SEQUENCE LISTING

<110> Zhao, Lishan
Xu, Lan
Westfall, Patrick
Main, Andrew

<120> Methods of Developing Terpene Synthase Variants

<130> 6291-21-PCT

<140> not yet assigned
<141> 2012-02-01

<150> 61/438,948
<151> 2011-02-02

<160> 176

<170> PatentIn version 3.5

<210> 1
<211> 11741
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Expression plasmid pAM765

<400> 1
gaattccgga tgagcattca tcaggcgggc aagaatgtga ataaaggccg gataaaactt 60

gtgcttattt ttctttacgg tctttaaaaa ggccgtaata tccagctgaa cggtctggtt 120

ataggtacat tgagcaactg actgaaatgc ctcaaaatgt tctttacgat gccattggga 180

tatatcaacg gtggtatatc cagtgatttt tttctccatt ttagcttcct tagctcctga 240

aaatctcgat aactcaaaaa atacgcccgg tagtgatctt atttcattat ggtgaaagtt 300

ggaacctctt acgtgccgat caacgtctca ttttcgccaa aagttggccc agggcttccc 360

ggtatcaaca gggacaccag gatttattta ttctgcgaag tgatcttccg tcacaggtat 420

ttattcggcg caaagtgcgt cgggtgatgc tgccaactta ctgatttagt gtatgatggt 480

gtttttgagg tgctccagtg gcttctgttt ctatcagctg tccctcctgt tcagctactg 540

acggggtggt gcgtaacggc aaaagcaccg ccggacatca gcgctagcgg agtgtatact 600

ggcttactat gttggcactg atgagggtgt cagtgaagtg cttcatgtgg caggagaaaa 660

aaggctgcac cggtgcgtca gcagaatatg tgatacagga tatattccgc ttcctcgctc 720

actgactcgc tacgctcggt cgttcgactg cggcgagcgg aaatggctta cgaacggggc 780

ggagatttcc tggaagatgc caggaagata cttaacaggg aagtgagagg gccgcggcaa 840

agccgttttt ccataggctc cgcccccctg acaagcatca cgaaatctga cgctcaaatc 900

agtggtggcg aaacccgaca ggactataaa gataccaggc gtttcccccc ggcggctccc 960

tcgtgcgctc tcctgttcct gcctttcggt ttaccggtgt cattccgctg ttatggccgc 1020

gtttgtctca ttccacgcct gacactcagt tccgggtagg cagttcgctc caagctggac 1080

tgtatgcacg aacccccccgt tcagtccgac cgctgcgcct tatccggtaa ctatcgtctt 1140

gagtccaacc cggaaagaca tgcaaaagca ccactggcag cagccactgg taattgattt 1200

agaggagtta gtcttgaagt catgcgccgg ttaaggctaa actgaaagga caagttttgg 1260

tgactgcgct cctccaagcc agttacctcg gttcaaagag ttggtagctc agagaacctt 1320

cgaaaaaccg ccctgcaagg cggtttttc gttttcagag caagagatta cgcgcagacc 1380

aaaacgatct caagaagatc atcttattaa tcagataaaa tatttctaga tttcagtgca 1440

atttatctct tcaaatgtag cacctgaagt cagccccata cgatataagt tgtaattctc 1500

atgtttgaca gcttatcatc gataagcttc cgatggcgcg ccgagaggct ttacacttta 1560

tgcttccggc tcgtataatg tgtggaattg tgagcggata acaattgaat tcaaaggagg 1620

ccatcctggc catgaagaac tgtgtgattg tttctgcggt ccgcacggcg atcggcagct 1680

ttaacggctc tttagcgagc acctctgcaa tcgatctggg tgcgacggtc attaaggccg 1740

ccattgaacg cgccaaaatc gacagccagc acgttgatga ggtgatcatg ggcaatgtgt 1800

tacaagccgg cctgggtcaa aacccagcgc gtcaagcact gttaaaatct ggtctggccg 1860

agaccgtgtg tggcttcacc gtcaataagg tttgcggctc tggcctgaag agcgtggccc 1920

tggcagcaca agcgattcaa gccggtcagg cacaaagcat cgttgcgggt ggcatggaga 1980

acatgtctct ggcgccgtac ttattagatg ccaaagcccg cagcggttat cgcctgggcg 2040

atggtcaggt gtacgacgtc atcttacgcg atggcttaat gtgcgcgacc cacggttacc 2100

acatgggtat tacggccgaa aacgtggcga aagaatacgg cattacgcgc gagatgcagg 2160

