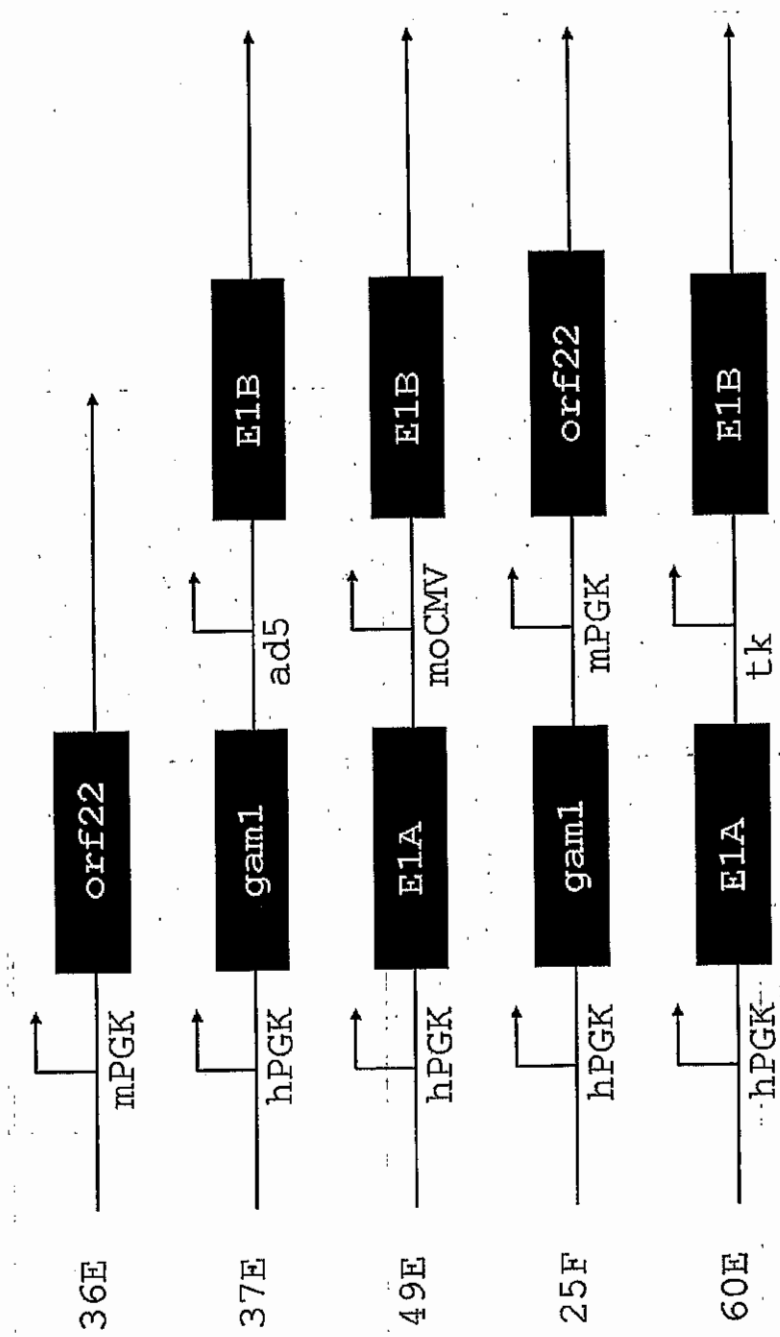

36E
mPGK
orf22
37E
hPGK
gam1
ad5
E1B
49E
hPGK
E1A
moCMV
E1B
25F
hPGK
gam1
mPGK
orf22
60E
hPGK
E1A
tk
E1B

