcg ccttgaacat gacagccagc tactaccaga catactgccc 6420

cccaactccg gaaacggact gtgaaacaca agttaccacc tatgcggatt tcatagacag 6480
ccttaaaacc tttctgactg atatcccctt tgaatgcaaa aaaccaggcc aaaaatgagt 6540
cgaaacctcg agggcgcgcc gaattcgata tcaagcttat cgataatcaa cctctggatt 6600
acaaaatttg tgaaagattg actggtattc ttaactatgt tgctccttt acgctatgtg 6660
gatacgctgc tttaatgcct ttgtatcatg ctattgcttc ccgtatggct ttcattttct 6720
cctccttgta taaatcctgg ttgctgtctc tttatgagga gttgtggccc gttgtcaggc 6780
aacgtggcgt ggtgtgcact gtgtttgctg acgcaacccc cactggttgg ggcattgcca 6840
ccacctgtca gctccttcc gggactttcg ctttcccccc ccctattgcc acggcggaac 6900
tcatcgccgc ctgccttgcc cgctgctgga caggggctcg gctgttgggc actgacaatt 6960
ccgtggtgtt gtcggggaaa tcatcgtcct ttccttggct gctcgcctgt gttgccacct 7020
ggattctgcg cgggacgtcc ttctgctacg tcccttcggc cctcaatcca gcggaccttc 7080
cttcccgcgg cctgctgccg gctctgcggc ctcttccgcg tcttcgcctt cgccctcaga 7140
cgagtcggat ctccctttgg gccgcctccc cgcatcgata ccgtcgacct cgagacctag 7200
aaaaacatgg agcaatcaca agtagcaata cagcagctac caatgctgat tgtgcctggc 7260
tagaagcaca agaggaggag gaggtgggtt ttccagtcac acctcaggta cctttaagac 7320
caatgactta caaggcagct gtagatctta gccacttttt aaaagaaaag gggggactgg 7380
aagggctaat tcactcccaa cgaagacaag atatccttga tctgtggatc taccacacac 7440
aaggctactt ccctgattgg cagaactaca caccagggcc agggatcaga tatccactga 7500
cctttggatg gtgctacaag ctagtaccag ttgagcaaga gaaggtagaa gaagccaatg 7560
aaggagagaa cacccgcttg ttacaccctg tgagcctgca tgggatggat gacccggaga 7620
gagaagtatt agagtggagg tttgacagcc gcctagcatt tcatcacatg gcccgagagc 7680
tgcatccgga ctgtactggg tctctctggt tagaccagat ctgagcctgg gagctctctg 7740
gctaactagg gaacccactg cttaagcctc aataaagctt gccttgagtg cttcaagtag 7800
tgtgtgcccg tctgttgtgt gactctggta actagagatc cctcagaccc ttttagtcag 7860
tgtggaaaat ctctagcagg gcccgtttaa acccgctgat cagcctcgac tgtgccttct 7920
agttgccagc catctgttgt ttgcccctcc cccgtgcctt ccttgaccct ggaaggtgcc 7980
actcccactg tcctttccta ataaaatgag gaaattgcat cgcattgtct gagtaggtgt 8040
cattctattc tgggggtgg ggtggggcag gacagcaagg gggaggattg ggaagacaat 8100
agcaggcatg ctggggatgc ggtgggctct atggcttctg aggcggaaag aaccagctgg 8160
ggctctaggg ggtatcccca cgcgccctgt agcggcgcat taagcgcggc gggtgtggtg 8220
gttacgcgca gcgtgaccgc tacacttgcc agcgccctag cgcccgctcc tttcgctttc 8280
ttcccttcct ttctcgccac gttcgccggc tttccccgtc aagctctaaa tcgggggctc 8340
cctttagggt tccgatttag tgctttacgg cacctcgacc ccaaaaaact tgattagggt 8400
gatggttcac gtagtgggcc atcgccctga tagacggttt ttcgcccttt gacgttggag 8460
tccacgttct ttaatagtgg actcttgttc caaactggaa caacactcaa ccctatctcg 8520
gtctattctt ttgatttata agggattttg ccgatttcgg cctattggtt aaaaaatgag 8580
ctgatttaac aaaaatttaa cgcgaattaa ttctgtggaa tgtgtgtcag ttagggtgtg 8640
gaaagtcccc aggctcccca gcaggcagaa gtatgcaaag catgcatctc aattagtcag 8700
caaccaggtg tggaaagtcc ccaggctccc cagcaggcag aagtatgcaa agcatgcatc 8760
tcaattagtc agcaaccata gtcccgcccc taactccgcc catcccgccc ctaactccgc 8820
ccagttccgc ccattctccg ccccatggct gactaatttt ttttatttat gcagaggccg 8880
aggccgcctc tgcctctgag ctattccaga agtagtgagg aggctttttt ggaggcctag 8940
gcttttgcaa aaagctcccg ggagcttgta tatccatttt cggatctgat cagcacgtgt 9000
tgacaattaa tcatcggcat agtatatcgg catagtataa tacgacaagg tgaggaacta 9060
aaccatggcc aagttgacca gtgccgttcc ggtgctcacc gcgcgcgacg tcgccggagc 9120
ggtcgagttc tggaccgacc ggctcgggtt ctcccgggac ttcgtggagg acgacttcgc 9180
cggtgtggtc cgggacgacg tgaccctgtt catcagcgcg gtccaggacc aggtggtgcc 9240
ggacaacacc ctggcctggg tgtgggtgcg cggcctggac gagctgtacg ccgagtggtc 9300
ggaggtcgtg tccacgaact tccgggacgc ctccgggccg gccatgaccg agatcggcga 9360
gcagccgtgg gggcgggagt tcgccctgcg cgacccggcc ggcaactgcg tgcacttcgt 9420
ggccgaggag caggactgac acgtgctacg agatttcgat tccaccgccg ccttctatga 9480
aaggttgggc ttcggaatcg ttttccggga cgccggctgg atgatcctcc agcgcgggga 9540
tctcatgctg gagttcttcg cccaccccaa cttgtttatt gcagcttata atggttacaa 9600
ataaagcaat agcatcacaa atttcacaaa taaagcattt ttttcactgc attctagttg 9660
tggtttgtcc aaactcatca atgtatctta tcatgtctgt ataccgtcga cctctagcta 9720
gagcttggcg taatcatggt catagctgtt tcctgtgtga aattgttatc cgctcacaat 9780
tccacacaac atacgagccg gaagcataaa gtgtaaagcc tggggtgcct aatgagtgag 9840
ctaactcaca ttaattgcgt tgcgctcact gcccgctttc cagtcgggaa acctgtcgtg 9900
ccagctgcat taatgaatcg gccaacgcgc ggggagaggc ggtttgcgta ttgggcgctc 9960
ttccgcttcc tcgctcactg actcgctgcg ctcggtcgtt cggctgcggc gagcggtatc 10020
agctcactca aaggcggtaa tacggttatc cacagaatca ggggataacg caggaaagaa 10080
catgtgagca aaaggccagc aaaaggccag gaaccgtaaa aaggccgcgt tgctggcgtt 10140
tttccatagg ctccgccccc ctgacgagca tcacaaaaat cgacgctcaa gtcagaggtg 10200
gcgaaacccg acaggactat aaagatacca ggcgtttccc cctggaagct ccctcgtgcg 10260
ctctcctgtt ccgaccctgc cgcttaccgg atacctgtcc gcctttctcc cttcgggaag 10320
cgtggcgctt tctcatagct cacgctgtag gtatctcagt tcggtgtagg tcgttcgctc 10380
caagctgggc tgtgtgcacg aaccccccgt tcagcccgac cgctgcgcct tatccggtaa 10440