atgaattagc actgcactct cagcgcaaag cagcagccgc gatcgagtct ggtgcgttta 2220

cggcggaaat cgtgccagtt aacgtggtca cgcgcaagaa gacgttcgtt ttcagccagg 2280

acgagttccc gaaggcaaac agcaccgcgg aggccttagg tgccttacgc ccagcctttg 2340

acaaagcggg cacggtcacc gccggtaatg cgagcggcat caatgatggt gcagcggcac 2400

tggtcatcat ggaagagagc gccgcattag cagcgggtct gaccccatta gcgcgcatta 2460

aatcttatgc cagcggcggc gtcccaccag ccctgatggg catgggtccg gtcccagcca 2520

cgcaaaaagc cctgcaatta gcgggcctgc aactggccga cattgatctg atcgaggcga 2580

acgaggcgtt tgcagcgcag ttcctggcgg tgggtaagaa tctgggcttc gacagcgaga 2640

aagtcaatgt gaacggtggc gcgattgcgt taggccatcc gattggtgca agcggcgcac 2700

gcatcttagt gacgttactg cacgccatgc aggcacgcga caagacctta ggcctggcga 2760

ccttatgtat tggtggcggt caaggtatcg ccatggtgat cgaacgcctg aactgaagat 2820

ctaggaggaa agcaaaatga caataggtat cgacaaaata aacttttacg ttccaaagta 2880

ctatgtagac atggctaaat tagcagaagc acgccaagta gacccaaaca aatttttaat 2940

tggaattggt caaactgaaa tggctgttag tcctgtaaac caagacatcg tttcaatggg 3000

cgctaacgct gctaaggaca ttataacaga cgaagataaa aagaaaattg gtatggtaat 3060

tgtggcaact gaatcagcag ttgatgctgc taaagcagcc gctgttcaaa ttcacaactt 3120

attaggtatt caacctttg cacgttgctt tgaaatgaaa gaagcttgtt atgctgcaac 3180

accagcaatt caattagcta aagattattt agcaactaga ccgaatgaaa aagtattagt 3240

tattgctaca gatacagcac gttatggatt gaattcaggc ggcgagccaa cacaaggtgc 3300

tggcgcagtt gcgatggtta ttgcacataa tccaagcatt ttggcattaa atgaagatgc 3360

tgttgcttac actgaagacg tttatgattt ctggcgtcca actggacata aatatccatt 3420

agttgatggt gcattatcta aagatgctta tatccgctca ttccaacaaa gctggaatga 3480

atacgcaaaa cgtcaaggta agtcgctagc tgacttcgca tctctatgct tccatgttcc 3540

atttacaaaa atgggtaaaa aggcattaga gtcaatcatt gataacgctg atgaaacaac 3600

tcaagagcgt ttacgttcag gatatgaaga tgctgtagat tataaccgtt atgtcggtaa 3660

tatttatact ggatcattat atttaagcct aatatcatta cttgaaaatc gtgatttaca 3720

agctggtgaa acaatcggtt tattcagtta tggctcaggt tcagttggtg aattttatag 3780

tgcgacatta gttgaaggct acaaagatca tttagatcaa gctgcacata aagcattatt 3840

aaataaccgt actgaagtat ctgttgatgc atatgaaaca ttcttcaaac gttttgatga 3900

cgttgaattt gacgaagaac aagatgctgt tcatgaagat cgtcatattt tctacttatc 3960

aaatattgaa aataacgttc gcgaatatca cagaccagag taactagtag gaggaaaaca 4020

tcatgcaaag tttagataag aatttccgac atttatctcg tcaacaaaag ttacaacaat 4080

tggtagataa gcaatggtta tcagaagatc aattcgacat tttattgaat catccattaa 4140

ttgatgagga agtagcaaat agtttaattg aaaatgtcat cgcgcaaggt gcattacccg 4200

ttggattatt accgaatatc attgtggacg ataaggcata tgttgtacct atgatggtgg 4260

aagagccttc agttgtcgct gcagctagtt atggtgcaaa gctagtgaat cagactggcg 4320

gatttaaaac ggtatcttct gaacgtatta tgataggtca aatcgtcttt gatggcgttg 4380

acgatactga aaaattatca gcagacatta aagctttaga aaagcaaatt cataaaattg 4440

cggatgaggc atatccttct attaaagcgc gtggtggtgg ttaccaacgt atagctattg 4500

atacatttcc tgagcaacag ttactatctt taaaagtatt tgttgatacg aaagatgcta 4560