Fig.1

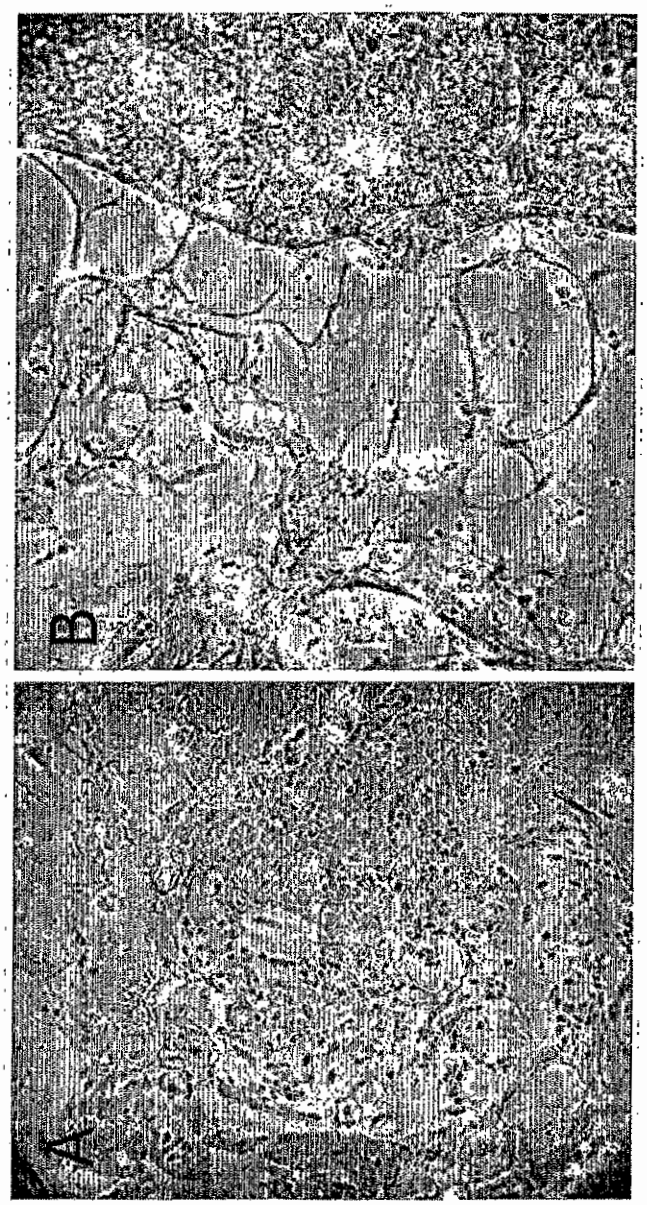


Fig.2

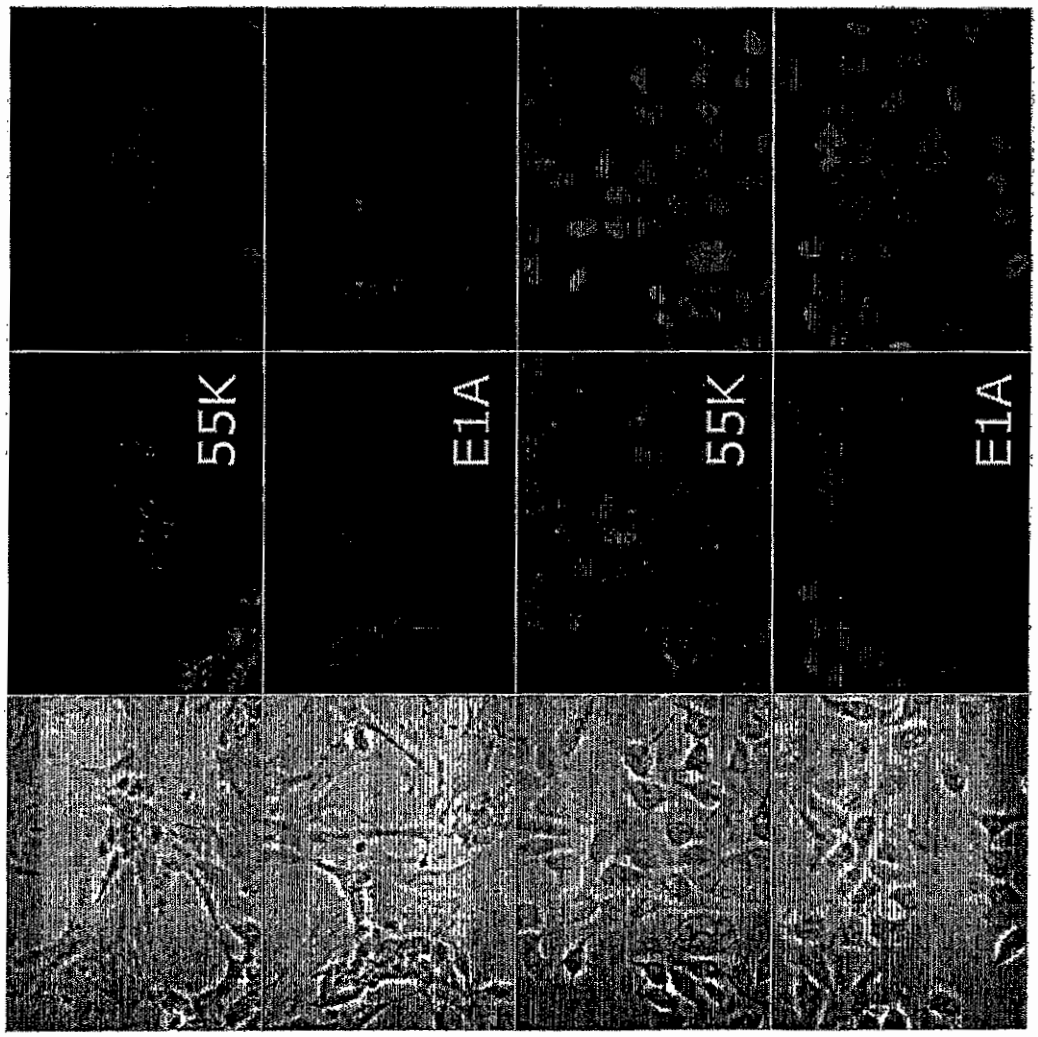


Fig.3

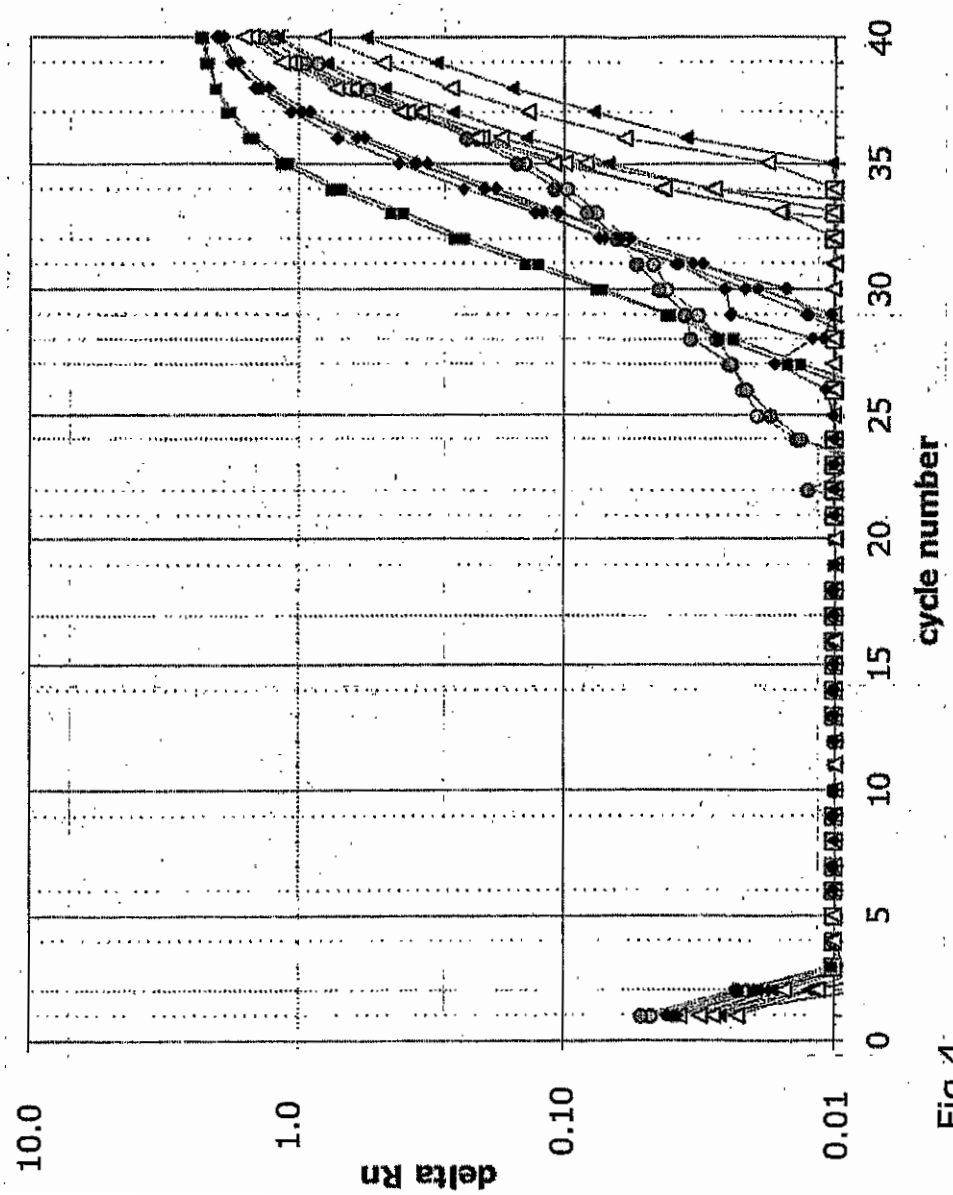


Fig.4

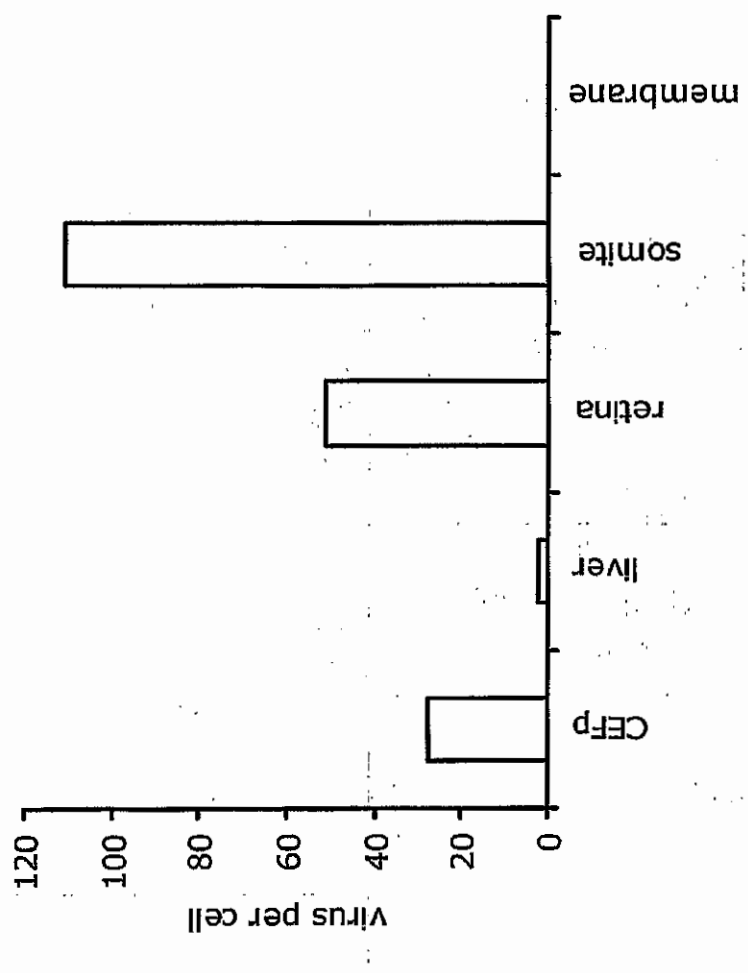

virus per cell
120
100
80
60
40
20
0
CEFp
liver
retina
somite
membrane

Fig.5

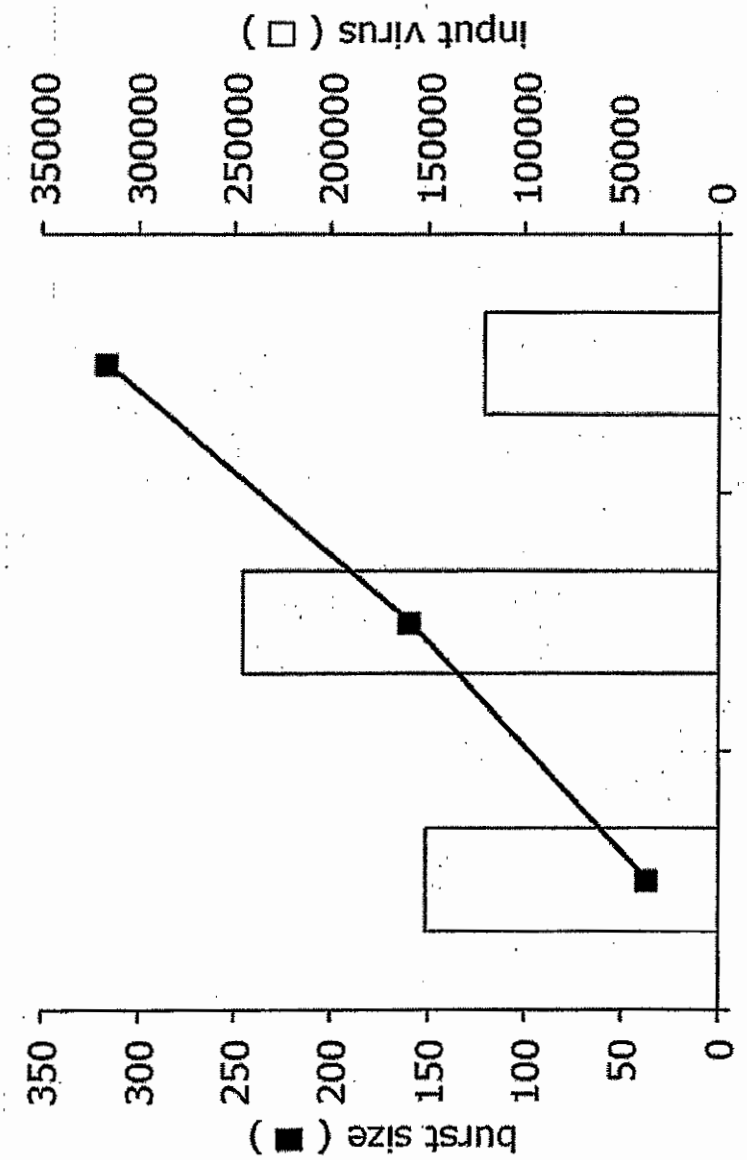

burst size (■)
input virus (□)
0
50
100
150
200
250
300
350
0
50000
100000
150000
200000
250000
300000
350000
P 0
P 1
P 2
passage

Fig.6

SEQUENCE LISTING

<110> Probiogen AG

<120> Immortalized Avian Cell Lines for Virus Production

<130> 042666wo/JH/PCH

<140>
<141>

<150> 03025158.1
<151> 2003-11-03

<160> 19

<170> PatentIn Ver. 2.1

<210> 1
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer VS182

<400> 1
actcgagctg acgtgtagtg tatt 24

<210> 2
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer VS183

<400> 2
cacacgcaat cacaggtt 18

<210> 3
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer VS184

<400> 3
actcgagtca tggaggcttg ggagt 25

<210> 4
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer VS185

<400> 4

acacatttca gtacctca 18

<210> 5
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer VintSA-F

<400> 5
aaggtaccct ccctagtccc agtga 25

<210> 6
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer Vint SA-R

<400> 6
caatgtacag agtgggctcc tgtgg 25

<210> 7
<211> 6471
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Plasmid pEFAd5E1A

<400> 7
gtaccgaatt caagcttcgt gaggctccgg tgcccgtcag tgggcagagc gcacatcgcc 60
cacagtcccc gagaagttgg ggggagggct cggcaattga accggtgcct agagaaggtg 120
gcgcggggta aactgggaaa gtgatgtcgt gtactggctc cgcctttttc ccgagggtgg 180
gggagaaccg tatataagtg cagtagtcgc cgtgaacgtt ctttttcgca acgggtttgc 240
cgccagaaca caggtaagtg ccgtgtgtgg ttcccgcggg cctggcctct ttacgggtta 300
tggcccttgc gtgccttgaa ttacttccac ctggctccag tacgtgattc ttgatcccga 360
gctggagcca ggggcgggcc ttgcgcttta ggagcccctt cgcctcgtgc ttgagttgag 420
gcctggcctg ggcgctgggg ccgccgcgtg cgaatctggt ggcaccttcg cgcctgtctc 480
gctgctttcg ataagtctct agccatttaa aattttgat gacctgctgc gacgcttttt 540
ttctggcaag atagtcttgt aaatgcgggc caggatctgc acactggtat ttcggttttt 600
gggcccgcgg ccggcgacgg ggcccgtgcg tcccagcgca catgttcggc gaggcggggc 660
ctgcgagcgc ggccaccgag aatcggacgg gggtagtctc aagctggccg gcctgctctg 720
gtgcctggcc tcgcgccgcc gtgtatcgcc ccgccctggg cggcaaggct ggcccggtcg 780
gcaccagttg cgtgagcgga aagatggccg cttcccggcc ctgctccagg gggctcaaaa 840
tggaggacgc ggcgctcggg agagcgggcg ggtgagtcac ccacacaaag gaaaagggcc 900
tttccgtcct cagccgtcgc ttcatgtgac tccacggagt accgggcgcc gtccaggcac 960
ctcgattagt tctggagctt ttggagtacg tcgtctttag gttgggggga ggggttttat 1020
gcgatggagt ttccccacac tgagtgggtg gagactgaag ttaggccagc ttggcacttg 1080
atgtaattct ccttggaatt tgccctttt gagtttggat cttggttcat tctcaagcct 1140
cagacagtgg ttcaaagttt ttttcttcca tttcaggtgt cgtgaacact cgagctgacg 1200
tgtagtgtat ttatacccgg tgagttcctc aagaggccac tcttgagtgc cagcgagtag 1260
agttttctcc tccgagccgc tccgacaccg ggactgaaaa tgagacatat tatctgccac 1320
ggaggtgtta ttaccgaaga aatggccgcc agtcttttgg accagctgat cgaagaggta 1380
ctggctgata atcttccacc tcctagccat tttgaaccac ctacccttca cgaactgtat 1440