ctatcgtctt gagtccaacc cggtaagaca cgacttatcg ccactggcag cagccactgg 10500
taacaggatt agcagagcga ggtatgtagg cggtgctaca gagttcttga agtggtggcc 10560
taactacggc tacactagaa gaacagtatt tggtatctgc gctctgctga agccagttac 10620
cttcggaaaa agagttggta gctcttgatc cggcaaacaa accaccgctg gtagcggtgg 10680
tttttttgtt tgcaagcagc agattacgcg cagaaaaaaa ggatctcaag aagatccttt 10740
gatcttttct acggggtctg acgctcagtg gaacgaaaac tcacgttaag ggattttggt 10800
catgagatta tcaaaaagga tcttcaccta gatcctttta aattaaaaat gaagttttaa 10860
atcaatctaa agtatatatg agtaaacttg gtctgacagt taccaatgct taatcagtga 10920
ggcacctatc tcagcgatct gtctatttcg ttcatccata gttgcctgac tccccgtcgt 10980
gtagataact acgatacggg agggcttacc atctggcccc agtgctgcaa tgataccgcg 11040
agacccacgc tcaccggctc cagatttatc agcaataaac cagccagccg gaagggccga 11100
gcgcagaagt ggtcctgcaa ctttatccgc ctccatccag tctattaatt gttgccggga 11160
agctagagta agtagttcgc cagttaatag tttgcgcaac gttgttgcca ttgctacagg 11220
catcgtggtg tcacgctcgt cgtttggtat ggcttcattc agctccggtt cccaacgatc 11280
aaggcgagtt acatgatccc ccatgttgtg caaaaaagcg gttagctcct tcggtcctcc 11340
gatcgttgtc agaagtaagt tggccgcagt gttatcactc atggttatgg cagcactgca 11400
taattctctt actgtcatgc catccgtaag atgcttttct gtgactggtg agtactcaac 11460
caagtcattc tgagaatagt gtatgcggcg accgagttgc tcttgcccgg cgtcaatacg 11520
ggataatacc gcgccacata gcagaacttt aaaagtgctc atcattggaa aacgttcttc 11580
ggggcgaaaa ctctcaagga tcttaccgct gttgagatcc agttcgatgt aacccactcg 11640
tgcacccaac tgatcttcag catcttttac tttcaccagc gtttctgggt gagcaaaaac 11700
aggaaggcaa aatgccgcaa aaaagggaat aagggcgaca cggaaatgtt gaatactcat 11760
actcttcctt tttcaatatt attgaagcat ttatcagggt tattgtctca tgagcggata 11820
catatttgaa tgtatttaga aaaataaaca aatagggggtt ccgcgcacat ttccccgaaa 11880
agtgccacct gac 11893

<210> 9
<211> 9569
<212> DNA
<213> Artificial Sequence

<220>
<223> Constructed plasmid vector

<220>
<221> misc_feature
<222> 4189
<223> n=a, t, c or g

<400> 9
gtcgacggat cgggagatct cccgatcccc tatggtgcac tctcagtaca atctgctctg 60
atgccgcata gttaagccag tatctgctcc ctgcttgtgt gttggaggtc gctgagtagt 120
gcgcgagcaa aatttaagct acaacaaggc aaggcttgac cgacaattgc atgaagaatc 180
tgcttagggt taggcgtttt gcgctgcttc gcgatgtacg ggccagatat acgcgttgac 240
attgattatt gactagttat taatagtaat caattacggg gtcattagtt catagcccat 300
atatggagtt ccgcgttaca taacttacgg taaatggccc gcctggctga ccgcccaacg 360
acccccgccc attgacgtca ataatgacgt atgttcccat agtaacgcca atagggactt 420
tccattgacg tcaatgggtg gagtatttac ggtaaactgc ccacttggca gtacatcaag 480
tgtatcatat gccaagtacg ccccctattg acgtcaatga cggtaaatgg cccgcctggc 540
attatgccca gtacatgacc ttatgggact ttcctacttg gcagtacatc tacgtattag 600
tcatcgctat taccatggtg atgcggtttt ggcagtacat caatgggcgt ggatagcggt 660
ttgactcacg gggatttcca agtctccacc ccattgacgt caatgggagt ttgttttggc 720
accaaaatca acgggacttt ccaaaatgtc gtaacaactc cgccccattg acgcaaatgg 780
gcggtaggcg tgtacggtgg gaggtctata taagcagcgc gttttgcctg tactgggtct 840
ctctggttag accagatctg agcctgggag ctctctggct aactagggaa cccactgctt 900
aagcctcaat aaagcttgcc ttgagtgctt caagtagtgt gtgcccgtct gttgtgtgac 960
tctggtaact agagatccct cagacccttt tagtcagtgt ggaaaatctc tagcagtggc 1020
gcccgaacag ggacttgaaa gcgaaaggga aaccagagga gctctctcga cgcaggactc 1080
ggcttgctga agcgcgcacg gcaagaggcg aggggcggcg actggtgagt acgccaaaaa 1140
ttttgactag cggaggctag aaggagagag atgggtgcga gagcgtcagt attaagcggg 1200
ggagaattag atcgcgatgg gaaaaaattc ggttaaggcc agggggaaag aaaaaatata 1260
aattaaaaca tatagtatgg gcaagcaggg agctagaacg attcgcagtt aatcctggcc 1320
tgttagaaac atcagaaggc tgtagacaaa tactgggaca gctacaacca tcccttcaga 1380
caggatcaga agaacttaga tcattatata atacagtagc aaccctctat tgtgtgcatc 1440
aaaggataga gataaaagac accaaggaag ctttagacaa gatagaggaa gagcaaaaca 1500