tgggcgctaa tatgcttaat acgattttag aggccataac tgcatttta aaaaatgaat 4620

ctccacaaag cgacatttta atgagtattt tatccaatca tgcaacagcg tccgttgtta 4680

aagttcaagg cgaaattgac gttaaagatt tagcaagggg cgagagaact ggagaagagg 4740

ttgccaaacg aatggaacgt gcttctgtat tggcacaagt tgatattcat cgtgctgcaa 4800

cacataataa aggtgttatg aatggcatac atgccgttgt tttagcaaca ggaaatgata 4860

cgcgtggtgc agaagcaagt gcgcatgcat acgcgagtcg tgacggacag tatcgtggta 4920

ttgcaacatg gagatacgat caaaaacgtc aacgtttaat tggtacaata gaagtgccta 4980

tgacattggc aatcgttggc ggtggtacaa aagtattacc aattgctaaa gcttctttag 5040

aattgctaaa tgtagattca gcacaagaat taggtcatgt agttgctgcc gttggtttag 5100

cacagaactt tgcagcatgt cgcgcgctcg tttccgaagg tatccagcaa ggccatatga 5160

gcttgcaata taaatcttta gctattgttg taggtgcaaa aggtgatgaa attgcgcaag 5220

tagctgaagc attgaagcaa gaaccccgtg cgaatacaca agtagctgaa cgcattttac 5280

aagaaattag acaacaatag tctagaagca gcttcgatcc catggtacgc gtgctagagg 5340

catcaaataa aacgaaaggc tcagtcgaaa gactgggcct ttcgttttat ctgttgtttg 5400

tcggtgaacg ctctcctgag taggacaaat ccgccggcga tcgccgagag gctttacact 5460

ttatgcttcc ggctcgtata atgtgtggaa ttgtgagcgg ataacaattg aattcaaagg 5520

aggctcgaga tgacgcgcaa aggctacggt gaatctactg gtaagattat cctgattggc 5580

gagcatgctg taacctttgg cgaacctgcc atcgcagtac cgttcaacgc gggcaaaatc 5640

aaggttctga tcgaagccct ggagtccggc aactattcta gcatcaaatc tgacgtatac 5700

gacggtatgc tgtacgacgc gccggaccac ctgaagagcc tggtgaaccg ttttgttgaa 5760

ctgaacaaca tcactgaacc gctggcggta accattcaga ccaacctgcc gccatctcgc 5820

ggcctgggta gctctgctgc ggttgctgta gcgttcgtac gcgcgtctta tgatttcctg 5880

ggtaagtctc tgaccaaaga agaactgatt gagaaagcga actgggcaga acagattgca 5940

cacggcaaac caagcggcat cgacacccaa actattgtgt ctggcaaacc agtttggttc 6000

caaaaaggcc aggcggagac cctgaaaacc ctgagcctgg acggttacat ggttgtaatt 6060

gacactggtg taaaaggcag cacccgccag gcagtagagg atgtgcacaa actgtgcgaa 6120

gaccctcagt atatgagcca cgtgaagcac atcggtaaac tggtactgcg cgcttctgac 6180

gtgattgaac accacaactt cgaagcactg gcggatatct tcaacgaatg ccatgcggat 6240

ctgaaagcac tgactgtgag ccatgacaaa attgagcagc tgatgaaaat cggcaaagaa 6300

aacggtgcga tcgctggcaa actgactggt gcaggtcgcg gtggctctat gctgctgctg 6360

gctaaagacc tgccgactgc taaaaacatt gttaaggcag tagaaaaggc aggtgctgca 6420

cacacttgga ttgaaaacct gggtggttag gaggcagatc aaatgtcaga gttgagagcc 6480

ttcagtgccc cagggaaagc gttactagct ggtggatatt tagttttaga tacaaaatat 6540

gaagcatttg tagtcggatt atcggcaaga atgcatgctg tagcccatcc ttacggttca 6600

ttgcaagggt ctgataagtt tgaagtgcgt gtgaaaagta aacaatttaa agatggggag 6660

tggctgtacc atataagtcc taaaagtggc ttcattcctg tttcgatagg cggatctaag 6720

aacccttca ttgaaaaagt tatcgctaac gtatttagct actttaaacc taacatggac 6780

gactactgca atagaaactt gttcgttatt gatattttct ctgatgatgc ctaccattct 6840

caggaggata gcgttaccga acatcgtggc aacagaagat tgagttttca ttcgcacaga 6900

attgaagaag ttcccaaaac agggctgggc tcctcggcag gtttagtcac agttttaact 6960

acagctttgg cctccttttt tgtatcggac ctggaaaata atgtagacaa atatagagaa 7020