gatttagacg tgacggcccc cgaagatccc aacgaggagg cggtttcgca gatttttccc 1500
gactctgtaa tgttggcggt gcaggaaggg attgacttac tcacttttcc gccggcgccc 1560
ggttctccgg agccgcctca cctttcccgg cagcccgagc agccggagca gagagccttg 1620
ggtccggttt ctatgccaaa ccttgtaccg gaggtgatcg atcttacctg ccacgaggct 1680
ggctttccac ccagtgacga cgaggatgaa gagggtgagg agtttgtgtt agattatgtg 1740
gagcaccccg ggcacggttg caggtcttgt cattatcacc ggaggaatac gggggaccca 1800
gatattatgt gttcgctttg ctatatgagg acctgtggca tgtttgtcta cagtaagtga 1860
aaattatggg cagtgggtga tagagtggtg ggtttggtgt ggtaattttt tttttaattt 1920
ttacagtttt gtggtttaaa gaattttgta ttgtgatttt tttaaaaggt cctgtgtctg 1980
aacctgagcc tgagcccgag ccagaaccgg agcctgcaag acctacccgc cgtcctaaaa 2040
tggcgcctgc tatcctgaga cgcccgacat cacctgtgtc tagagaatgc aatagtagta 2100
cggatagctg tgactccggt ccttctaaca cacctcctga gatacacccg gtggtcccgc 2160
tgtgccccat taaaccagtt gccgtgagag ttggtgggcg tcgccaggct gtggaatgta 2220
tcgaggactt gcttaacgag cctgggcaac ctttggactt gagctgtaaa cgccccaggc 2280
cataaggtgt aaacctgtga ttgcgtgtgg aattctagaa gctcgctgat cagcctcgac 2340
tgtgccttct agttgccagc catctgttgt ttgcccctcc cccgtgcctt ccttgaccct 2400
ggaaggtgcc actcccactg tcctttccta ataaaatgag gaaattgcat cgcattgtct 2460
gagtaggtgt cattctattc tgggggggtgg ggtggggcag gacagcaagg gggaggattg 2520
ggaagacaat agcaggcatg ctggggatgg cccgggctct atggcttctg aggcggaaag 2580
aaccagctgg ggctctaggg ggtatcccca cgcgccctgt agcggcgcat taagcgcggc 2640
gggtgtggtg gttacgcgca gcgtgaccgc tacacttgcc agcgccctag cgcccgctcc 2700
tttcgctttc ttcccttcct ttctcgccac gttcgccggc tttccccgtc aagctctaaa 2760
tcggggcatc cctttagggt tccgatttag tgctttacgg cacctcgacc ccaaaaaact 2820
tgattagggt gatggttcac gtagtgggcc atcgccctga tagacggttt ttcgcccttt 2880
gacgttggag tccacgttct ttaatagtgg actcttgttc caaactggaa caacactcaa 2940
ccctatctcg gtctattctt ttgatttata agggattttg gggatttcgg cctattggtt 3000
aaaaaatgag ctgatttaac aaaaatttaa cgcgaattaa ttctgtggaa tgtgtgtcag 3060
ttagggtgtg gaaagtcccc aggctcccca ggcaggcaga agtatgcaaa gcatgcatct 3120
caattagtca gcaaccaggt gtggaaagtc cccaggctcc ccagcaggca gaagtatgca 3180
aagcatgcat ctcaattagt cagcaaccat agtccccgcc ctaactccgc ccatcccgcc 3240
cctaactccg cccagttccg cccattctcc gccctaggc tgactaattt tttttattta 3300
tgcagaggcc gaggccgcct ctgcctctga gctattccag aagtagtgag gaggcttttt 3360
tggaggccta ggcttttgca aaaagctccc gggaggtcca caatgattga acaagatgga 3420
ttgcacgcag gttctccggc cgcttgggtg gagaggctat tcggctatga ctgggcacaa 3480
cagacaatcg gctgctctga tgccgccgtg ttccggctgt cagcgcaggg gcgcccggtt 3540
ctttttgtca agaccgacct gtccggtgcc ctgaatgaac tccaggacga ggcagcgcgg 3600
ctatcgtggc tggccacgac gggcgttcct tgcgcagctg tgctcgacgt tgtcactgaa 3660
gcgggaaggg actggctgct attgggcgaa gtgccggggc aggatctcct gtcatctcac 3720
cttgctcctg ccgagaaagt atccatcatg gctgatgcaa tgcggcggct gcatacgctt 3780
gatccggcta cctgcccatt cgaccaccaa gcgaaacatc gcatcgagcg agcacgtact 3840
cggatggaag ccggtcttgt cgatcaggat gatctggacg aagagcatca ggggctcgcg 3900
ccagccgaac tgttcgccag gctcaaggcg cgtatgcccg acggcgagga tctcgtcgtg 3960
actcatggcg atgcctgctt gccgaatatc atggtggaaa atggccgctt ttctggattc 4020
atcgactgtg gccggctggg tgtggcggac cgctatcagg acatagcgtt ggctacccgt 4080
gatattgctg aagagcttgg cggcgaatgg gctgaccgct tcctcgtgct ttacggtatc 4140
gccgctcccg attcgcagcg catcgccttc tatcgccttc ttgacgagtt cttctgagcg 4200
ggactctggg gttcgaaatg accgaccaag cgacgcccaa cctgccatca cgagatttcg 4260
attccaccgc cgccttctat gaaaggttgg gcttcggaat cgttttccgg gacgccggct 4320
ggatgatcct ccagcgcggg gatctcatgc tggagttctt cgcccaccca aacttgttta 4380
ttgcagctta taatggttac aaataaagca atagcatcac aaatttcaca aataaagcat 4440
ttttttcact gcattctagt tgtggtttgt ccaaactcat caatgtatct tatcatgtct 4500
gtataccgga tctttccgct tcctcgctca ctgactcgct gcgctcggtc gttcggctgc 4560
ggcgagcggt atcagctcac tcaaaggcgg taatacggtt atccacagaa tcaggggata 4620
acgcaggaaa gaacatgtga gcaaaaggcc agcaaaaggc caggaaccgt aaaaaggccg 4680
cgttgctggc gtttttccat aggctccgcc cccctgacga gcatcacaaa aatcgacgct 4740
caagtcagag gtggcgaaac ccgacaggac tataaagata ccaggcgttt cccccctggaa 4800
gctccctcgt gcgctctcct gttccgaccc tgccgcttac cggatacctg tccgcctttc 4860
tcccttcggg aagcgtggcg ctttctcaat gctcacgctg taggtatctc agttcggtgt 4920
aggtcgttcg ctccaagctg ggctgtgtgc acgaaccccc cgttcagccc gaccgctgcg 4980
ccttatccgg taactatcgt cttgagtcca acccggtaag acacgactta tcgccactgg 5040
cagcagccac tggtaacagg attagcagag cgaggtatgt aggcggtgct acagagttct 5100
tgaagtggtg gcctaactac ggctacacta gaaggacagt atttggtatc tgcgctctgc 5160
tgaagccagt taccttcgga aaaagagttg gtagctcttg atccggcaaa caaaccaccg 5220

ctggtagcgg tggtttttt gtttgcaagc agcagattac gcgcagaaaa aaaggatctc 5280
aagaagatcc tttgatcttt tctacggggt ctgacgctca gtggaacgaa aactcacgtt 5340
aagggatttt ggtcatgaga ttatcaaaaa ggatcttcac ctagatcctt ttaaattaaa 5400
aatgaagttt taaatcaatc taaagtatat atgagtaaac ttggtctgac agttaccaat 5460
gcttaatcag tgaggcacct atctcagcga tctgtctatt tcgttcatcc atagttgcct 5520
gactccccgt cgtgtagata actacgatac gggagggctt accatctggc cccagtgctg 5580
caatgatacc gcgagaccca cgctcaccgg ctccagattt atcagcaata aaccagccag 5640
ccggaagggc cgagcgcaga agtggtcctg caactttatc cgcctccatc cagtctatta 5700
attgttgccg ggaagctaga gtaagtagtt cgccagttaa tagtttgcgc aacgttgttg 5760
ccattgctac aggcatcgtg gtgtcacgct cgtcgtttgg tatggcttca ttcagctccg 5820
gttcccaacg atcaaggcga gttacatgat cccccatgtt gtgcaaaaaa gcggttagct 5880
ccttcggtcc tccgatcgtt gtcagaagta agttggccgc agtgttatca ctcatggtta 5940
tggcagcact gcataattct cttactgtca tgccatccgt aagatgcttt tctgtgactg 6000
gtgagtactc aaccaagtca ttctgagaat agtgtatgcg gcgaccgagt tgctcttgcc 6060
cggcgtcaat acgggataat accgcgccac atagcagaac tttaaaagtg ctcatcattg 6120
gaaaacgttc ttcggggcga aaactctcaa ggatcttacc gctgttgaga tccagttcga 6180
tgtaacccac tcgtgcaccc aactgatctt cagcatcttt tactttcacc agcgtttctg 6240
ggtgagcaaa aacaggaagg caaaatgccg caaaaaaggg aataagggcg acacggaaat 6300
gttgaatact catactcttc ctttttcaat attattgaag catttatcag ggttattgtc 6360
tcatgagcgg atacatattt gaatgtattt agaaaaataa acaaataggg gttccgcgca 6420
catttccccg aaaagtgcca cctgacgtca gatcgacgga tcgggagatc g 6471

<210> 8
<211> 6629
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Plasmid
pEFAd5E1BSA

<400> 8
tcttccgctt cctcgctcac tgactcgctg cgctcggtcg ttcggctgcg gcgagcggta 60
tcagctcact caaaggcggt aatacggtta tccacagaat caggggataa cgcaggaaag 120
aacatgtgag caaaaggcca gcaaaagccc aggaaccgta aaaaggccgc gttgctggcg 180
tttttccata ggctccgccc ccctgacgag catcacaaaa atcgacgctc aagtcagagg 240
tggcgaaacc cgacaggact ataaagatac caggcgtttc cccctggaag ctccctcgtg 300
cgctctcctg ttccgaccct gccgcttacc ggatacctgt ccgcctttct cccttcggga 360
agcgtggcgc tttctcatag ctcacgctgt aggtatctca gttcggtgta ggtcgttcgc 420
tccaagctgg gctgtgtgca cgaaccccc gttcagcccg accgctgcgc cttatccggt 480
aactatcgtc ttgagtccaa cccggtaaga cacgacttat cgccactggc agcagccact 540
ggtaacagga ttagcagagc gaggtatgta ggcggtgcta cagagttctt gaagtggtgg 600
cctaactacg gctacactag aaggacagta tttggtatct gcgctctgct gaagccagtt 660
accttcggaa aaagagttgg tagctcttga tccggcaaac aaaccaccgc tggtagcggt 720
ggtttttttg tttgcaagca gcagattacg cgcagaaaaa aaggatctca agaagatcct 780
ttgatctttt ctacggggtc tgacgctcag tggaacgaaa actcacgtta agggattttg 840
gtcatgagat tatcaaaaag gatcttcacc tagatccttt taaattaaaa atgaagtttt 900
aaatcaatct aaagtatata tgagtaaact tggtctgaca gttaccaatg cttaatcagt 960
gaggcaccta tctcagcgat ctgtctattt cgttcatcca tagttgcctg actccccgtc 1020
gtgtagataa ctacgatacg ggagggctta ccatctggcc ccagtgctgc aatgataccg 1080
cgagacccac gctcaccggc tccagattta tcagcaataa accagccagc cggaagggcc 1140
gagcgcagaa gtggtcctgc aactttatcc gcctccatcc agtctattaa ttgttgccgg 1200
gaagctagag taagtagttc gccagttaat agtttgcgca acgttgttgc cattgctaca 1260
ggcatcgtgg tgtcacgctc gtcgtttggt atggcttcat tcagctccgg ttcccaacga 1320
tcaaggcgag ttacatgatc ccccatgttg tgcaaaaaag cggttagctc cttcggtcct 1380
ccgatcgttg tcagaagtaa gttggccgca gtgttatcac tcatggttat ggcagcactg 1440
cataattctc ttactgtcat gccatccgta agatgctttt ctgtgactgg tgagtactca 1500
accaagtcat tctgagaata gtgtatgcgg cgaccgagtt gctcttgccc ggcgtcaata 1560
cgggataata ccgcgccaca tagcagaact ttaaaagtgc tcatcattgg aaaacgttct 1620
tcggggcgaa aactctcaag gatcttaccg ctgttgagat ccagttcgat gtaacccact 1680
cgtgcaccca actgatcttc agcatctttt actttcacca gcgtttctgg gtgagcaaaa 1740
acaggaaggc aaaatgccgc aaaaaaggga ataagggcga cacggaaatg ttgaatactc 1800