aaagtaagac caccgcacag caagcggccg gccgcgctga tcttcagacc tggaggagga 1560
gatatgaggg acaattggag aagtgaatta tataaatata aagtagtaaa aattgaacca 1620
ttaggagtag cacccaccaa ggcaaagaga agagtggtgc agagagaaaa aagagcagtg 1680
ggaataggag ctttgttcct tgggttcttg ggagcagcag gaagcactat gggcgcagcg 1740
tcaatgacgc tgacggtaca ggccagacaa ttattgtctg gtatagtgca gcagcagaac 1800
aatttgctga gggctattga ggcgcaacag catctgttgc aactcacagt ctggggcatc 1860
aagcagctcc aggcaagaat cctggctgtg gaaagatacc taaaggatca acagctcctg 1920
gggatttggg gttgctctgg aaaactcatt tgcaccactg ctgtgccttg gaatgctagt 1980
tggagtaata aatctctgga acagatttgg aatcacacga cctggatgga gtgggacaga 2040
gaaattaaca attacacaag cttaatacac tccttaattg aagaatcgca aaaccagcaa 2100
gaaaagaatg aacaagaatt attggaatta gataaatggg caagtttgtg gaattggttt 2160
aacataacaa attggctgtg gtatataaaa ttattcataa tgatagtagg aggcttggta 2220
ggtttaagaa tagtttttgc tgtactttct atagtgaata gagttaggca gggatattca 2280
ccattatcgt ttcagaccca cctcccaacc ccgaggggac ccgacaggcc cgaaggaata 2340
gaagaagaag gtggagagag agacagagac agatccattc gattagtgaa cggatcggca 2400
ctgcgtgcgc caattctgca gacaaatggc agtattcatc cacaatttta aaagaaaagg 2460
ggggattggg gggtacagtg caggggaaag aatagtagac ataatagcaa cagacataca 2520
aactaaagaa ttacaaaaac aaattacaaa aattcaaaat tttcgggttt attacaggga 2580
cagcagagat ccagtttggt tagtaccggg cccggtgctt tgctctgagc cagcccacca 2640
gtttggaatg actccttttt atgacttgaa ttttcaagta taaagtctag tgctaaattt 2700
aatttgaaca actgtatagt ttttgctggt tgggggaagg aaaaaaaatg gtggcagtgt 2760
ttttttcaga attagaagtg aaatgaaaat tgttgtgtgt gaggatttct aatgacatgt 2820
ggtggttgca tactgagtga agccggtgag cattctgcca tgtcaccccc tcgtgctcag 2880
taatgtactt tacagaaatc ctaaactcaa aagattgata taaaccatgc ttcttgtgta 2940
tatccggtct cttctctggg tagtctcact cagcctgcat ttctgccagg gcccgctcta 3000
gaactagtgg atcccccggg ctgcaggaat tcgaacgctg acgtcatcaa cccgctccaa 3060
ggaatcgcgg gcccagtgtc actaggcggg aacacccagc gcgcgtgcgc cctggcagga 3120
agatggctgt gagggacagg ggagtggcgc cctgcaatat ttgcatgtcg ctatgtgttc 3180
tgggaaatca ccataaacgt gaaatgtctt tggatttggg aatcttataa gttctgtatg 3240
agaccacaga tccccctacc tgagttcctt ccccttcaag agaggggaag gaactcaggt 3300
agtttttaag cttatcgata ccgtcgacct cgaggtcgac ggtatcgata agctcgcttc 3360
acgagattcc agcaggtcga gggacctaat aacttcgtat agcatacatt atacgaagtt 3420
atattaaggg ttccaagctt aagcggccgc gtggataacc gtattaccgc catgcattag 3480
ttattaatag taatcaatta cggggtcatt agttcatagc ccatatatgg agttccgcgt 3540
tacataactt acggtaaatg gcccgcctgg ctgaccgccc aacgacccca gcccattgac 3600
gtcaataatg acgtatgttc ccatagtaac gccaataggg actttccatt gacgtcaatg 3660
ggtggagtat ttacggtaaa ctgcccactt ggcagtacat caagtgtatc atatgccaag 3720
tacgcccccc attgacgtca atgacggtaa atggcccgcc tggcattatg cccagtacat 3780
gaccttatgg gactttccta cttggcagta catctacgta ttagtcatcg ctattaccat 3840
ggtgatgcgg ttttggcagt acatcaatgg gcgtggatag cggtttgact cacggggatt 3900
tccaagtctc caccccattg acgtcaatgg gagtttgttt tggcaccaaa atcaacggga 3960
ctttccaaaa tgtcgtaaca actccgcccc attgacgcaa atgggcggta ggcgtgtacg 4020
gtgggaggtc tatataagca gagctggttt agtgaaccgt cagatccgct agcgctaccg 4080
gatcacaagt ttgtacaaaa aagcaggctc tttaaaggaa ccaattcagt cgactggatc 4140
cggtaccgaa ttcaaagaca actcagagtt caccatgggc tccatcggng cagcaagcat 4200
ggaattttgt tttgatgtat tcaaggagct caaagtccac catgccaatg agaacatctt 4260
ctactgcccc attgccatca tgtcagctct agccatggta tacctgggtg caaaagacag 4320
caccaggaca caaataaata aggttgttcg ctttgataaa cttccaggat tcggagacag 4380
tattgaagct cagtgtggca catctgtaaa cgttcactct tcacttagag acatcctcaa 4440
ccaaatcacc aaaccaaatg atgtttattc gttcagcctt gccagtagac tttatgctga 4500
agagagatac ccaatcctgc cagaatactt gcagtgtgtg aaggaactgt atagaggagg 4560
cttggaacct atcaactttc aaacagctgc agatcaagcc agagagctca tcaattcctg 4620
ggtagaaagt cagacaaatg gaattatcag aaatgtcctt cagccaagct ccgtggattc 4680
tcaaactgca atggttctgg ttaatgccat tgtcttcaaa ggactgtggg agaaaacatt 4740
taaggatgaa gacacacaag caatgccttt cagagtgact gagcaagaaa gcaaacctgt 4800
gcagatgatg taccagattg gtttatttag agtggcatca atggcttctg agaaaatgaa 4860
gatcctggag cttccatttg ccagtgggac aatgagcatg ttggtgctgt tgcctgatga 4920
agtctcaggc cttgagcagc ttgagagtat aatcaacttt gaaaaactga ctgaatggac 4980
cagttctaat gttatggaag agaggaagat caaagtgtac ttacctcgca tgaagatgga 5040
ggaaaaatac aacctcacat ctgtcttaat ggctatgggc attactgacg tgtttagctc 5100
ttcagccaat ctgtctggca tctcctcagc agagagcctg aagatatctc aagctgtcca 5160
tgcagcacat gcagaaatca atgaagcagg cagagaggtg gtagggtcag cagaggctgg 5220
agtggatgct gcaagcgtct ctgaagaatt tagggctgac catccattcc tcttctgtat 5280
caagcacatc gcaaccaacg ccgttctctt ctttggcaga tgtgtttccc cttaaaaaga 5340
agaaagctga aaaactctgt cccttccaac aagacccaga gcactgtagt atcaggggta 5400
aaatgaaaag tatgttctct gctgcatcca gacttcataa aagctggagc ttaatctaga 5460
ctcgagcggc cgccactgtg ctggatatct gcagaattcg cggccgcact cgagatatct 5520