gttattcata atttagcaca agttgctcat tgtcaagctc agggtaaaat tggaagcggg 7080

tttgatgtag cggcggcagc atatggatct atcagatata gaagattccc acccgcatta 7140

atctctaatt tgccagatat tggaagtgct acttacggca gtaaactggc gcatttggtt 7200

gatgaagaag actggaatat tacgattaaa agtaaccatt taccttcggg attaacttta 7260

tggatgggcg atattaagaa tggttcagaa acagtaaaac tggtccagaa ggtaaaaaat 7320

tggtatgatt cgcatatgcc agaaagcttg aaaatatata cagaactcga tcatgcaaat 7380

tctagattta tggatggact atctaaacta gatcgcttac acgagactca tgacgattac 7440

agcgatcaga tatttgagtc tcttgagagg aatgactgta cctgtcaaaa gtatcctgaa 7500

atcacagaag ttagagatgc agttgccaca attagacgtt cctttagaaa aataactaaa 7560

gaatctggtg ccgatatcga acctcccgta caaactagct tattggatga ttgccagacc 7620

ttaaaaggag ttcttacttg cttaatacct ggtgctggtg gttatgacgc cattgcagtg 7680

attactaagc aagatgttga tcttagggct caaaccgcta atgacaaaag attttctaag 7740

gttcaatggc tggatgtaac tcaggctgac tggggtgtta ggaaagaaaa agatccggaa 7800

acttatcttg ataaatagga ggtaatactc atgaccgttt acacagcatc cgttaccgca 7860

cccgtcaaca tcgcaaccct taagtattgg gggaaaaggg acacgaagtt gaatctgccc 7920

accaattcgt ccatatcagt gactttatcg caagatgacc tcagaacgtt gacctctgcg 7980

gctactgcac ctgagtttga acgcgacact ttgtggttaa atggagaacc acacagcatc 8040

gacaatgaaa gaactcaaaa ttgtctgcgc gacctacgcc aattaagaaa ggaaatggaa 8100

tcgaaggacg cctcattgcc cacattatct caatggaaac tccacattgt ctccgaaaat 8160

aactttccta cagcagctgg tttagcttcc tccgctgctg gctttgctgc attggtctct 8220

gcaattgcta agttatacca attaccacag tcaacttcag aaatatctag aatagcaaga 8280

aaggggtctg gttcagcttg tagatcgttg tttggcggat acgtggcctg ggaaatggga 8340

aaagctgaag atggtcatga ttccatggca gtacaaatcg cagacagctc tgactggcct 8400

cagatgaaag cttgtgtcct agttgtcagc gatattaaaa aggatgtgag ttccactcag 8460

ggtatgcaat tgaccgtggc aacctccgaa ctatttaaag aaagaattga acatgtcgta 8520

ccaaagagat ttgaagtcat gcgtaaagcc attgttgaaa aagatttcgc cacctttgca 8580

aaggaaacaa tgatggattc caactctttc catgccacat gtttggactc tttccctcca 8640

atattctaca tgaatgacac ttccaagcgt atcatcagtt ggtgccacac cattaatcag 8700

ttttacggag aaacaatcgt tgcatacacg tttgatgcag gtccaaatgc tgtgttgtac 8760

tacttagctg aaaatgagtc gaaactcttt gcatttatct ataaattgtt tggctctgtt 8820

cctggatggg acaagaaatt tactactgag cagcttgagg ctttcaacca tcaatttgaa 8880

tcatctaact ttactgcacg tgaattggat cttgagttgc aaaaggatgt tgccagagtg 8940

attttaactc aagtcggttc aggcccacaa gaaacaaacg aatctttgat tgacgcaaag 9000

actggtctac caaaggaata actgcagccc gggaggagga ttactatatg caaacggaac 9060

acgtcatttt attgaatgca cagggagttc ccacgggtac gctggaaaag tatgccgcac 9120

acacggcaga cacccgctta catctcgcgt tctccagttg gctgtttaat gccaaaggac 9180

aattattagt tacccgccgc gcactgagca aaaaagcatg gcctggcgtg tggactaact 9240

cggtttgtgg gcacccacaa ctgggagaaa gcaacgaaga cgcagtgatc cgccgttgcc 9300

gttatgagct tggcgtggaa attacgcctc ctgaatctat ctatcctgac tttcgctacc 9360

gcgccaccga tccgagtggc attgtggaaa atgaagtgtg tccggtattt gccgcacgca 9420

ccactagtgc gttacagatc aatgatgatg aagtgatgga ttatcaatgg tgtgatttag 9480