atactcttcc tttttcaata ttattgaagc atttatcagg gttattgtct catgagcgga 1860
tacatatttg aatgtattta gaaaaataaa caaataggggg ttccgcgcac atttccccga 1920
aaagtgccac ctgtatgcgg tgtgaaatac cgcacagatg cgtaaggaga aaataccgca 1980
tcaggaaatt gtaagcgtta ataattcaga agaactcgtc aagaaggcga tagaaggcga 2040
tgcgctgcga atcgggagcg gcgataccgt aaagcacgag gaagcggtca gcccattcgc 2100
cgccaagctc ttcagcaata tcacgggtag ccaacgctat gtcctgatag cggtccgcca 2160
cacccagccg gccacagtcg atgaatccag aaaagcggcc attttccacc atgatattcg 2220
gcaagcaggc atcgccatgg gtcacgacga gatcctcgcc gtcgggcatg ctcgccttga 2280
gcctggcgaa cagttcggct ggcgcgagcc cctgatgctc ttcgtccaga tcatcctgat 2340
cgacaagacc ggcttccatc cgagtacgtg ctcgctcgat gcgatgtttc gcttggtggt 2400
cgaatgggca ggtagccgga tcaagcgtat gcagccgccg cattgcatca gccatgatgg 2460
atactttctc ggcaggagca aggtgagatg acaggagatc ctgccccggc acttcgccca 2520
atagcagcca gtcccttccc gcttcagtga caacgtcgag cacagctgcg caaggaacgc 2580
ccgtcgtggc cagccacgat agccgcgctg cctcgtcttg cagttcattc agggcaccgg 2640
acaggtcggt cttgacaaaa agaaccgggc gcccctgcgc tgacagccgg aacacggcgg 2700
catcagagca gccgattgtc tgttgtgccc agtcatagcc gaatagcctc tccacccaag 2760
cggccggaga acctgcgtgc aatccatctt gttcaatcat gcgaaacgat cctcatcctg 2820
tctcttgatc agagcttgat cccctgcgcc atcagatcct tggcggcgag aaagccatcc 2880
agtttacttt gcagggcttc ccaaccttac cagagggcgc cccagctggc aattccggtt 2940
cgcttgctgt ccataaaacc gcccagtcta gctatcgcca tgtaagccca ctgcaagcta 3000
cctgctttct ctttgcgctt gcgttttccc ttgtccagat agcccagtag ctgacattca 3060
tccggggtca gcaccgtttc tgcggactgg ctttctacgt gaaaaggatc taggtgaaga 3120
tccttttga taatctcatg cctgacattt atattcccca gaacatcagg ttaatggcgt 3180
ttttgatgtc attttcgcgg tggctgagat cagccacttc ttccccgata acggagaccg 3240
gcacactggc catatcggtg gtcatcatgc gccagctttc atccccgata tgcaccaccg 3300
ggtaaagttc acgggagact ttatctgaca gcagacgtgc actggccagg gggatcacca 3360
tccgtcgccc cggcgtgtca ataatatcac tctgtacatc cacaaacaga cgataacggc 3420
tctctctttt ataggtgtaa accttaaact gccgtacgta taggctgcgc aactgttggg 3480
aagggcgatc ggtgcgggcc tcttcgctat tacgccagct ggcgaaaggg ggatgtgctg 3540
caaggcgatt aagttgggta acgccagggt tttcccagtc acgacgttgt aaaacgacgg 3600
ccagtgaatt gtaatacgac tcactatagg gcgaattgaa tttagcggcc gcgaattcta 3660
ccgggtaggg gaggcgcttt tcccaaggca gtctggagca tgcgctttag cagccccgct 3720
ggcacttggc gctacacaag tggcctctgg cctcgcacac attccacatc caccggtagg 3780
cgccaaccgg ctccgttctt tggtggcccc ttcgcgccac cttctactcc tcccctagtc 3840
aggaagttcc ccccccgccc gcagctcgcg tcgtgcagga cgtgacaaat ggaagtagca 3900
cgtctcacta gtctcgtgca gatggacagc accgctgagc aatggaagcg ggtaggcctt 3960
tggggcagcg gccaatagca gctttgctcc ttcgctttct gggctcagag gctgggaagg 4020
ggtgggtccg ggggcgggct caggggcggg ctcaggggcg gggcgggcgc ccgaaggtcc 4080
tccggaggcc cggcattctc gcacgcttca aaagcgcacg tctgccgcgc tgttctcctc 4140
ttcctcatct ccgggccttt ctcgagcatg gaggcttggg agtgtttgga agatttttct 4200
gctgtgcgta acttgctgga acagagctct aacagtacct cttggttttg gaggtttctg 4260
tggggctcat cccaggcaaa gttagtctgc agaattaagg aggattacaa gtgggaattt 4320
gaagagcttt tgaaatcctg tggtgagctg tttgattctt tgaatctggg tcaccaggcg 4380
cttttccaag agaaggtcat caagactttg gatttttcca caccgggcg cgctgcggct 4440
gctgttgctt ttttgagttt tataaaggat aaatggagcg aagaaaccca tctgagcggg 4500
gggtacctgc tggatttttct ggccatgcat ctgtggagag cggttgtgag acacaagaat 4560
cgcctgctac tgttgtcttc cgtccgcccg gcgataatac cgacggagga gcagcagcag 4620
cagcaggagg aagccaggcg gcggcggcag gagcagagcc catggaaccc gagagccggc 4680
ctggaccctc gggaatgaat gttgtacagg tggctgaact gtatccagaa ctgagacgca 4740
ttttgacaat tacagaggat gggcaggggc taaaggggct aaagagggag cgggggcctt 4800
gtgaggctac agaggaggct aggaatctag cttttagctt aatgaccaga caccgtcctg 4860
agtgtattac ttttcaacag atcaaggata attgcgctaa tgagcttgat ctgctggcgc 4920
agaagtattc catagagcag ctgaccactt actggctgca gccaggggat gattttgagg 4980
aggctattag ggtatatgca aaggtggcac ttaggccaga ttgcaagtac aagatcagca 5040
aacttgtaaa tatcaggaat tgttgctaca tttctgggaa cggggccgag gtggagatag 5100
atacggagga tagggtggcc tttagatgta gcatgataaa tatgtggccg ggggtgcttg 5160
gcatggacgg ggtggttatt atgaatgtaa ggtttactgg ccccaatttt agcggtacgg 5220
ttttcctggc caataccaac cttatcctac acggtgtaag cttctatggg tttaacaata 5280
cctgtgtgga agcctggacc gatgtaaggg ttcggggctg tgcctttac tgctgctgga 5340
agggggtggt gtgtcgcccc aaaagcaggg cttcaattaa gaaatgcctc tttgaaaggt 5400
gtaccttggg tatcctgtct gagggtaact ccagggtgcg ccacaatgtg gcctccgact 5460
gtggttgctt catgctagtg aaaagcgtgg ctgtgattaa gcataacatg gtatgtggca 5520
actgcgagga cagggcctct cagatgctga cctgctcgga cggcaactgt cacctgctga 5580

agaccattca cgtagccagc cactctcgca aggcctggcc agtgtttgag cataacatac 5640
tgacccgctg ttccttgcat ttgggtaaca ggaggggggt gttcctacct taccaatgca 5700
atttgagtca cactaagata ttgcttgagc ccgagagcat gtccaaggtg aacctgaacg 5760
gggtgtttga catgaccatg aagatctgga aggtgctgag gtacgatgag acccgcacca 5820
ggtgcagacc ctgcgagtgt ggcggtaaac atattaggaa ccagcctgtg atgctggatg 5880
tgaccgagga gctgaggccc gatcacttgg tgctggcctg cacccgcgct gagtttggct 5940
ctagcgatga agatacagat tgaggtactg aaatggctag cagtgtaccc tcctagtcc 6000
cagtgatgag aaagagattg agtccagtcc agggagatct catccacttc tgtgttctct 6060
ccacaggagc ccactctgta caagtaaagc ggccgcgact ctagatcata atcagccata 6120
ccacatttgt agaggtttta cttgctttaa aaaacctccc acacctcccc ctgaacctga 6180
aacataaaat gaatgcaatt gttgttgtta acttgtttat tgcagcttat aatggttaca 6240
aataaagcaa tagcatcaca aatttcacaa ataaagcatt tttttcactg cattctagtt 6300
gtggtttgtc caaactcatc aatgtatctt aagattaagg gcgaattcgt ttaaacctgc 6360
aggactagtc cctttagtga gggttaattc tgagcttggc gtaatcatgg tcatagctgt 6420
ttcctgtgtg aaattgttat ccgctcacaa ttccacacaa catacgagcc ggaagcataa 6480
agtgtaaagc ctggggtgcc taatgagtga gctaactcac attaattgcg ttgcgctcac 6540
tgcccgcttt ccagtcggga aacctgtcgt gccagctgca ttaatgaatc ggccaacgcg 6600
cggggagagg cggtttgcgt attgggcgc 6629

<210> 9
<211> 8297
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Plasmid 49E

<400> 9
agcgcccaat acgcaaaccg cctctccccg cgcgttggcc gattcattaa tgcagctggc 60
acgacaggtt tcccgactgg aaagcgggca gtgagcgcaa cgcaattaat gtgagttagc 120
tcactcatta ggcaccccag gctttacact ttatgcttcc ggctcgtatg ttgtgtggaa 180
ttgtgagcgg ataacaattt cacacaggaa acagctatga ccatgattac gccaagctca 240
gaattaaccc tcactaaagg gactagtcct gcaggtttaa acgaattcgc ccttaatctt 300
aagctgccgc cccgacgttg gctgcgagcc ctgggccttc acccgaactt gggggggtggg 360
gtggggaaaa ggaagaaacg cgggcgtatt ggccccaatg gggtctcggt ggggtatcga 420
cagagtgcca gccctgggac cgaaccccgc gtttatgaac aaacgaccca acaccgtgcg 480
ttttattctg tcttttttatt gccgtcatag cgcgggttcc ttccggtatt gtctccttcc 540
gtgttatcct caatctgtat cttcatcgct agagccaaac tcagcgcggg tgcaggccag 600
caccaagtga tcgggcctca gctcctcggt cacatccagc atcacaggct ggttcctaat 660
atgtttaccg ccacactcgc agggtctgca cctggtgcgg gtctcatcgt acctcagcac 720
cttccagatc ttcatggtca tgtcaaacac cccgttcagg ttcaccttgg acatgctctc 780
gggctcaagc aatatcttag tgtgactcaa attgcattgg taaggtagga acacccccct 840
cctgttaccc aaatgcaagg aacagcgggt cagtatgtta tgctcaaaca ctggccaggc 900
cttgcgagag tggctggcta cgtgaatggt cttcagcagg tgacagttgc cgtccgagca 960
ggtcagcatc tgagaggccc tgtcctcgca gttgccacat accatgttat gcttaatcac 1020
agccacgctt ttcactagca tgaagcaacc acagtcggag gccacattgt ggcgcaccct 1080
ggagttaccc tcagacagga tacccaaggt acacctttca aagaggcatt tcttaattga 1140
agccctgctt ttggggcgac acaccacccc cttccagcag cagtaaaagg cacagccccg 1200
aacccttaca tcggtccagg cttccacaca ggtattgtta aacccataga agcttacacc 1260
gtgtaggata aggttggtat tggccaggaa aaccgtaccg ctaaaattgg ggccagtaaa 1320
ccttacattc ataataacca ccccgtccat gccaagcacc cccggccaca tatttatcat 1380
gctacatcta aaggccaccc tatcctccgt atctatctcc acctcggccc cgttcccaga 1440
aatgtagcaa caattcctga tatttacaag tttgctgatc ttgtacttgc aatctggcct 1500
aagtgccacc tttgcatata ccctaatagc ctcctcaaaa tcatcccctg gctgcagcca 1560
gtaagtggtc agctgctcta tggaatactt ctgcgccagc agatcaagct cattagcgca 1620
attatccttg atctgttgaa aagtaataca ctcaggacgg tgtctggtca ttaagctaaa 1680
agctagattc ctagcctcct ctgtagcctc acaagccccc cgctcccctct ttacccccctt 1740
tagcccctgc ccatcctctg taattgtcaa aatgcgtctc agttctggat acagttcagc 1800
cacctgtaca acattcattc ccgagggtcc aggccggctc tcgggttcca tgggctctgc 1860
tcctgccgcc gccgcctggc ttcctcctgc tgctgctgct gctcctccgt cggtattatc 1920
gccgggcgga cggaagacaa cagtagcagg cgattcttgt gtctcacaac cgctctccac 1980
agatgcatgg ccagaaaatc cagcaggtac cccccgctca gatgggtttc ttcgctccat 2040