agacccagct ttcttgtaca aagtggtgat aattcgtcga gggacctaat aacttcgtat 5580
agcatacatt atacgaagtt atacatgttt aagggttccg gttccactag gtacaattcg 5640
atatcaagct tatcgataat caacctctgg attacaaaat ttgtgaaaga ttgactggta 5700
ttcttaacta tgttgctcct tttacgctat gtggatacgc tgctttaatg cctttgtatc 5760
atgctattgc ttcccgtatg gctttcattt tctcctcctt gtataaatcc tggttgctgt 5820
ctctttatga ggagttgtgg cccgttgtca ggcaacgtgg cgtggtgtgc actgtgtttg 5880
ctgacgcaac ccccactggt tggggcattg ccaccacctg tcagctcctt tccgggactt 5940
tcgctttccc cctccctatt gccacggcgg aactcatcgc cgcctgcctt gcccgctgct 6000
ggacaggggc tcggctgttg ggcactgaca attccgtggt gttgtcgggg aaatcatcgt 6060
cctttccttg gctgctcgcc tgtgttgcca cctggattct gcgcgggacg tccttctgct 6120
acgtcccttc ggccctcaat ccagcggacc ttccttcccg cggcctgctg ccggctctgc 6180
ggcctcttcc gcgtcttcgc cttcgccctc agacgagtcg gatctccctt tgggccgcct 6240
ccccgcatcg ataccgtcga cctcgatcga gacctagaaa aacatggagc aatcacaagt 6300
agcaatacag cagctaccaa tgctgattgt gcctggctag aagcacaaga ggaggaggag 6360
gtgggttttc cagtcacacc tcaggtacca agcatggggt aaagtactgt tctcatcaca 6420
tcatatcaag gttatatacc atcaatattg ccacagatgt tacttagcct tttaatattt 6480
ctctaattta gtgtatatgc aatgatagtt ctctgatttc tgagattgag tttctcatgt 6540
gtaatgatta tttagagttt ctctttcatc tgttcaaatt tttgtctagt tttatttttt 6600
actgatttgt aagacttctt tttataatct gcatattaca attctcttta ctggggtgtt 6660
gcaaatattt tctgtcattc tatggcctga cttttcttaa tggtttttta attttaaaaa 6720
taagtcttaa tattcatgca atctaattaa caatcttttc tttgtggtta ggactttgag 6780
tcataagaaa tttttctcta cactgaagtc atgatggcat gcttctatat tattttctaa 6840
aagatttaaa gttttgcctt ctccatttag acttataatt cactggaatt tttttgtgtg 6900
tatggtatga catatgggtt ccctttttatt ttttacatat aaatatattt ccctgttttt 6960
ctaaaaaaga aaaagatcat cattttccca ttgtaaaatg ccatattttt ttcataggtc 7020
acttacatat atcaatgggt ctgtttctga gctctactct attttatcag cctcactgtc 7080
tatccccaca catctcatgc tttgctctaa atcttgatat ttagtggaac attctttccc 7140
attttgttct acaagaatat ttttgttatt gtcttttggg cttctatata cattttagaa 7200
tgaggttggc aagttctgta gatcttagcc actttttaaa agaaaagggg ggactggaag 7260
ggctaattca ctcccaacga agacaagata tccttgatct gtggatctac cacacacaag 7320
gctacttccc tgattggcag aactacacac cagggccagg gatcagatat ccactgacct 7380
ttggatggtg ctacaagcta gtaccagttg agcaagagaa ggtagaagaa gccaatgaag 7440
gagagaacac ccgcttgtta caccctgtga gcctgcatgg gatggatgac ccggagagag 7500
aagtattaga gtggaggttt gacagccgcc tagcatttca tcacatggcc cgagagctgc 7560
atccggactg tactgggtct ctctggttag accagatctg agcctgggag ctctctggct 7620
aactagggaa cccactgctt aagcctcaat aaagcttgcc ttgagtgctt caagtagtgt 7680
gtgcccgtct gttgtgtgac tctggtaact agagatccct cagacccttt tagtcagtgt 7740
ggaaaatctc tagcagcatg tgagcaaaag gccagcaaaa ggccaggaac cgtaaaaagg 7800
ccgcgttgct ggcgtttttc cataggctcc gccccctga cgagcatcac aaaaatcgac 7860
gctcaagtca gaggtggcga aacccgacag gactataaag ataccaggcg tttccccctg 7920
gaagctccct cgtgcgctct cctgttccga ccctgccgct taccggatac ctgtccgcct 7980
ttctcccttc gggaagcgtg gcgctttctc atagctcacg ctgtaggtat ctcagttcgg 8040
tgtaggtcgt tcgctccaag ctgggctgtg tgcacgaacc ccccgttcag cccgaccgct 8100
gcgccttatc cggtaactat cgtcttgagt ccaacccggt aagacacgac ttatcgccac 8160
tggcagcagc cactggtaac aggattagca gagcgaggta tgtaggcggt gctacagagt 8220
tcttgaagtg gtggcctaac tacggctaca ctagaagaac agtatttggt atctgcgctc 8280
tgctgaagcc agttaccttc ggaaaaagag ttggtagctc ttgatccggc aaacaaacca 8340
ccgctggtag cggtggtttt tttgtttgca agcagcagat tacgcgcaga aaaaaaggat 8400
ctcaagaaga tcctttgatc ttttctacgg ggtctgacgc tcagtggaac gaaaactcac 8460
gttaagggat tttggtcatg agattatcaa aaaggatctt cacctagatc cttttaaatt 8520
aaaaatgaag ttttaaatca atctaaagta tatatgagta aacttggtct gacagttacc 8580
aatgcttaat cagtgaggca cctatctcag cgatctgtct atttcgttca tccatagttg 8640
cctgactccc cgtcgtgtag ataactacga tacgggaggg cttaccatct ggccccagtg 8700
ctgcaatgat accgcgagac ccacgctcac cggctccaga tttatcagca ataaaccagc 8760
cagccggaag ggccgagcgc agaagtggtc ctgcaacttt atccgcctcc atccagtcta 8820
ttaattgttg ccgggaagct agagtaagta gttcgccagt taatagtttg cgcaacgttg 8880
ttgccattgc tacaggcatc gtggtgtcac gctcgtcgtt tggtatggct tcattcagct 8940
ccggttccca acgatcaagg cgagttacat gatccccat gttgtgcaaa aaagcggtta 9000
gctccttcgg tcctccgatc gttgtcagaa gtaagttggc cgcagtgtta tcactcatgg 9060
ttatggcagc actgcataat tctcttactg tcatgccatc cgtaagatgc ttttctgtga 9120
ctggtgagta ctcaaccaag tcattctgag aatagtgtat gcggcgaccg agttgctctt 9180
gcccggcgtc aatacgggat aataccgcgc cacatagcag aactttaaaa gtgctcatca 9240
ttggaaaacg ttcttcgggg cgaaaactct caaggatctt accgctgttg agatccagtt 9300
cgatgtaacc cactcgtgca cccaactgat cttcagcatc ttttactttc accagcgttt 9360
ctgggtgagc aaaaacagga aggcaaaatg ccgcaaaaaa gggaataagg gcgacacgga 9420
aatgttgaat actcatactc ttccttttttc aatattattg aagcatttat cagggttatt 9480
gtctcatgag cggatacata tttgaatgta tttagaaaaa taaacaaata ggggttccgc 9540