cagatgtatt acacggtatt gatgccacgc cgtgggcgtt cagtccgtgg atggtgatgc 9540

aggcgacaaa tcgcgaagcc agaaaacgat tatctgcatt tacccagctt aaataacccg 9600

ggggatccac tagttctaga gcggccgcca ccgcggagga ggaatgagta atggactttc 9660

cgcagcaact cgaagcctgc gttaagcagg ccaaccaggc gctgagccgt tttatcgccc 9720

cactgccctt tcagaacact cccgtggtcg aaaccatgca gtatggcgca ttattaggtg 9780

gtaagcgcct gcgacctttc ctggtttatg ccaccggtca tatgttcggc gttagcacaa 9840

acacgctgga cgcacccgct gccgccgttg agtgtatcca cgcttactca ttaattcatg 9900

atgatttacc ggcaatggat gatgacgatc tgcgtcgcgg tttgccaacc tgccatgtga 9960

agtttggcga agcaaacgcg attctcgctg gcgacgcttt acaaacgctg gcgttctcga 10020

ttttaagcga tgccgatatg ccggaagtgt cggaccgcga cagaatttcg atgatttctg 10080

aactggcgag cgccagtggt attgccggaa tgtgcggtgg tcaggcatta gatttagacg 10140

cggaaggcaa acacgtacct ctggacgcgc ttgagcgtat tcatcgtcat aaaaccggcg 10200

cattgattcg cgccgccgtt cgccttggtg cattaagcgc cggagataaa ggacgtcgtg 10260

ctctgccggt actcgacaag tatgcagaga gcatcggcct tgccttccag gttcaggatg 10320

acatcctgga tgtggtggga gatactgcaa cgttgggaaa acgccagggt gccgaccagc 10380

aacttggtaa aagtacctac cctgcacttc tgggtcttga gcaagcccgg aagaaagccc 10440

gggatctgat cgacgatgcc cgtcagtcgc tgaaacaact ggctgaacag tcactcgata 10500

cctcggcact ggaagcgcta gcggactaca tcatccagcg taataaataa gagctccaat 10560

tcgccctata gtgagacgcg tgctagaggc atcaaataaa acgaaaggct cagtcgaaag 10620

actgggcctt tcgttttatc tgttgtttgt cggtgaacgc tctcctgagt taattaactc 10680

caggccggcc tacgcgttta aacttccggt taacgccatg agcggcctca tttcttattc 10740

tgagttacaa cagtccgcac cgctgccggt agctccttcc ggtgggcgcg gggcatgact 10800

atcgtcgccg cacttatgac tgtcttcttt atcatgcaac tcgtaggaca ggtgccggca 10860

gcgcccaaca gtcccccggc cacggggcct gccaccatac ccacgccgaa acaagcgccc 10920

tgcaccatta tgttccggat ctgcatcgca ggatgctgct ggctaccctg tggaacacct 10980

acatctgtat taacgaagcg ctaaccgttt ttatcaggct ctgggaggca gaataaatga 11040

tcatatcgtc aattattacc tccacgggga gagcctgagc aaactggcct caggcatttg 11100

agaagcacac ggtcacactg cttccggtag tcaataaacc ggtaaaccag caatagacat 11160

aagcggctat ttaacgaccc tgccctgaac cgacgaccgg gtcgaatttg ctttcgaatt 11220

tctgccattc atccgcttat tatcacttat tcaggcgtag caccaggcgt ttaagggcac 11280

caataactgc cttaaaaaaa ttacgccccg ccctgccact catcgcagta ctgttgtaat 11340

tcattaagca ttctgccgac atggaagcca tcacagacgg catgatgaac ctgaatcgcc 11400

agcggcatca gcaccttgtc gccttgcgta taatatttgc ccatggtgaa aacgggggcg 11460

aagaagttgt ccatattggc cacgtttaaa tcaaaactgg tgaaactcac ccagggattg 11520

gctgagacga aaaacatatt ctcaataaac cctttaggga ataggccag gttttcaccg 11580

taacacgcca catcttgcga atatatgtgt agaaactgcc ggaaatcgtc gtggtattca 11640

ctccagagcg atgaaaacgt ttcagtttgc tcatggaaaa cggtgtaaca agggtgaaca 11700

ctatcccata tcaccagctc accgtctttc attgccatac g 11741

<210> 2
<211> 5050
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, TRP1_PGAL10-ERG20_PGAL1-tHMGR_TRP insert of expression plasmid pAM489