ttatccttta taaaactcaa aaaagcaaca gcagccgcag cgcgccccgg tgtggaaaaa 2100
tccaaagtct tgatgacctt ctcttggaaa agcgcctggt gacccagatt caaagaatca 2160
aacagctcac cacaggattt caaaagctct tcaaattccc acttgtaatc ctccttaatt 2220
ctgcagacta actttgcctg ggatgagccc cacagaaacc tccaaaacca agaggtactg 2280
ttagagctct gttccagcaa gttacgcaca gcagaaaaat cttccaaaca ctcccaagcc 2340
tccatgctcg accggtccct accgacgctg gtcgcgcctc ttatacccac gtagaacgca 2400
gctcagccaa tagaatgagt gccaatatgg aatttccagg ggaaaaccgg ggcggtgtta 2460
cgttttggct gcccctttcac ttcccattga cgtgtattgg ctcgagaacg gtactttccc 2520
attaatcagc tatgggaaag taccgtttaa aggtcacgtt gcattagttt caatagccca 2580
ttgacgtcaa tggtgggaaa gtacatggcg ttttataaat ggctggaaaa acccaatgac 2640
tcaccctat tgaccttatg tacgtgccaa taatgggaaa aacccattga ctcacccct 2700
attgaccttt tgtactgggc aaaacccaat ggaaagtccc tattgactca gtgtacttgg 2760
ctccaatggg actttcctgt tgattcaccc ctattgacct tatgtactgg gcaaaaccca 2820
ttggaaagtc cctaatgact cagtatatgg cggccgatac ttggcctcgg tggccgatga 2880
cctcgagggg gggcccggta cccggtggat gtggaatgtg tgcgaggcca gaggccactt 2940
gtgtagcgcc aagtgccagc ggggctgcta aagcgcatgc tccagactgc cttgggaaaa 3000
gcgcctcccc tacccggtag aattcgtaac caagattagc ccacggcgca ttatataccc 3060
tttaagcccc gccccattta acacgccatg caagttaaac attatctcac cctttattaa 3120
acttacatca actcattcag caaacaaagg cgttaaccac acacgcaatc acaggtttac 3180
accttatggc ctggggcgtt tacagctcaa gtccaaaggt tgcccaggct cgttaagcaa 3240
gtcctcgata cattccacag cctggcgacg cccaccaact ctcacggcaa ctggtttaat 3300
ggggcacagc gggaccaccg ggtgtatctc aggaggtgtg ttagaaggac cggagtcaca 3360
gctatccgta ctactattgc attctctaga cacaggtgat gtcgggcgtc tcaggatagc 3420
aggcgccatt ttaggacggc gggtaggtct tgcaggctcc ggttctggct cgggctcagg 3480
ctcaggttca gacacaggac cttttaaaaa aatcacaata caaaattctt taaaccacaa 3540
aactgtaaaa attaaaaaaa aaattaccac accaaaccca ccactctatc acccactgcc 3600
cataatttc acttactgta gacaaacatg ccacaggtcc tcatatagca aagcgaacac 3660
ataatatctg ggtcccccgt attcctccgg tgataatgac aagacctgca accgtgcccg 3720
gggtgctcca cataatctaa cacaaactcc tcaccctctt catcctcgtc gtcactgggt 3780
ggaaagccag cctcgtggca ggtaagatcg atcacctccg gtacaaggtt tggcatagaa 3840
accggaccca aggctctctg ctccggctgc tcgggctgcc gggaaaggtg aggcggctcc 3900
ggagaaccgg gcgccggcgg aaaagtgagt aagtcaatcc cttcctgcac cgccaacatt 3960
acagagtcgg gaaaaatctg cgaaaccgcc tcctcgttgg gatcttcggg ggccgtcacg 4020
tctaaatcat acagttcgtg aagggtaggt ggttcaaaat ggctaggagg tggaagatta 4080
tcagccagta cctcttcgat cagctggtcc aaaagactgg cggccatttc ttcggtaata 4140
acacctccgt ggcagataat atgtctcatt ttcagtcccg gtgtcggagc ggctcggagg 4200
agaaaactct actcgctggc actcaagagt ggcctcttga ggaactcacc gggtataaat 4260
acactacacg tcagctgact ataactcgag aacgagggag ccgactgccg acgtgcgctc 4320
cggaggcttg cagaatgcgg aacaccgcgc gggcaggaac agggcccaca ctaccgcccc 4380
acaccccgcc tcccgcaccg ccccttcccg gccgctgctc tcggcgcgcc ctgctgagca 4440
gccgctattg gccacagccc atcgcggtcg gcgcgctgcc attgctccct ggcgctgtcc 4500
gtctgcgagg gtactagtga gacgtgcggc ttccgtttgt cacgtccggc acgccgcgaa 4560
ccgcaaggaa ccttcccgac ttaggggcgg acgaggaagc gtcgccgggg ggcccacaag 4620
ggtagcggcg aagatccggg tgacgctgcg aacggacgtg aagaatgtgc gagacccagg 4680
gtcggcgccg ctgcgtttcc cggaaccacg cccagagcag ccgcgtccct gcgcaaaccc 4740
agggctgcct tggaaaaggc gcaaccccaa ccattaataa ctaatgcatg gcggtaatac 4800
ggttatccac agaatcaggg gataacgcag gaaagaacat ggtacggcag tttaaggttt 4860
acacctataa aagagagagc cgttatcgtc tgtttgtgga tgtacagagt gatattattg 4920
acacgccggg gcgacggatg gtgatccccc tggccagtgc acgtctgctg tcagataaag 4980
tctcccgtga actttacccg gtggtgcata tcggggatga aagctggcgc atgatgacca 5040
ccgatatggc cagtgtgccg gtctccgtta tcggggaaga agtggctgat ctcagccacc 5100
gcgaaaatga catcaaaaac gccattaacc tgatgttctg gggaatataa atgtcaggca 5160
tgagattatc aaaaaggatc ttcacctaga tccttttcac gtagaaagcc agtccgcaga 5220
aacggtgctg accccggatg aatgtcagct actgggctat ctggacaagg gaaaacgcaa 5280
gcgcaaagag aaagcaggta gcttgcagtg ggcttacatg gcgatagcta gactgggcgg 5340
ttttatggac agcaagcgaa ccggaattgc cagctggggc gccctctggt aaggttggga 5400
agccctgcaa agtaaactgg atggctttct cgccgccaag gatctgatgg cgcaggggat 5460
caagctctga tcaagagaca ggatgaggat cgtttcgcat gattgaacaa gatggattgc 5520
acgcaggttc tccggccgct tgggtggaga ggctattcgg ctatgactgg gcacaacaga 5580
caatcggctg ctctgatgcc gccgtgttcc ggctgtcagc gcaggggcgc ccggttcttt 5640
ttgtcaagac cgacctgtcc ggtgccctga atgaactgca agacgaggca gcgcggctat 5700
cgtggctggc cacgacgggc gttccttgcg cagctgtgct cgacgttgtc actgaagcgg 5760
gaagggactg gctgctattg ggcgaagtgc cggggcagga tctcctgtca tctcaccttg 5820

ctcctgccga gaaagtatcc atcatggctg atgcaatgcg gcggctgcat acgcttgatc 5880
cggctacctg cccattcgac caccaagcga aacatcgcat cgagcgagca cgtactcgga 5940
tggaagccgg tcttgtcgat caggatgatc tggacgaaga gcatcagggg ctcgcgccag 6000
ccgaactgtt cgccaggctc aaggcgagca tgcccgacgg cgaggatctc gtcgtgaccc 6060
atggcgatgc ctgcttgccg aatatcatgg tggaaaatgg ccgcttttct ggattcatcg 6120
actgtggccg gctgggtgtg gcggaccgct atcaggacat agcgttggct acccgtgata 6180
ttgctgaaga gcttggcggc gaatgggctg accgcttcct cgtgctttac ggtatcgccg 6240
ctcccgattc gcagcgcatc gccttctatc gccttcttga cgagttcttc tgaattatta 6300
acgcttacaa tttcctgatg cggtattttc tccttacgca tctgtgcggt atttcacacc 6360
gcatacaggt ggcacttttc ggggaaatgt gcgcggaacc cctatttgtt tatttttcta 6420
aatacattca aatatgtatc cgctcatgag acaataaccc tgataaatgc ttcaataata 6480
ttgaaaaagg aagagtatga gtattcaaca tttccgtgtc gcccttattc cctttttgc 6540
ggcattttgc cttcctgttt ttgctcaccc agaaacgctg gtgaaagtaa aagatgctga 6600
agatcagttg ggtgcacgag tgggttacat cgaactggat ctcaacagcg gtaagatcct 6660
tgagagtttt cgccccgaag aacgttttcc aatgatgagc acttttaaag ttctgctatg 6720
tggcgcggta ttatcccgta ttgacgccgg gcaagagcaa ctcggtcgcc gcatacacta 6780
ttctcagaat gacttggttg agtactcacc agtcacagaa aagcatctta cggatggcat 6840
gacagtaaga gaattatgca gtgctgccat aaccatgagt gataacactg cggccaactt 6900
acttctgaca acgatcggag gaccgaagga gctaaccgct tttttgcaca acatgggggа 6960
tcatgtaact cgccttgatc gttgggaacc ggagctgaat gaagccatac caaacgacga 7020
gcgtgacacc acgatgcctg tagcaatggc aacaacgttg cgcaaactat taactggcga 7080
actacttact ctagcttccc ggcaacaatt aatagactgg atggaggcgg ataaagttgc 7140
aggaccactt ctgcgctcgg cccttccggc tggctggttt attgctgata aatctggagc 7200
cggtgagcgt gggtctcgcg gtatcattgc agcactgggg ccagatggta agccctcccg 7260
tatcgtagtt atctacacga cggggagtca ggcaactatg gatgaacgaa atagacagat 7320
cgctgagata ggtgcctcac tgattaagca ttggtaactg tcagaccaag tttactcata 7380
tatactttag attgatttaa aacttcattt ttaatttaaa aggatctagg tgaagatcct 7440
ttttgataat ctcatgacca aaatccctta acgtgagttt tcgttccact gagcgtcaga 7500
ccccgtagaa aagatcaaag gatcttcttg agatcctttt tttctgcgcg taatctgctg 7560
cttgcaaaca aaaaaaccac cgctaccagc ggtggtttgt ttgccggatc aagagctacc 7620
aactcttttt ccgaaggtaa ctggcttcag cagagcgcag ataccaaata ctgtccttct 7680
agtgtagccg tagttaggcc accacttcaa gaactctgta gcaccgccta catacctcgc 7740
tctgctaatc ctgttaccag tggctgctgc cagtggcgat aagtcgtgtc ttaccgggtt 7800
ggactcaaga cgatagttac cggataaggc gcagcggtcg ggctgaacgg ggggttcgtg 7860
cacacagccc agcttggagc gaacgaccta caccgaactg agatacctac agcgtgagct 7920
atgagaaagc gccacgcttc ccgaagggag aaaggcggac aggtatccgg taagcggcag 7980
ggtcggaaca ggagagcgca cgagggagct tccagggga aacgcctggt atctttatag 8040
tcctgtcggg tttcgccacc tctgacttga gcgtcgattt ttgtgatgct cgtcaggggg 8100
gcggagccta tggaaaaacg ccagcaacgc ggcctttta cggttcctgg gcttttgctg 8160
gccttttgct cacatgttct ttcctgcgtt atcccctgat tctgtggata accgtattac 8220
cgcctttgag tgagctgata ccgctcgccg cagccgaacg accgagcgca gcgagtcagt 8280
gagcgaggaa gcggaag 8297

<210> 10
<211> 7174
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Plasmid 25F

<400> 10
agcgcccaat acgcaaaccg cctctccccg cgcgttggcc gattcattaa tgcagctggc 60
acgacaggtt tcccgactgg aaagcgggca gtgagcgcaa cgcaattaat gtgagttagc 120
tcactcatta ggcaccccag gctttacact ttatgcttcc ggctcgtatg ttgtgtggaa 180
ttgtgagcgg ataacaattt cacacaggaa acagctatga ccatgattac gccaagctca 240
gaattaaccc tcactaaagg gactagtcct gcaggtttaa acgaattcgc ccttaatctt 300
aagctcggga gtagcggatg ccccggggag aggagtgtta gtaacgcga cgctggtggg 360
ggtcggcttg ttaagagggg cgctgctaac gctgcaagag tgggttgtca gcgtggggcc 420
ggtgctactg gaatcgatac cggcatgatt gacagcctgg gcgaggatgt cacctgatgg 480
tgataagaag acacgggaga cttagtacgg tttcacaggc gtgacacgtt tattgagtag 540
gattacagag tataacatag agtataatat agagtataca atagtgacgt gggatccgtt 600