gcacatttcc ccgaaaagtg ccacctgac 9569

<210> 10
<211> 9394
<212> DNA
<213> Artificial Sequence

<220>
<223> Constructed plasmid vector

<220>
<221> misc_feature
<222> 7971
<223> n=a ,t, c or g

<400> 10
ttgtacaaag tggtgataac ctcgagggcg caattcgtcg agggacctaa taacttcgta 60
tagcatacat tatacgaagt tatacatgtt taagggttcc ggttccacta ggtacaattc 120
gatatcaagc ttatcgataa tcaacctctg gattacaaaa tttgtgaaag attgactggt 180
attcttaact atgttgctcc ttttacgcta tgtggatacg ctgctttaat gcctttgtat 240
catgctattg cttcccgtat ggctttcatt ttctcctcct tgtataaatc ctggttgctg 300
tctctttatg aggagttgtg gcccgttgtc aggcaacgtg gcgtggtgtg cactgtgttt 360
gctgacgcaa cccccactgg ttggggcatt gccaccacct gtcagctcct ttccgggact 420
ttcgctttcc ccctccctat tgccacggcg gaactcatcg ccgcctgcct tgcccgctgc 480
tggacagggg ctcggctgtt gggcactgac aattccgtgg tgttgtcggg gaaatcatcg 540
tcctttcctt ggctgctcgc ctgtgttgcc acctggattc tgcgcgggac gtccttctgc 600
tacgtccctt cggccctcaa tccagcggac cttccttccc gcggcctgct gccggctctg 660
cggcctcttc cgcgtcttcg ccttcgccct cagacgagtc ggatctccct ttgggccgcc 720
tccccgcatc gataccgtcg acctcgatcg agacctagaa aaacatggag caatcacaag 780
tagcaataca gcagctacca atgctgattg tgcctggcta gaagcacaag aggaggagga 840
ggtgggtttt ccagtcacac ctcaggtacc aagcatgggg taaagtactg ttctcatcac 900
atcatatcaa ggttatatac catcaatatt gccacagatg ttacttagcc ttttaatatt 960
tctctaattt agtgtatatg caatgatagt tctctgattt ctgagattga gtttctcatg 1020
tgtaatgatt atttagagtt tctctttcat ctgttcaaat ttttgtctag ttttattttt 1080
tactgatttg taagacttct ttttataatc tgcatattac aattctcttt actggggtgt 1140
tgcaaatatt ttctgtcatt ctatggcctg actttttcta atggtttttt aattttaaaa 1200
ataagtctta atattcatgc aatctaatta acaatctttt ctttgtggtt aggactttga 1260
gtcataagaa atttttctct acactgaagt catgatggca tgcttctata ttatttttcta 1320
aaagatttaa agttttgcct tctccattta gacttataat tcactggaat ttttttgtgt 1380
gtatggtatg acatatgggt tccctttttat tttttacata taaatatatt tccctgtttt 1440
tctaaaaaag aaaaagatca tcatttttccc attgtaaaat gccatatttt tttcataggt 1500
cacttacata tatcaatggg tctgtttctg agctctactc tattttatca gcctcactgt 1560
ctatccccac acatctcatg ctttgctcta aatcttgata tttagtggaa cattctttcc 1620
cattttgttc tacaagaata tttttgttat tgtcttttgg gcttctatat acattttaga 1680
atgaggttgg caagttctgt agatcttagc cacttttaa aagaaaaggg gggactggaa 1740
gggctaattc actcccaacg aagacaagat atccttgatc tgtggatcta ccacacacaa 1800
ggctacttcc ctgattggca gaactacaca ccagggccag ggatcagata tccactgacc 1860
tttggatggt gctacaagct agtaccagtt gagcaagaga aggtagaaga agccaatgaa 1920
ggagagaaca cccgcttgtt acaccctgtg agcctgcatg ggatggatga cccggagaga 1980
gaagtattag agtggaggtt tgacagccgc ctagcatttc atcacatggc ccgagagctg 2040
catccggact gtactgggtc tctctggtta gaccagatct gagcctggga gctctctggc 2100
taactaggga acccactgct taagcctcaa taaagcttgc cttgagtgct tcaagtagtg 2160
tgtgcccgtc tgttgtgtga ctctggtaac tagagatccc tcagaccctt ttagtcagtg 2220
tggaaaatct ctagcagcat gtgagcaaaa ggccagcaaa aggccaggaa ccgtaaaaag 2280
gccgcgttgc tggcgttttt ccataggctc cgccccctg acgagcatca caaaaatcga 2340
cgctcaagtc agaggtggcg aaacccgaca ggactataaa gataccaggc gtttcccccct 2400
ggaagctccc tcgtgcgctc tcctgttccg accctgccgc ttaccggata cctgtccgcc 2460
tttctccctt cgggaagcgt ggcgctttct catagctcac gctgtaggta tctcagttcg 2520
gtgtaggtcg ttcgctccaa gctgggctgt gtgcacgaac ccccgttca gcccgaccgc 2580
tgcgccttat ccggtaacta tcgtcttgag tccaacccgg taagacacga cttatcgcca 2640
ctggcagcag ccactggtaa caggattagc agagcgaggt atgtaggcgg tgctacagag 2700
ttcttgaagt ggtggcctaa ctacggctac actagaagaa cagtatttgg tatctgcgct 2760
ctgctgaagc cagttacctt cggaaaaaga gttggtagct cttgatccgg caaacaaacc 2820
accgctggta gcggtggttt ttttgtttgc aagcagcaga ttacgcgcag aaaaaaagga 2880
tctcaagaag atcctttgat cttttctacg gggtctgacg ctcagtggaa cgaaaactca 2940