<400> 2
gtttaaacta ctattagctg aattgccact gctatcgttg ttagtggcgt tagtgcttgc 60

attcaaagac atggagggcg ttattacgcc ggagctcctc gacagcagat ctgatgactg 120

gtcaatatat ttttgcattg aggctctgtt tggaattata ttttgagatg acccatctaa 180

tgtactggta tcaccagatt tcatgtcgtt ttttaaagcg gctgcttgag tcttagcaat 240

agcgtcacca tctggtgaat cctttgaagg aaccactgac gaaggtttgg acagtgacga 300

agaggatctt tcctgctttg aattagtcgc gctgggagca gatgacgagt tggtggagct 360

gggggcagga ttgctggccg tcgtgggtcc tgaatgggtc cttggctggt ccatctctat 420

tctgaaaacg gaagaggagt agggaatatt actggctgaa aataagtctt gaatgaacgt 480

atacgcgtat atttctacca atctctcaac actgagtaat ggtagttata agaaagagac 540

cgagttaggg acagttagag gcggtggaga tattccttat ggcatgtctg gcgatgataa 600

aacttttcaa acggcagccc cgatctaaaa gagctgacac ccgggagtta tgacaattac 660

aacaacagaa ttctttctat atatgcacga acttgtaata tggaagaaat tatgacgtac 720

aaactataaa gtaaatattt tacgtaacac atggtgctgt tgtgcttctt tttcaagaga 780

ataccaatga cgtatgacta agtttaggat ttaatgcagg tgacggaccc atctttcaaa 840

cgatttatat cagtggcgtc caaattgtta ggttttgttg gttcagcagg tttcctgttg 900

tgggtcatat gactttgaac caaatggccg gctgctaggg cagcacataa ggataattca 960

cctgccaaga cggcacaggc aactattctt gctaattgac gtgcgttggt accaggagcg 1020

gtagcatgtg ggcctcttac acctaataag tccaacatgg caccttgtgg ttctagaaca 1080

gtaccaccac cgatggtacc tacttcgatg gatggcatgg atacggaaat tctcaaatca 1140

ccgtccactt ctttcatcaa tgttatacag ttggaacttt cgacattttg tgcaggatct 1200

tgtcctaatg ccaagaaaac agctgtcact aaattagctg catgtgcgtt aaatccacca 1260

acagacccag ccattgcaga tccaaccaaa ttcttagcaa tgttcaactc aaccaatgcg 1320

gaaacatcac tttttaacac ttttctgaca acatcaccag gaatagtagc ttctgcgacg 1380

acactcttac cacgaccttc gatccagttg atggcagctg gttttttgtc ggtacagtag 1440

ttaccagaaa cggagacaac ctccatatct tcccagccat actcttctac catttgcttt 1500

aatgagtatt cgacaccctt agaaatcata ttcataccca ttgcgtcacc agtagttgtt 1560

ctaaatctca tgaagagtaa atctcctgct agacaagttt gaatatgttg cagacgtgca 1620

aatcttgatg tagagttaaa agctttttta attgcgtttt gtccctcttc tgagtctaac 1680

catatcttac aggcaccaga tcttttcaaa gttgggaaac ggactactgg gcctcttgtc 1740

ataccatcct tagttaaaac agttgttgca ccaccgccag cattgattgc cttacagcca 1800

cgcatggcag aagctaccaa acaaccctct gtagttgcca ttggtatatg ataagatgta 1860

ccatcgataa ccaaggggcc tataacacca acgggcaaag gcatgtaacc tataacattt 1920

tcacaacaag cgccaaatac gcggtcgtag tcataatttt tatatggtaa acgatcagat 1980

gctaatacag gagcttctgc caaaattgaa agagccttcc tacgtaccgc aaccgctctc 2040

gtagtatcac ctaatttttt ctccaaagcg tacaaaggta acttaccgtg aataaccaag 2100

gcagcgacct ctttgttctt caattgtttt gtatttccac tacttaataa tgcttctaat 2160

tcttctaaag gacgtatttt cttatccaag ctttcaatat cgcgggaatc atcttcctca 2220

ctagatgatg aaggtcctga tgagctcgat tgcgcagatg ataaactttt gactttcgat 2280

ccagaaatga ctgttttatt ggttaaaact ggtgtagaag ccttttgtac aggagcagta 2340

aaagacttct tggtgacttc agtcttcacc aattggtctg cagccattat agtttttct 2400

ccttgacgtt aaagtataga ggtatattaa caatttttg ttgatacttt tatgacattt 2460

gaataagaag taatacaaac cgaaaatgtt gaaagtatta gttaaagtgg ttatgcagct 2520

tttgcattta tatatctgtt aatagatcaa aaatcatcgc ttcgctgatt aattacccca 2580

gaaataaggc taaaaaacta atcgcattat tatcctatgg ttgttaattt gattcgttga 2640

tttgaaggtt tgtggggcca ggttactgcc aatttttcct cttcataacc ataaaagcta 2700

gtattgtaga atctttattg ttcggagcag tgcggcgcga ggcacatctg cgtttcagga 2760