aacaggtgaa ccatttatac agtctcacgt ctctttattg catacgctcc gctaaatgtt 660
tccattcgct catttgccag taatacagca gattcgcaaa ctcactgaac caatcttctg 720
tataaaaatg tacgcgctgc gtgtccaaat caacatcaat tttcctcata tacagacagg 780
ggctgccacc cgcctccccc aagcgcgaca ccgcaattag gaatggtagc ctgctgtgca 840
ggtccacgtg aattaacatc ccgcacacgt tcccgatcgg tcgctgcata aatactggag 900
agaaatcgct aaaccccggt gacgcccaca tagccacgaa gtacacccct gccacattca 960
agtcatcctc caacctggcc caaacataag tggccaaatc ggaaggagcc aggtggcaag 1020
ccgataaccc catacgatgc aaaggtaacc cgtggcaagc gcatcccccg aaatgaagtt 1080
cgaaagaatc gtaacacagt agctgatagg catgaagcgg cgtcggcatc tgaagaccgt 1140
catcatcttc gtcgtcttcc atgtcatccc caacttcctc ctcgcgctcc gcttcctgtt 1200
ggcggcgctg ctggtgctgc agcaccatct ccaggatctg ctcgtcgttc atcttaatcc 1260
ggactcgaga aaggcccgga gatgaggaag aggagaacag cgcggcagac gtgcgctttt 1320
gaagcgtgcg agaatgccgg gcctccggag gaccttcggg cgcccgcccc gcccctgagc 1380
ccgcccctga gcccgccccc ggacccaccc cttcccagcc tctgagccca gaaagcgaag 1440
gagcaaagct gctattggcc gctgccccaa aggcctaccc gcttccattg ctcagcggtg 1500
ctgtccatct gcacgagact agtgagacgt gctacttcca tttgtcacgt cctgcacgac 1560
gcgagctgcg gggcgggggg gaacttcctg actaggggag gagtagaagg tggcgcgaag 1620
gggccaccaa agaacggagc cggttggcgc ctaccggtgg atgtggaatg tgtgcgaggc 1680
cagaggccac ttgtgtagcg ccaagtgcca gcggggctgc taaagcgcat gctccagact 1740
gccttgggaa aagcgcctcc cctacccggt agaattcgcg gcctcgacgg cctcggtggc 1800
cagtctagtc aataatcaat gtccgagctc gaatacactc cgctatcgct acgtgactgg 1860
gtcatggctg cgccccgaca cccgccaaca cccgctgacg cgccctgacg ggcttgtctg 1920
ctcccggcat ccgcttacag acaagctgtg accgtctccg ggagctgcat gtgtcagagg 1980
ttttcaccgt catcaccgaa acgcgcgagg cagccggatc ataatcagcc ataccacatt 2040
tgtagaggtt ttacttgctt taaaaaacct cccacacctc cccctgaacc tgaaacataa 2100
aatgaatgca attgttgttg ttaacttgtt tattgcagct tataatggtt acaaataaag 2160
caatagcatc acaaatttca caaataaagc attttttca ctgcattcta gttgtggttt 2220
gtccaaactc atcaatgtat cttatcatgt ctggatcgaa gctctagagc ggccaacttc 2280
agggattggt tacagagaat ggtaggggtg gtgccgagac ccgagtcccc gcctactcat 2340
acgtaggcag gtttccatga cacccagtct tgcccaatct tggagagaat ggggatttct 2400
gggttcattt ctctcggggg cggggctatc cccgccgaga gtcatacacc aaatttctgt 2460
agaaaacgga tttttgccag tcttgatggc acaaacttcg ggagtttggt taaaaaatcg 2520
gctgaagaat ggttctggaa gtgttctttt cagatctttt ttggtgaaaa ctccagtggt 2580
caggagccga tattgtcggg gggctttgat ggtggtggtc ccacagagac cctcatagcc 2640
agggaccccc actccgcgag ggacatggat cttcagtgtg tctagcgcca tcttcagggc 2700
atgcacggaa ccaatgggga agcccaggtc ccccacgtgg gttatgccgt gggggagggg 2760
atccgagtat tccctggcca cccaatcagg aaccgcgaac gcgccacgga ccgccttctc 2820
catcataatg agggcctcac tgggggtctt gggttccgcg gagcgccccc taatggtaac 2880
gtggataatg cgctggggac cctcgtagtc tgcgaagatt gcctttctcc ccatggacac 2940
taggggggctg aatgagtatt cccgcagttg ctcgccggtc aggttagggt taaaaatcag 3000
gccggtggtc accatttctc taaggctagt ggtgggattc cgctggctag ggtccacagg 3060
gaccaccgaa gtaaaggaaa tggtccccat gtagtatgga aggtccccag ggaacatgcg 3120
gaatgggttg cgggccatac ctgtagaatg tacaggggggg tctcgagaac gagggagccg 3180
actgccgacg tgcgctccgg aggcttgcag aatgcggaac accgcgcggg caggaacagg 3240
gcccacacta ccgccccaca ccccgcctcc cgcaccgccc cttcccggcc gctgctctcg 3300
gcgcgccctg ctgagcagcc gctattggcc acagcccatc gcggtcggcg cgctgccatt 3360
gctccctggc gctgtccgtc tgcgagggta ctagtgagac gtgcggcttc cgtttgtcac 3420
gtccggcacg ccgcgaaccg caaggaacct tcccgactta ggggcggacg aggaagcgtc 3480
gccgggggcc ccacaagggt agcggcgaag atccgggtga cgctgcgaac ggacgtgaag 3540
aatgtgcgag acccagggtc ggcgccgctg cgtttcccgg aaccacgccc agagcagccg 3600
cgtccctgcg caaacccagg gctgccttgg aaaaggcgca accccaacca ttaataacta 3660
atgcatggcg gtaatacggt tatccacaga atcaggggat aacgcaggaa agaacatggt 3720
acggcagttt aaggtttaca cctataaaag agagagccgt tatcgtctgt ttgtggatgt 3780
acagagtgat attattgaca cgccgggggcg acggatggtg atccccctgg ccagtgcacg 3840
tctgctgtca gataaagtct cccgtgaact ttacccggtg gtgcatatcg gggatgaaag 3900
ctggcgcatg atgaccaccg atatggccag tgtgccggtc tccgttatcg gggaagaagt 3960
ggctgatctc agccaccgcg aaaatgacat caaaaacgcc attaacctga tgttctgggg 4020
aatataaatg tcaggcatga gattatcaaa aaggatcttc acctagatcc ttttcacgta 4080
gaaagccagt ccgcagaaac ggtgctgacc ccggatgaat gtcagctact gggctatctg 4140
gacaagggaa aacgcaagcg caaagagaaa gcaggtagct tgcagtgggc ttacatggcg 4200
atagctagac tgggcggttt tatggacagc aagcgaaccg gaattgccag ctggggcgcc 4260
ctctggtaag gttgggaagc cctgcaaagt aaactggatg gctttctcgc cgccaaggat 4320
ctgatggcgc aggggatcaa gctctgatca agagacagga tgaggatcgt ttcgcatgat 4380

tgaacaagat ggattgcacg caggttctcc ggccgcttgg gtggagaggc tattcggcta 4440
tgactgggca caacagacaa tcggctgctc tgatgccgcc gtgttccggc tgtcagcgca 4500
ggggcgcccg gttctttttg tcaagaccga cctgtccggt gccctgaatg aactgcaaga 4560
cgaggcagcg cggctatcgt ggctggccac gacgggcgtt ccttgcgcag ctgtgctcga 4620
cgttgtcact gaagcgggaa gggactggct gctattgggc gaagtgccgg ggcaggatct 4680
cctgtcatct caccttgctc ctgccgagaa agtatccatc atggctgatg caatgcggcg 4740
gctgcatacg cttgatccgg ctacctgccc attcgaccac caagcgaaac atcgcatcga 4800
gcgagcacgt actcggatgg aagccggtct tgtcgatcag gatgatctgg acgaagagca 4860
tcaggggctc gcgccagccg aactgttcgc caggctcaag gcgagcatgc ccgacggcga 4920
ggatctcgtc gtgacccatg gcgatgcctg cttgccgaat atcatggtgg aaaatggccg 4980
cttttctgga ttcatcgact gtggccggct gggtgtggcg gaccgctatc aggacatagc 5040
gttggctacc cgtgatattg ctgaagagct tggcggcgaa tgggctgacc gcttcctcgt 5100
gctttacggt atcgccgctc ccgattcgca gcgcatcgcc ttctatcgcc ttcttgacga 5160
gttcttctga attattaacg cttacaattt cctgatgcgg tattttctcc ttacgcatct 5220
gtgcggtatt tcacaccgca tacaggtggc acttttcggg gaaatgtgcg cggaaccccc 5280
atttgtttat ttttctaaat acattcaaat atgtatccgc tcatgagaca ataaccctga 5340
taaatgcttc aataatattg aaaaaggaag agtatgagta ttcaacattt ccgtgtcgcc 5400
cttattccct tttttgcggc attttgcctt cctgtttttg ctcacccaga aacgctggtg 5460
aaagtaaaag atgctgaaga tcagttgggt gcacgagtgg gttacatcga actggatctc 5520
aacagcggta agatccttga gagttttcgc cccgaagaac gttttccaat gatgagcact 5580
tttaaagttc tgctatgtgg cgcggtatta tcccgtattg acgccgggca agagcaactc 5640
ggtcgccgca tacactattc tcagaatgac ttggttgagt actcaccagt cacagaaaag 5700
catcttacgg atggcatgac agtaagagaa ttatgcagtg ctgccataac catgagtgat 5760
aacactgcgg ccaacttact tctgacaacg atcggaggac cgaaggagct aaccgctttt 5820
ttgcacaaca tgggggatca tgtaactcgc cttgatcgtt gggaaccgga gctgaatgaa 5880
gccataccaa acgacgagcg tgacaccacg atgcctgtag caatggcaac aacgttgcgc 5940
aaactattaa ctggcgaact acttactcta gcttcccggc aacaattaat agactggatg 6000
gaggcggata aagttgcagg accacttctg cgctcggccc ttccggctgg ctggtttatt 6060
gctgataaat ctggagccgg tgagcgtggg tctcgcggta tcattgcagc actggggcca 6120
gatggtaagc cctcccgtat cgtagttatc tacacgacgg ggagtcaggc aactatggat 6180
gaacgaaata gacagatcgc tgagataggt gcctcactga ttaagcattg gtaactgtca 6240
gaccaagttt actcatatat actttagatt gatttaaaac ttcatttta atttaaaagg 6300
atctaggtga agatcctttt tgataatctc atgaccaaaa tcccttaacg tgagttttcg 6360
ttccactgag cgtcagaccc cgtagaaaag atcaaaggat cttcttgaga tcctttttt 6420
ctgcgcgtaa tctgctgctt gcaaacaaaa aaaccaccgc taccagcggt ggtttgtttg 6480
ccggatcaag agctaccaac tctttttccg aaggtaactg gcttcagcag agcgcagata 6540
ccaaatactg tccttctagt gtagccgtag ttaggccacc acttcaagaa ctctgtagca 6600
ccgcctacat acctcgctct gctaatcctg ttaccagtgg ctgctgccag tggcgataag 6660
tcgtgtctta ccgggttgga ctcaagacga tagttaccgg ataaggcgca gcggtcgggc 6720
tgaacggggg gttcgtgcac acagcccagc ttggagcgaa cgacctacac cgaactgaga 6780
tacctacagc gtgagctatg agaaagcgcc acgcttcccg aagggagaaa ggcggacagg 6840
tatccggtaa gcggcagggt cggaacagga gagcgcacga gggagcttcc agggggaaac 6900
gcctggtatc tttatagtcc tgtcgggttt cgccacctct gacttgagcg tcgatttttg 6960
tgatgctcgt caggggggcg gagcctatgg aaaaacgcca gcaacgcggc ctttttacgg 7020
ttcctgggct tttgctggcc ttttgctcac atgttctttc ctgcgttatc ccctgattct 7080
gtggataacc gtattaccgc ctttgagtga gctgataccg ctcgccgcag ccgaacgacc 7140
gagcgcagcg agtcagtgag cgaggaagcg gaag 7174

<210> 11
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer V206

<400> 11
aacctcgaga ccccctgta cattcta 27

<210> 12
<211> 27

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer V207

<400> 12
gccgttaact tcagggattg gttacag 27

<210> 13
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer V208

<400> 13
cacctcgagt ccggattaag atgaacg 27

<210> 14
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer V209

<400> 14
ccagttaaca ggtgaaccat ttatacag 28

<210> 15
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: RT primer

<400> 15
gcctttgaga gttactcttt g 21

<210> 16
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer cDNA 1

<400> 16
aaacactgta cggcacccgc att 23

<210> 17
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer cDNA 2

<400> 17
gcctttgaga gttactcttt g 21

<210> 18
<211> 8681
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Plasmid 60E