cgttaaggga ttttggtcat gagattatca aaaaggatct tcacctagat ccttttaaat 3000
taaaaatgaa gttttaaatc aatctaaagt atatatgagt aaacttggtc tgacagttac 3060
caatgcttaa tcagtgaggc acctatctca gcgatctgtc tatttcgttc atccatagtt 3120
gcctgactcc ccgtcgtgta gataactacg atacgggagg gcttaccatc tggccccagt 3180
gctgcaatga taccgcgaga cccacgctca ccggctccag atttatcagc aataaaccag 3240
ccagccggaa gggccgagcg cagaagtggt cctgcaactt tatccgcctc catccagtct 3300
attaattgtt gccgggaagc tagagtaagt agttcgccag ttaatagttt gcgcaacgtt 3360
gttgccattg ctacaggcat cgtggtgtca cgctcgtcgt ttggtatggc ttcattcagc 3420
tccggttccc aacgatcaag gcgagttaca tgatccccca tgttgtgcaa aaaagcggtt 3480
agctccttcg gtcctccgat cgttgtcaga agtaagttgg ccgcagtgtt atcactcatg 3540
gttatggcag cactgcataa ttctcttact gtcatgccat ccgtaagatg cttttctgtg 3600
actggtgagt actcaaccaa gtcattctga gaatagtgta tgcggcgacc gagttgctct 3660
tgcccggcgt caatacggga taataccgcg ccacatagca gaactttaaa agtgctcatc 3720
attggaaaac gttcttcggg gcgaaaactc tcaaggatct taccgctgtt gagatccagt 3780
tcgatgtaac ccactcgtgc acccaactga tcttcagcat cttttacttt caccagcgtt 3840
tctgggtgag caaaaacagg aaggcaaaat gccgcaaaaa agggaataag ggcgacacgg 3900
aaatgttgaa tactcatact cttccttttt caatattatt gaagcattta tcagggttat 3960
tgtctcatga gcggatacat atttgaatgt atttagaaaa ataaacaaat aggggttccg 4020
cgcacatttc cccgaaaagt gccacctgac gtcgacggat cgggagatct cccgatcccc 4080
tatggtgcac tctcagtaca atctgctctg atgccgcata gttaagccag tatctgctcc 4140
ctgcttgtgt gttggaggtc gctgagtagt gcgcgagcaa aatttaagct acaacaaggc 4200
aaggcttgac cgacaattgc atgaagaatc tgcttagggt taggcgtttt gcgctgcttc 4260
gcgatgtacg ggccagatat acgcgttgac attgattatt gactagttat taatagtaat 4320
caattacggg gtcattagtt catagcccat atatggagtt ccgcgttaca taacttacgg 4380
taaatggccc gcctggctga ccgcccaacg acccccgccc attgacgtca ataatgacgt 4440
atgttcccat agtaacgcca atagggactt tccattgacg tcaatgggtg gagtatttac 4500
ggtaaactgc ccactttggca gtacatcaag tgtatcatat gccaagtacg ccccctattg 4560
acgtcaatga cggtaaatgg cccgcctggc attatgccca gtacatgacc ttatgggact 4620
ttcctacttg gcagtacatc tacgtattag tcatcgctat taccatggtg atgcggtttt 4680
ggcagtacat caatgggcgt ggatagcggt ttgactcacg gggatttcca agtctccacc 4740
ccattgacgt caatgggagt ttgttttggc accaaaatca acgggacttt ccaaaatgtc 4800
gtaacaactc cgccccattg acgcaaatgg gcggtaggcg tgtacggtgg gaggtctata 4860
taagcagcgc gttttgcctg tactgggtct ctctggttag accagatctg agcctgggag 4920
ctctctggct aactagggaa cccactgctt aagcctcaat aaagcttgcc ttgagtgctt 4980
caagtagtgt gtgcccgtct gttgtgtgac tctggtaact agagatccct cagacccttt 5040
tagtcagtgt ggaaaatctc tagcagtggc gcccgaacag ggacttgaaa gcgaaaggga 5100
aaccagagga gctctctcga cgcaggactc ggcttgctga agcgcgcacg gcaagaggcg 5160
aggggcggcg actggtgagt acgccaaaaa ttttgactag cggaggctag aaggagagag 5220
atgggtgcga gagcgtcagt attaagcggg ggagaattag atcgcgatgg gaaaaaattc 5280
ggttaaggcc agggggaaag aaaaaatata aattaaaaca tatagtatgg gcaagcaggg 5340
agctagaacg attcgcagtt aatcctggcc tgttagaaac atcagaaggc tgtagacaaa 5400
tactgggaca gctacaacca tcccttcaga caggatcaga agaacttaga tcattatata 5460
atacagtagc aaccctctat tgtgtgcatc aaaggataga gataaaagac accaaggaag 5520
ctttagacaa gatagaggaa gagcaaaaca aaagtaagac caccgcacag caagcggccg 5580
gccgcgctga tcttcagacc tggaggagga gatatgaggg acaattggag aagtgaatta 5640
tataaatata aagtagtaaa aattgaacca ttaggagtag cacccaccaa ggcaaagaga 5700
agagtggtgc agagagaaaa aagagcagtg ggaataggag ctttgttcct tgggttcttg 5760
ggagcagcag gaagcactat gggcgcagcg tcaatgacgc tgacggtaca ggccagacaa 5820
ttattgtctg gtatagtgca gcagcagaac aatttgctga gggctattga ggcgcaacag 5880
catctgttgc aactcacagt ctggggcatc aagcagctcc aggcaagaat cctggctgtg 5940
gaaagatacc taaaggatca acagctcctg gggatttggg gttgctctgg aaaactcatt 6000
tgcaccactg ctgtgccttg gaatgctagt tggagtaata aatctctgga acagatttgg 6060
aatcacacga cctggatgga gtgggacaga gaaattaaca attacacaag cttaatacac 6120
tccttaattg aagaatcgca aaaccagcaa gaaaagaatg aacaagaatt attggaatta 6180