acgcgaccgg tgaagaccag gacgcacgga ggagagtctt ccgtcggagg gctgtcgccc 2820

gctcggcggc ttctaatccg tacttcaata tagcaatgag cagttaagcg tattactgaa 2880

agttccaaag agaaggtttt tttaggctaa gataatgggg ctctttacat ttccacaaca 2940

tataagtaag attagatatg gatatgtata tggtggtatt gccatgtaat atgattatta 3000

aacttctttg cgtccatcca aaaaaaaagt aagaattttt gaaaattcaa tataaatggc 3060

ttcagaaaaa gaaattagga gagagagatt cttgaacgtt ttccctaaat tagtagagga 3120

attgaacgca tcgcttttgg cttacggtat gcctaaggaa gcatgtgact ggtatgccca 3180

ctcattgaac tacaacactc caggcggtaa gctaaataga ggtttgtccg ttgtggacac 3240

gtatgctatt ctctccaaca agaccgttga acaattgggg caagaagaat acgaaaaggt 3300

tgccattcta ggttggtgca ttgagttgtt gcaggcttac ttcttggtcg ccgatgatat 3360

gatggacaag tccattacca gaagaggcca accatgttgg tacaaggttc ctgaagttgg 3420

ggaaattgcc atcaatgacg cattcatgtt agaggctgct atctacaagc ttttgaaatc 3480

tcacttcaga aacgaaaaat actacataga tatcaccgaa ttgttccatg aggtcacctt 3540

ccaaaccgaa ttgggccaat tgatggactt aatcactgca cctgaagaca aagtcgactt 3600

gagtaagttc tccctaaaga agcactcctt catagttact ttcaagactg cttactattc 3660

tttctacttg cctgtcgcat tggccatgta cgttgccggt atcacggatg aaaaggattt 3720

gaaacaagcc agagatgtct tgattccatt gggtgaatac ttccaaattc aagatgacta 3780

cttagactgc ttcggtaccc cagaacagat cggtaagatc ggtacagata tccaagataa 3840

caaatgttct tgggtaatca acaaggcatt ggaacttgct tccgcagaac aaagaaagac 3900

tttagacgaa aattacggta agaaggactc agtcgcagaa gccaaatgca aaaagatttt 3960

caatgacttg aaaattgaac agctatacca cgaatatgaa gagtctattg ccaaggattt 4020

gaaggccaaa atttctcagg tcgatgagtc tcgtggcttc aaagctgatg tcttaactgc 4080

gttcttgaac aaagtttaca agagaagcaa atagaactaa cgctaatcga taaaacatta 4140

gatttcaaac tagataagga ccatgtataa gaactatata cttccaatat aatatagtat 4200

aagctttaag atagtatctc tcgatctacc gttccacgtg actagtccaa ggatttttt 4260

taacccggga tatatgtgta ctttgcagtt atgacgccag atggcagtag tggaagatat 4320

tctttattga aaaatagctt gtcaccttac gtacaatctt gatccggagc ttttcttttt 4380

ttgccgatta agaattcggt cgaaaaaaga aaaggagagg gccaagaggg agggcattgg 4440

tgactattga gcacgtgagt atacgtgatt aagcacacaa aggcagcttg gagtatgtct 4500

gttattaatt tcacaggtag ttctggtcca ttggtgaaag tttgcggctt gcagagcaca 4560

gaggccgcag aatgtgctct agattccgat gctgacttgc tgggtattat atgtgtgccc 4620

aatagaaaga gaacaattga cccggttatt gcaaggaaaa tttcaagtct tgtaaaagca 4680

tataaaaata gttcaggcac tccgaaatac ttggttggcg tgtttcgtaa tcaacctaag 4740

gaggatgttt tggctctggt caatgattac ggcattgata tcgtccaact gcatggagat 4800

gagtcgtggc aagaatacca agagttcctc ggtttgccag ttattaaaag actcgtattt 4860

ccaaaagact gcaacatact actcagtgca gcttcacaga aacctcattc gtttattccc 4920

ttgtttgatt cagaagcagg tgggacaggt gaacttttgg attggaactc gatttctgac 4980

tgggttggaa ggcaagagag ccccgaaagc ttacatttta tgttagctgg tggactgacg 5040

ccgtttaaac 5050

<210> 3
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK001-G

<400> 3
gtttaaacta ctattagctg aattgccact 30

<210> 4
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK002-G

<400> 4
actgcaaagt acacatatat cccgggtgtc agctctttta gatcgg 46

<210> 5
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK003-G

<400> 5
ccgatctaaa agagctgaca cccgggatat atgtgtactt tgcagt 46

<210> 6
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK004-G

<400> 6
gtttaaacgg cgtcagtcca ccagctaaca 30

<210> 7
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK025-G

<400> 7