<400> 18
agcgcccaat acgcaaaccg cctctccccg cgcgttggcc gattcattaa tgcagctggc 60
acgacaggtt tcccgactgg aaagcgggca gtgagcgcaa cgcaattaat gtgagttagc 120
tcactcatta ggcaccccag gctttacact ttatgcttcc ggctcgtatg ttgtgtggaa 180
ttgtgagcgg ataacaattt cacacaggaa acagctatga ccatgattac gccaagctca 240
gaattaaccc tcactaaagg gactagtcct gcaggtttct agtcctgcag gtttaaacga 300
attcgccctt aatcttaagc tgccgccccg acgttggctg cgagccctgg gccttcaccc 360
gaacttgggg ggtggggtgg ggaaaaggaa gaaacgcggg cgtattggcc ccaatggggt 420
ctcggtgggg tatcgacaga gtgccagccc tgggaccgaa ccccgcgttt atgaacaaac 480
gacccaacac cgtgcgtttt attctgtctt tttattgccg tcatagcgcg ggttccttcc 540
ggtattgtct ccttccgtgt tatcctcaat ctgtatcttc atcgctagag ccaaactcag 600
cgcgggtgca ggccagcacc aagtgatcgg gcctcagctc ctcggtcaca tccagcatca 660
caggctggtt cctaatatgt ttaccgccac actcgcaggg tctgcacctg gtgcgggtct 720
catcgtacct cagcaccttc cagatcttca tggtcatgtc aaacaccccg ttcaggttca 780
ccttggacat gctctcgggc tcaagcaata tcttagtgtg actcaaattg cattggtaag 840
gtaggaacac ccccctcctg ttacccaaat gcaaggaaca gcgggtcagt atgttatgct 900
caaacactgg ccaggccttg cgagagtggc tggctacgtg aatggtcttc agcaggtgac 960
agttgccgtc cgagcaggtc agcatctgag aggccctgtc ctcgcagttg ccacatacca 1020
tgttatgctt aatcacagcc acgctttca ctagcatgaa gcaaccacag tcggaggcca 1080
cattgtggcg caccctggag ttaccctcag acaggatacc caaggtacac ctttcaaaga 1140
ggcatttctt aattgaagcc ctgcttttgg ggcgacacac cacccccttc cagcagcagt 1200
aaaaggcaca gccccgaacc cttacatcgg tccaggcttc cacacaggta ttgttaaacc 1260
catagaagct tacaccgtgt aggataaggt tggtattggc caggaaaacc gtaccgctaa 1320
aattggggcc agtaaacctt acattcataa taaccacccc gtccatgcca agcacccccg 1380
gccacatatt tatcatgcta catctaaagg ccaccctatc ctccgtatct atctccacct 1440
cggccccgtt cccagaaatg tagcaacaat tcctgatatt tacaagtttg ctgatcttgt 1500
acttgcaatc tggcctaagt gccaccttg catataccct aatagcctcc tcaaaatcat 1560
cccctggctg cagccagtaa gtggtcagct gctctatgga atacttctgc gccagcagat 1620
caagctcatt agcgcaatta tccttgatct gttgaaaagt aatacactca ggacggtgtc 1680
tggtcattaa gctaaaagct agattcctag cctcctctgt agcctcacaa gccccccgct 1740
ccctctttac ccccttagc ccctgcccat cctctgtaat tgtcaaaatg cgtctcagtt 1800
ctggatacag ttcagccacc tgtacaacat tcattcccga gggtccaggc cggctctcgg 1860
gttccatggg ctctgctcct gccgccgccg cctggcttcc tcctgctgct gctgctgctc 1920
ctccgtcggt attatcgccg ggcggacgga agacaacagt agcaggcgat tcttgtgtct 1980
cacaaccgct ctccacagat gcatggccag aaaatccagc aggtaccccc cgctcagatg 2040
ggtttcttcg ctccatttat cctttataaa actcaaaaaa gcaacagcag ccgcagcgcg 2100
ccccggtgtg gaaaaatcca aagtcttgat gaccttctct tggaaaagcg cctggtgacc 2160
cagattcaaa gaatcaaaca gctcaccaca ggatttcaaa agctcttcaa attcccactt 2220
gtaatcctcc ttaattctgc agactaactt tgcctgggat gagccccaca gaaacctcca 2280
aaaccaagag gtactgttag agctctgttc cagcaagtta cgcacagcag aaaaatcttc 2340
caaacactcc caagcctcca tgctcgagat ccttcctcct cgggcgggtg tggaccaccg 2400
cctcgcctct ctccggaaaa aaaaaatgaa ataaacaaca aaaccgaaca aaagcgaaac 2460
gccacggatg gagcgcaaaa ccctcttcga agttctgcga ctgcacacag acagtcaaat 2520
ggagcagagc caggcgagcg accgcccgag ccgcagtagc gcgcaggtct ggggaagaga 2580
ggcgcaggta ggggatctga gtccggtagc gatctgcggc acgctgttga cgctgttaag 2640
cgggtcgctg cagggtcgct cggtattcga ggccacacgc gtcaccttaa tatgcgaagt 2700
ggacctggga ccgcgccgcc ccgactgcat ctgcgtgttc gaattcgcca atgacaagac 2760
gctgggcggg gtttgtgtca tcatagaact aaagacatgc aaatatattt cttccgggga 2820

caccgccagc aaacgcgagc aacgggccac ggggatgaag cagctgcgcc actccctgaa 2880
gctcctgcag tccctcgcgc ctccgggtga caagatagtg tacctgtgcc ccgtcctggt 2940
gtttgtcgcc caacggacgc tccgcgtcag ccgcgtgacc cggctcgtcc cgcagaaggt 3000
ctccggtaat atcaccgcag tcgtgcggat gctccagagc ctgtccacgt atacggtccc 3060
cattgagcct aggacccagc gagcccgtcg ccgccgcggc ggcgccgccc gggggtctgc 3120
gagcagaccg aaaaggtcac actctggggc gcgcgacccg cccgagtcag cggcccgcca 3180
gttaccaccc gccgaccaaa cccccacctc cacggagggc gggggggtgc ttaagaggat 3240
cgcggcgctc ttctgcgtgc ccgtggccac caagaccaaa ccccgagccg cctccgaatg 3300
agagtgtttc gttccttccc cctcccccccg cgtcagacaa accctaacca ccgcttaagc 3360
ggccccccgcg aggtccgaag actcatttgg atccactaga aacgaattcg taaccaagat 3420
tagcccacgg cgcattatat acccttaag ccccgcccca tttaacacgc catgcaagtt 3480
aaacattatc tcacccttta ttaaacttac atcaactcat tcagcaaaca aaggcgttaa 3540
ccacacacgc aatcacaggt ttacacctta tggcctgggg cgtttacagc tcaagtccaa 3600
aggttgccca ggctcgttaa gcaagtcctc gatacattcc acagcctggc gacgcccacc 3660
aactctcacg gcaactggtt taatggggca cagcgggacc accgggtgta tctcaggagg 3720
tgtgttagaa ggaccggagt cacagctatc cgtactacta ttgcattctc tagacacagg 3780
tgatgtcggg cgtctcagga tagcaggcgc cattttagga cggcgggtag gtcttgcagg 3840
ctccggttct ggctcgggct caggctcagg ttcagacaca ggacctttta aaaaaatcac 3900
aatacaaaat tctttaaacc acaaaactgt aaaaattaaa aaaaaaatta ccacaccaaa 3960
cccaccactc tatcacccac tgcccataat tttcacttac tgtagacaaa catgccacag 4020
gtcctcatat agcaaagcga acacataata tctgggtccc ccgtattcct ccggtgataa 4080
tgacaagacc tgcaaccgtg cccggggtgc tccacataat ctaacacaaa ctcctcaccc 4140
tcttcatcct cgtcgtcact gggtggaaag ccagcctcgt ggcaggtaag atcgatcacc 4200
tccggtacaa ggtttggcat agaaaccgga cccaaggctc tctgctccgg ctgctcgggc 4260
tgccgggaaa ggtgaggcgg ctccggagaa ccgggcgccg gcggaaaagt gagtaagtca 4320
atcccttcct gcaccgccaa cattacagag tcgggaaaaa tctgcgaaac cgcctcctcg 4380
ttgggatctt cgggggccgt cacgtctaaa tcatacagtt cgtgaagggt aggtggttca 4440
aaatggctag gaggtggaag attatcagcc agtacctctt cgatcagctg gtccaaaaga 4500
ctggcggcca tttcttcggt aataacacct ccgtggcaga taatatgtct cattttcagt 4560
cccggtgtcg gagcggctcg gaggagaaaa ctctactcgc tggcactcaa gagtggcctc 4620
ttgaggaact caccgggtat aaatacacta cacgtcagct gactataact cgagaacgag 4680
ggagccgact gccgacgtgc gctccggagg cttgcagaat gcggaacacc gcgcgggcag 4740
gaacagggcc cacactaccg ccccacaccc cgcctcccgc accgcccctt cccggccgct 4800
gctctcggcg cgccctgctg agcagccgct attggccaca gcccatcgcg gtcggcgcgc 4860
tgccattgct ccctggcgct gtccgtctgc gagggtacta gtgagacgtg cggcttccgt 4920
ttgtcacgtc cggcacgccg cgaaccgcaa ggaaccttcc cgacttaggg gcggacgagg 4980
aagcgtcgcc gggggggccca caagggtagc ggcgaagatc cgggtgacgc tgcgaacgga 5040
cgtgaagaat gtgcgagacc cagggtcggc gccgctgcgt ttcccggaac cacgcccaga 5100
gcagccgcgt ccctgcgcaa acccagggct gccttggaaa aggcgcaacc ccaaccatta 5160
ataactaatg catggcggta atacggttat ccacagaatc aggggataac gcaggaaaga 5220
acatggtacg gcagtttaag gtttacacct ataaaagaga gagccgttat cgtctgtttg 5280
tggatgtaca gagtgatatt attgacacgc cggggcgacg gatggtgatc cccctggcca 5340
gtgcacgtct gctgtcagat aaagtctccc gtgaacttta cccggtggtg catatcgggg 5400
atgaaagctg gcgcatgatg accaccgata tggccagtgt gccggtctcc gttatcgggg 5460
aagaagtggc tgatctcagc caccgcgaaa atgacatcaa aaacgccatt aacctgatgt 5520
tctggggaat ataaatgtca ggcatgagat tatcaaaaag gatcttcacc tagatccttt 5580
tcacgtagaa agccagtccg cagaaacggt gctgaccccg gatgaatgtc agctactggg 5640
ctatctggac aagggaaaac gcaagcgcaa agagaaagca ggtagcttgc agtgggctta 5700
catggcgata gctagactgg gcggttttat ggacagcaag cgaaccggaa ttgccagctg 5760
gggcgccctc tggtaaggtt gggaagccct gcaaagtaaa ctggatggct ttctcgccgc 5820
caaggatctg atggcgcagg ggatcaagct ctgatcaaga gacaggatga ggatcgtttc 5880
gcatgattga acaagatgga ttgcacgcag gttctccggc cgcttgggtg gagaggctat 5940
tcggctatga ctgggcacaa cagacaatcg gctgctctga tgccgccgtg ttccggctgt 6000
cagcgcaggg gcgcccggtt ctttttgtca agaccgacct gtccggtgcc ctgaatgaac 6060
tgcaagacga ggcagcgcgg ctatcgtggc tggccacgac gggcgttcct tgcgcagctg 6120
tgctcgacgt tgtcactgaa gcgggaaggg actggctgct attgggcgaa gtgccggggc 6180
aggatctcct gtcatctcac cttgctcctg ccgagaaagt atccatcatg gctgatgcaa 6240
tgcggcggct gcatacgctt gatccggcta cctgcccatt cgaccaccaa gcgaaacatc 6300
gcatcgagcg agcacgtact cggatggaag ccggtcttgt cgatcaggat gatctggacg 6360
aagagcatca ggggctcgcg ccagccgaac tgttcgccag gctcaaggcg agcatgcccg 6420
acggcgagga tctcgtcgtg acccatggcg atgcctgctt gccgaatatc atggtggaaa 6480
atggccgctt ttctggattc atcgactgtg gccggctggg tgtggcggac cgctatcagg 6540
acatagcgtt ggctacccgt gatattgctg aagagcttgg cggcgaatgg gctgaccgct 6600