gataaatggg caagtttgtg gaattggttt aacataacaa attggctgtg gtatataaaa 6240
ttattcataa tgatagtagg aggcttggta ggtttaagaa tagtttttgc tgtactttct 6300
atagtgaata gagttaggca gggatattca ccattatcgt ttcagaccca cctcccaacc 6360
ccgaggggac ccgacaggcc cgaaggaata gaagaagaag gtggagagag agacagagac 6420
agatccattc gattagtgaa cggatcggca ctgcgtgcgc caattctgca gacaaatggc 6480
agtattcatc cacaatttta aaagaaaagg ggggattggg gggtacagtg caggggaaag 6540
aatagtagac ataatagcaa cagacataca aactaaagaa ttacaaaaac aaattacaaa 6600
aattcaaaat tttcgggttt attacaggga cagcagagat ccagtttggt tagtaccggg 6660
cccggtgctt tgctctgagc cagcccacca gtttggaatg actccttttt atgacttgaa 6720
ttttcaagta taaagtctag tgctaaattt aatttgaaca actgtatagt ttttgctggt 6780
tgggggaagg aaaaaaaatg gtggcagtgt ttttttcaga attagaagtg aaatgaaaat 6840
tgttgtgtgt gaggatttct aatgacatgt ggtggttgca tactgagtga agccggtgag 6900
cattctgcca tgtcaccccc tcgtgctcag taatgtactt tacagaaatc ctaaactcaa 6960

```
aagattgata taaaccatgc ttcttgtgta tatccggtct cttctctggg tagtctcact 7020
cagcctgcat ttctgccagg gcccgctcta gtcgaggtcg acggtatcga taagctcgct 7080
tcacgagatt ccagcaggtc gagggaccta ataacttcgt atagcataca ttatacgaag 7140
ttatattaag ggttccaagc ttaagcggcc gcgtggataa ccgtattacc gccatgcatt 7200
agttattaat agtaatcaat tacggggtca ttagttcata gcccatatat ggagttccgc 7260
gttacataac ttacggtaaa tggcccgcct ggctgaccgc ccaacgaccc ccgcccattg 7320
acgtcaataa tgacgtatgt tcccatagta acgccaatag ggactttcca ttgacgtcaa 7380
tgggtggagt atttacggta aactgcccac ttggcagtac atcaagtgta tcatatgcca 7440
agtacgcccc ctattgacgt caatgacggt aaatggcccg cctggcatta tgcccagtac 7500
atgaccttat gggactttcc tacttggcag tacatctacg tattagtcat cgctattacc 7560
atggtgatgc ggttttggca gtacatcaat gggcgtggat agcggtttga ctcacgggga 7620
tttccaagtc tccaccccat tgacgtcaat gggagtttgt tttggcacca aaatcaacgg 7680
gactttccaa aatgtcgtaa caactccgcc ccattgacgc aaatgggcgg taggcgtgta 7740
cggtgggagg tctatataag cagagctggt ttagtgaacc gtcagatccg ctagcgctac 7800
cggctagaaa attgtccgct aaattctggc cgtttttggc ttttttgtta gacaggatcc 7860
gttatcacaa gtttgtacaa aaaagcaggc tctttaaagg aaccaattca gtcgactgga 7920
tccggtaccg aattcaaaga caactcagag ttcaccatgg gctccatcgg ngcagcaagc 7980
atggaatttt gttttgatgt attcaaggag ctcaaagtcc accatgccaa tgagaacatc 8040
ttctactgcc ccattgccat catgtcagct ctagccatgg tatacctggg tgcaaaagac 8100
agcaccagga cacaaataaa taaggttgtt cgctttgata aacttccagg attcggagac 8160
agtattgaag ctcagtgtgg cacatctgta aacgttcact cttcacttag agacatcctc 8220
aaccaaatca ccaaaccaaa tgatgtttat tcgttcagcc ttgccagtag actttatgct 8280
gaagagagat acccaatcct gccagaatac ttgcagtgtg tgaaggaact gtatagagga 8340
ggcttggaac ctatcaactt tcaaacagct gcagatcaag ccagagagct catcaattcc 8400
tgggtagaaa gtcagacaaa tggaattatc agaaatgtcc ttcagccaag ctccgtggat 8460
tctcaaactg caatggttct ggttaatgcc attgtcttca aaggactgtg ggagaaaaca 8520
tttaaggatg aagacacaca agcaatgcct ttcagagtga ctgagcaaga aagcaaacct 8580
gtgcagatga tgtaccagat tggtttattt agagtggcat caatggcttc tgagaaaatg 8640
aagatcctgg agcttccatt tgccagtggg acaatgagca tgttggtgct gttgcctgat 8700
gaagtctcag gccttgagca gcttgagagt ataatcaact ttgaaaaact gactgaatgg 8760
accagttcta atgttatgga agaggaggaag atcaaagtgt acttacctcg catgaagatg 8820
gaggaaaaat acaacctcac atctgtctta atggctatgg gcattactga cgtgtttagc 8880
tcttcagcca atctgtctgg catctcctca gcagagagcc tgaagatatc tcaagctgtc 8940
catgcagcac atgcagaaat caatgaagca ggcagagagg tggtagggtc agcagaggct 9000
ggagtggatg ctgcaagcgt ctctgaagaa tttagggctg accatccatt cctcttctgt 9060
atcaagcaca tcgcaaccaa cgccgttctc ttctttggca gatgtgtttc cccttaaaaa 9120
gaagaaagct gaaaaactct gtcccttcca acaagaccca gagcactgta gtatcagggg 9180
taaaatgaaa agtatgttct ctgctgcatc cagacttcat aaaagctgga gcttaatcta 9240
gactggaggc ttgctgaagg ctgtatgctg tgagaactga attccatggg ttgttttggc 9300
cactgactga caacccatga ttcagttctc acaggacaca aggcctgtta ctagcactca 9360
catggaacaa atggcccatc tagacccagc tttc                           9394
```