tcctcgtgct ttacggtatc gccgctcccg attcgcagcg catcgccttc tatcgccttc 6660
ttgacgagtt cttctgaatt attaacgctt acaatttcct gatgcggtat tttctcctta 6720
cgcatctgtg cggtatttca caccgcatac aggtggcact tttcggggaa atgtgcgcgg 6780
aacccctatt tgtttatttt tctaaataca ttcaaatatg tatccgctca tgagacaata 6840
accctgataa atgcttcaat aatattgaaa aaggaagagt atgagtattc aacatttccg 6900
tgtcgccctt attccctttt ttgcggcatt ttgccttcct gtttttgctc acccagaaac 6960
gctggtgaaa gtaaaagatg ctgaagatca gttgggtgca cgagtgggtt acatcgaact 7020
ggatctcaac agcggtaaga tccttgagag ttttcgcccc gaagaacgtt ttccaatgat 7080
gagcactttt aaagttctgc tatgtggcgc ggtattatcc cgtattgacg ccgggcaaga 7140
gcaactcggt cgccgcatac actattctca gaatgacttg gttgagtact caccagtcac 7200
agaaaagcat cttacggatg gcatgacagt aagagaatta tgcagtgctg ccataaccat 7260
gagtgataac actgcggcca acttacttct gacaacgatc ggaggaccga aggagctaac 7320
cgcttttttg cacaacatgg gggatcatgt aactcgcctt gatcgttggg aaccggagct 7380
gaatgaagcc ataccaaacg acgagcgtga caccacgatg cctgtagcaa tggcaacaac 7440
gttgcgcaaa ctattaactg gcgaactact tactctagct tcccggcaac aattaataga 7500
ctggatggag gcggataaag ttgcaggacc acttctgcgc tcggcccttc cggctggctg 7560
gtttattgct gataaatctg gagccggtga gcgtgggtct cgcggtatca ttgcagcact 7620
ggggccagat ggtaagccct cccgtatcgt agttatctac acgacgggga gtcaggcaac 7680
tatggatgaa cgaaatagac agatcgctga gataggtgcc tcactgatta agcattggta 7740
actgtcagac caagtttact catatatact ttagattgat ttaaaacttc atttttaatt 7800
taaaaggatc taggtgaaga tccttttttga taatctcatg accaaaatcc cttaacgtga 7860
gttttcgttc cactgagcgt cagaccccgt agaaaagatc aaaggatctt cttgagatcc 7920
ttttttttctg cgcgtaatct gctgcttgca aacaaaaaaa ccaccgctac cagcggtggt 7980
ttgtttgccg gatcaagagc taccaactct ttttccgaag gtaactggct tcagcagagc 8040
gcagatacca aatactgtcc ttctagtgta gccgtagtta ggccaccact tcaagaactc 8100
tgtagcaccg cctacatacc tcgctctgct aatcctgtta ccagtggctg ctgccagtgg 8160
cgataagtcg tgtcttaccg ggttggactc aagacgatag ttaccggata aggcgcagcg 8220
gtcgggctga acgggggggtt cgtgcacaca gcccagcttg gagcgaacga cctacaccga 8280
actgagatac ctacagcgtg agctatgaga aagcgccacg cttcccgaag ggagaaaggc 8340
ggacaggtat ccggtaagcg gcagggtcgg aacaggagag cgcacgaggg agcttccagg 8400
gggaaacgcc tggtatcttt atagtcctgt cgggtttcgc cacctctgac ttgagcgtcg 8460
atttttgtga tgctcgtcag gggggcggag cctatggaaa aacgccagca acgcggcctt 8520
tttacggttc ctgggctttt gctggccttt tgctcacatg ttctttcctg cgttatcccc 8580
tgattctgtg gataaccgta ttaccgcctt tgagtgagct gataccgctc gccgcagccg 8640
aacgaccgag cgcagcgagt cagtgagcga ggaagcggaa g 8681

<210> 19
<211> 5428
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Plasmid 36E

<400> 19
tcttccgctt cctcgctcac tgactcgctg cgctcggtcg ttcggctgcg gcgagcggta 60
tcagctcact caaaggcggt aatacggtta tccacagaat caggggataa cgcaggaaag 120
aacatgtgag caaaaggcca gcaaaaggcc aggaaccgta aaaaggccgc gttgctggcg 180
tttttccata ggctccgccc ccctgacgag catcacaaaa atcgacgctc aagtcagagg 240
tggcgaaacc cgacaggact ataaagatac caggcgtttc cccctggaag ctccctcgtg 300
cgctctcctg ttccgaccct gccgcttacc ggatacctgt ccgcctttct cccttcggga 360
agcgtggcgc tttctcatag ctcacgctgt aggtatctca gttcggtgta ggtcgttcgc 420
tccaagctgg gctgtgtgca cgaaccccc gttcagcccg accgctgcgc cttatccggt 480
aactatcgtc ttgagtccaa cccggtaaga cacgacttat cgccactggc agcagccact 540
ggtaacagga ttagcagagc gaggtatgta ggcggtgcta cagagttctt gaagtggtgg 600
cctaactacg gctacactag aaggacagta tttggtatct gcgctctgct gaagccagtt 660
accttcggaa aaagagttgg tagctcttga tccggcaaac aaaccaccgc tggtagcggt 720
ggtttttttg tttgcaagca gcagattacg cgcagaaaaa aaggatctca agaagatcct 780
ttgatctttt ctacggggtc tgacgctcag tggaacgaaa actcacgtta agggattttg 840
gtcatgagat tatcaaaaag gatcttcacc tagatccttt taaattaaaa atgaagtttt 900
aaatcaatct aaagtatata tgagtaaact tggtctgaca gttaccaatg cttaatcagt 960
gaggcaccta tctcagcgat ctgtctattt cgttcatcca tagttgcctg actccccgtc 1020

gtgtagataa ctacgatacg ggagggctta ccatctggcc ccagtgctgc aatgataccg 1080
cgagacccac gctcaccggc tccagattta tcagcaataa accagccagc cggaagggcc 1140
gagcgcagaa gtggtcctgc aactttatcc gcctccatcc agtctattaa ttgttgccgg 1200
gaagctagag taagtagttc gccagttaat agtttgcgca acgttgttgc cattgctaca 1260
ggcatcgtgg tgtcacgctc gtcgtttggt atggcttcat tcagctccgg ttcccaacga 1320
tcaaggcgag ttacatgatc ccccatgttg tgcaaaaaag cggttagctc cttcggtcct 1380
ccgatcgttg tcagaagtaa gttggccgca gtgttatcac tcatggttat ggcagcactg 1440
cataattctc ttactgtcat gccatccgta agatgctttt ctgtgactgg tgagtactca 1500
accaagtcat tctgagaata gtgtatgcgg cgaccgagtt gctcttgccc ggcgtcaata 1560
cgggataata ccgcgccaca tagcagaact ttaaaagtgc tcatcattgg aaaacgttct 1620
tcggggcgaa aactctcaag gatcttaccg ctgttgagat ccagttcgat gtaacccact 1680
cgtgcaccca actgatcttc agcatctttt actttcacca gcgtttctgg gtgagcaaaa 1740
acaggaaggc aaaatgccgc aaaaaaggga ataagggcga cacggaaatg ttgaatactc 1800
atactcttcc tttttcaata ttattgaagc atttatcagg gttattgtct catgagcgga 1860
tacatatttg aatgtattta gaaaaataaa caaatagggg ttccgcgcac atttccccga 1920
aaagtgccac ctgtatgcgg tgtgaaatac cgcacagatg cgtaaggaga aaataccgca 1980
tcaggaaatt gtaagcgtta ataattcaga agaactcgtc aagaaggcga tagaaggcga 2040
tgcgctgcga atcgggagcg gcgataccgt aaagcacgag gaagcggtca gcccattcgc 2100
cgccaagctc ttcagcaata tcacgggtag ccaacgctat gtcctgatag cggtccgcca 2160
cacccagccg gccacagtcg atgaatccag aaaagcggcc attttccacc atgatattcg 2220
gcaagcaggc atcgccatgg gtcacgacga gatcctcgcc gtcgggcatg ctcgccttga 2280
gcctggcgaa cagttcggct ggcgcgagcc cctgatgctc ttcgtccaga tcatcctgat 2340
cgacaagacc ggcttccatc cgagtacgtg ctcgctcgat gcgatgtttc gcttggtggt 2400
cgaatgggca ggtagccgga tcaagcgtat gcagccgccg cattgcatca gccatgatgg 2460
atactttctc ggcaggagca aggtgagatg acaggagatc ctgccccggc acttcgccca 2520
atagcagcca gtcccttccc gcttcagtga caacgtcgag cacagctgcg caaggaacgc 2580
ccgtcgtggc cagccacgat agccgcgctg cctcgtcttg cagttcattc agggcaccgg 2640
acaggtcggt cttgacaaaa agaaccgggc gcccctgcgc tgacagccgg aacacggcgg 2700
catcagagca gccgattgtc tgttgtgccc agtcatagcc gaatagcctc tccacccaag 2760
cggccggaga acctgcgtgc aatccatctt gttcaatcat gcgaaacgat cctcatcctg 2820
tctcttgatc agagcttgat ccccgtcgcc atcagatcct tggcggcgag aaagccatcc 2880
agtttacttt gcagggcttc ccaaccttac cagagggcgc cccagctggc aattccggtt 2940
cgcttgctgt ccataaaacc gcccagtcta gctatcgcca tgtaagccca ctgcaagcta 3000
cctgctttct ctttgcgctt gcgttttccc ttgtccagat agcccagtag ctgacattca 3060
tccgggggtca gcaccgtttc tgcggactgg ctttctacgt gaaaaggatc taggtgaaga 3120
tccttttttga taatctcatg cctgacattt atattcccca gaacatcagg ttaatggcgt 3180
ttttgatgtc attttcgcgg tggctgagat cagccacttc ttccccgata acggagaccg 3240
gcacactggc catatcggtg gtcatcatgc gccagctttc atccccgata tgcaccaccg 3300
ggtaaagttc acgggagact ttatctgaca gcagacgtgc actggccagg gggatcacca 3360
tccgtcgccc cggcgtgtca ataatatcac tctgtacatc cacaaacaga cgataacggc 3420
tctctctttt ataggtgtaa accttaaact gccgtacgta taggctgcgc aactgttggg 3480
aagggcgatc ggtgcgggcc tcttcgctat tacgccagct ggcgaaaggg ggatgtgctg 3540
caaggcgatt aagttgggta acgccagggt tttcccagtc acgacgttgt aaaacgacgg 3600
ccagtgaatt gtaatacgac tcactatagg gcgaattgaa tttagcggcc gcgaattcta 3660
ccgggtaggg gaggcgcttt tcccaaggca gtctggagca tgcgctttag cagccccgct 3720
ggcacttggc gctacacaag tggcctctgg cctcgcacac attccacatc caccggtagg 3780
cgccaaccgg ctccgttctt tggtggcccc ttcgcgccac cttctactcc tcccctagtc 3840
aggaagttcc ccccccgccc gcagctcgcg tcgtgcagga cgtgacaaat ggaagtagca 3900
cgtctcacta gtctcgtgca gatggacagc accgctgagc aatggaagcg ggtaggcctt 3960
tggggcagcg gccaatagca gctttgctcc ttcgctttct gggctcagag gctgggaagg 4020
ggtgggtccg ggggcgggct cagggggcgg ctcagggggcg gggcgggcgc ccgaaggtcc 4080
tccggaggcc cggcattctc gcacgcttca aaagcgcacg tctgccgcgc tgttctcctc 4140
ttcctcatct ccgggccttt ctcgagtccg gattaagatg aacgacgagc agatcctgga 4200
gatggtgctg cagcaccagc agcgccgcca acaggaagcg gagcgcgagg aggaagttgg 4260
ggatgacatg gaagacgacg aagatgatga cggtcttcag atgccgacgc cgcttcatgc 4320
ctatcagcta ctgtgttacg attctttcga acttcatttc gggggatgcg cttgccacgg 4380
gttacctttg catcgtatgg ggttatcggc ttgccacctg gctccttccg atttggccac 4440
ttatgtttgg gccaggttgg aggatgactt gaatgtggca ggggtgtact tcgtggctat 4500
gtgggcgtca ccggggttta gcgatttctc tccagtattt atgcagcgac cgatcgggaa 4560
cgtgtgcggg atgttaattc acgtggacct gcacagcagg ctaccattcc taattgcggt 4620
gtcgcgcttg ggggaggcgg gtggcagccc ctgtctgtat atgaggaaaa ttgatgttga 4680
tttggacacg cagcgcgtac atttttatac agaagattgg ttcagtgagt ttgcgaatct 4740
gctgtattac tggcaaatga gcgaatggaa acatttagcg gagcgtatgc aataaagaga 4800

```
cgtgagactg tataaatggt tcacctgtta acggatccca cgtcactatt gtatactcta 4860
tattatactc tatgttatac tctgtaatcc tactcaataa acgtgtcacg cctgtgaaac 4920
cgtactaagt ctcccgtgtc ttcttatcac catcaggtga catcctcgcc caggctgtca 4980
atcatgccgg tatcgattcc agtagcaccg gccccacgct gacaacccac tcttgcagcg 5040
ttagcagcgc ccctcttaac aagccgaccc ccaccagcgt cgcggttact aacactcctc 5100
tccccggggc atccgctact cccgagctta agattaaggg cgaattcgtt taaacctgca 5160
ggactagtcc ctttagtgag ggttaattct gagcttggcg taatcatggt catagctgtt 5220
tcctgtgtga aattgttatc cgctcacaat tccacacaac atacgagccg gaagcataaa 5280
gtgtaaagcc tggggtgcct aatgagtgag ctaactcaca ttaattgcgt tgcgctcact 5340
gcccgctttc cagtcgggaa acctgtcgtg ccagctgcat taatgaatcg gccaacgcgc 5400
ggggagaggc ggtttgcgta ttgggcgc                                    5428
```