<210> 11
<211> 986
<212> PRT
<213> Artificial Sequence

<220>
<223> Mutated Sindbis virus glycoprotein

<400> 11

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

```
Gly Tyr Asp Gln Ser Gly Ala Ala Ser Ala Asn Lys Tyr Arg Tyr Met
        115                 120                 125
Ser Leu Lys Gln Met Tyr Pro Tyr Asp Val Pro Asp Tyr Ala Thr Val
    130                 135                 140
Lys Glu Gly Thr Met Asp Asp Ile Lys Ile Ser Thr Ser Gly Pro Cys
145                 150                 155                 160
Arg Arg Leu Ser Tyr Lys Gly Tyr Phe Leu Leu Ala Lys Cys Pro Pro
                165                 170                 175
Gly Asp Ser Val Thr Val Ser Ile Val Ser Ser Asn Ser Ala Thr Ser
            180                 185                 190
Cys Thr Leu Ala Arg Lys Ile Lys Pro Lys Phe Val Gly Arg Glu Lys
        195                 200                 205
Tyr Asp Leu Pro Pro Val His Gly Lys Lys Ile Pro Cys Thr Val Tyr
    210                 215                 220
Asp Arg Leu Ala Ala Thr Thr Ala Gly Tyr Ile Thr Met His Arg Pro
225                 230                 235                 240
Arg Pro His Ala Tyr Thr Ser Tyr Leu Glu Glu Ser Ser Gly Lys Val
                245                 250                 255
Tyr Ala Lys Pro Pro Ser Gly Lys Asn Ile Thr Tyr Glu Cys Lys Cys
            260                 265                 270
Gly Asp Tyr Lys Thr Gly Thr Val Ser Thr Arg Thr Glu Ile Thr Gly
        275                 280                 285
Cys Thr Ala Ile Lys Gln Cys Val Ala Tyr Lys Ser Asp Gln Thr Lys
    290                 295                 300
Trp Val Phe Asn Ser Pro Asp Leu Ile Arg His Asp Asp His Thr Ala
305                 310                 315                 320
Gln Gly Lys Leu His Leu Pro Phe Lys Leu Ile Pro Ser Thr Cys Met
                325                 330                 335
Val Pro Val Ala His Ala Pro Asn Val Ile His Gly Phe Lys His Ile
            340                 345                 350
Ser Leu Gln Leu Asp Thr Asp His Leu Thr Leu Leu Thr Thr Arg Arg
        355                 360                 365
Leu Gly Ala Asn Pro Glu Pro Thr Thr Glu Trp Ile Val Gly Lys Thr
    370                 375                 380
Val Arg Asn Phe Thr Val Asp Arg Asp Gly Leu Glu Tyr Ile Trp Gly
385                 390                 395                 400
Asn His Glu Pro Val Arg Val Tyr Ala Gln Glu Ser Ala Pro Gly Asp
                405                 410                 415
Pro His Gly Trp Pro His Glu Ile Val Gln His Tyr Tyr His Arg His
            420                 425                 430
Pro Val Tyr Thr Ile Leu Ala Val Ala Ser Ala Thr Val Ala Met Met
        435                 440                 445
Ile Gly Val Thr Val Ala Val Leu Cys Ala Cys Lys Ala Arg Arg Glu
    450                 455                 460
Cys Leu Thr Pro Tyr Ala Leu Ala Pro Asn Ala Val Ile Pro Thr Ser
465                 470                 475                 480
Leu Ala Leu Leu Cys Cys Val Arg Ser Ala Asn Ala Glu Thr Phe Thr
                485                 490                 495
Glu Thr Met Ser Tyr Leu Trp Ser Asn Ser Gln Pro Phe Phe Trp Val
            500                 505                 510
Gln Leu Cys Ile Pro Leu Ala Ala Phe Ile Val Leu Met Arg Cys Cys
        515                 520                 525
Ser Cys Cys Leu Pro Phe Leu Val Val Ala Gly Ala Tyr Leu Ala Lys
    530                 535                 540
Val Asp Ala Tyr Glu His Ala Thr Thr Val Pro Asn Val Pro Gln Ile
545                 550                 555                 560
Pro Tyr Lys Ala Leu Val Glu Arg Ala Gly Tyr Ala Pro Leu Asn Leu
                565                 570                 575
Glu Ile Thr Val Met Ser Ser Glu Val Leu Pro Ser Thr Asn Gln Glu
            580                 585                 590
Tyr Ile Thr Cys Lys Phe Thr Thr Val Val Pro Ser Pro Lys Ile Lys
        595                 600                 605
Cys Cys Gly Ser Leu Glu Cys Gln Pro Ala Ala His Ala Gly Tyr Thr
    610                 615                 620
Cys Lys Val Phe Gly Gly Val Tyr Pro Phe Met Trp Gly Gly Ala Gln
625                 630                 635                 640
Cys Phe Cys Asp Ser Glu Asn Ser Gln Met Ser Glu Ala Tyr Val Glu
```

645 650 655

Leu Ser Ala Asp Cys Ala Ser Asp His Ala Gln Ala Ile Lys Val His
660 665 670

Thr Ala Ala Met Lys Val Gly Leu Arg Ile Val Tyr Gly Asn Thr Thr
675 680 685

Ser Phe Leu Asp Val Tyr Val Asn Gly Val Thr Pro Gly Thr Ser Lys
690 695 700

Asp Leu Lys Val Ile Ala Gly Pro Ile Ser Ala Ser Phe Thr Pro Phe
705 710 715 720

Asp His Lys Val Val Ile His Arg Gly Leu Val Tyr Asn Tyr Asp Phe
725 730 735

Pro Glu Tyr Gly Ala Met Lys Pro Gly Ala Phe Gly Asp Ile Gln Ala
740 745 750

Thr Ser Leu Thr Ser Lys Asp Leu Ile Ala Ser Thr Asp Ile Arg Leu
755 760 765

Leu Lys Pro Ser Ala Lys Asn Val His Val Pro Tyr Thr Gln Ala Ser
770 775 780

Ser Gly Phe Glu Met Trp Lys Asn Asn Ser Gly Arg Pro Leu Gln Glu
785 790 795 800

Thr Ala Pro Phe Gly Cys Lys Ile Ala Val Asn Pro Leu Arg Ala Val
805 810 815

Asp Cys Ser Tyr Gly Asn Ile Pro Ile Ser Ile Asp Ile Pro Asn Ala
820 825 830

Ala Phe Ile Arg Thr Ser Asp Ala Pro Leu Val Ser Thr Val Lys Cys
835 840 845

Glu Val Ser Glu Cys Thr Tyr Ser Ala Asp Phe Gly Gly Met Ala Thr
850 855 860

Leu Gln Tyr Val Ser Asp Arg Glu Gly Gln Cys Pro Val His Ser His
865 870 875 880

Ser Ser Thr Ala Thr Leu Gln Glu Ser Thr Val His Val Leu Glu Lys
885 890 895

Gly Ala Val Thr Val His Phe Ser Thr Ala Ser Pro Gln Ala Asn Phe
900 905 910

Ile Val Ser Leu Cys Gly Lys Lys Thr Thr Cys Asn Ala Glu Cys Lys
915 920 925

Pro Pro Ala Asp His Ile Val Ser Thr Pro His Lys Asn Asp Gln Glu
930 935 940

Phe Gln Ala Ala Ile Ser Lys Thr Ser Trp Ser Trp Leu Phe Ala Leu
945 950 955 960

Phe Gly Gly Ala Ser Ser Leu Leu Ile Ile Gly Leu Met Ile Phe Ala
965 970 975

Cys Ser Met Met Leu Thr Ser Thr Arg Arg
980 985