tccccccggg ttaaaaaaaa tccttggact agtca 35

<210> 8
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK050-G

<400> 8
aatttttgaa aattcaatat aaatggcttc agaaaaagaa attagga 47

<210> 9
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK051-G

<400> 9
tcctaatttc tttttctgaa gccatttata ttgaattttc aaaaatt 47

<210> 10
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK052-G

<400> 10
agttttcacc aattggtctg cagccattat agtttttct ccttgacgtt a 51

<210> 11
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK053-G

<400> 11
taacgtcaag gagaaaaaac tataatggct gcagaccaat tggtgaaaac t 51

<210> 12
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK031-G

<400> 12
tccccccggg agttatgaca attacaacaa cagaa 35

<210> 13
<211> 5488
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, URA3_PGAL10-ERG13_PGAL1-tHMGR_URA3 insert of expression plasmid pAM491

<400> 13
gtttaaactt gctaaattcg agtgaaacac aggaagacca gaaaatcctc atttcatcca 60

tattaacaat aatttcaaat gtttatttgc attatttgaa actagggaag acaagcaacg 120

aaacgttttt gaaaattttg agtattttca ataaatttgt agaggactca gatattgaaa 180

aaaagctaca gcaattaata cttgataaga agagtattga gaagggcaac ggttcatcat 240

ctcatggatc tgcacatgaa caaacaccag agtcaaacga cgttgaaatt gaggctactg 300

cgccaattga tgacaataca gacgatgata acaaaccgaa gttatctgat gtagaaaagg 360

attaaagatg ctaagagata gtgatgatat ttcataaata atgtaattct atatatgtta 420

attacctttt ttgcgaggca tatttatggt gaaggataag ttttgaccat caaagaaggt 480

taatgtggct gtggtttcag ggtccatacc cgggagttat gacaattaca acaacagaat 540

tctttctata tatgcacgaa cttgtaatat ggaagaaatt atgacgtaca aactataaag 600

taaatatttt acgtaacaca tggtgctgtt gtgcttcttt ttcaagagaa taccaatgac 660

gtatgactaa gtttaggatt taatgcaggt gacggaccca tctttcaaac gatttatatc 720

agtggcgtcc aaattgttag gttttgttgg ttcagcaggt ttcctgttgt gggtcatatg 780

actttgaacc aaatggccgg ctgctagggc agcacataag gataattcac ctgccaagac 840

ggcacaggca actattcttg ctaattgacg tgcgttggta ccaggagcgg tagcatgtgg 900

gcctcttaca cctaataagt ccaacatggc accttgtggt tctagaacag taccaccacc 960

gatggtacct acttcgatgg atggcatgga tacggaaatt ctcaaatcac cgtccacttc 1020

tttcatcaat gttatacagt tggaactttc gacattttgt gcaggatctt gtcctaatgc 1080

caagaaaaca gctgtcacta aattagctgc atgtgcgtta aatccaccaa cagacccagc 1140

cattgcagat ccaaccaaat tcttagcaat gttcaactca accaatgcgg aaacatcact 1200

ttttaacact tttctgacaa catcaccagg aatagtagct tctgcgacga cactcttacc 1260

acgaccttcg atccagttga tggcagctgg ttttttgtcg gtacagtagt taccagaaac 1320

ggagacaacc tccatatctt cccagccata ctcttctacc atttgcttta atgagtattc 1380

gacaccctta gaaatcatat tcatacccat tgcgtcacca gtagttgttc taaatctcat 1440

gaagagtaaa tctcctgcta gacaagtttg aatatgttgc agacgtgcaa atcttgatgt 1500

agagttaaaa gctttttaa ttgcgttttg tccctcttct gagtctaacc atatcttaca 1560

ggcaccagat cttttcaaag ttgggaaacg gactactggg cctcttgtca taccatcctt 1620

agttaaaaca gttgttgcac caccgccagc attgattgcc ttacagccac gcatggcaga 1680

agctaccaaa caaccctctg tagttgccat tggtatatga taagatgtac catcgataac 1740

caaggggcct ataacaccaa cgggcaaagg catgtaacct ataacatttt cacaacaagc 1800

gccaaatacg cggtcgtagt cataattttt atatggtaaa cgatcagatg ctaatacagg 1860

agcttctgcc aaaattgaaa gagccttcct acgtaccgca accgctctcg tagtatcacc 1920

taatttttc tccaaagcgt acaaaggtaa cttaccgtga ataaccaagg cagcgacctc 1980

tttgttcttc aattgttttg tatttccact acttaataat gcttctaatt cttctaaagg 2040

acgtattttc ttatccaagc tttcaatatc gcgggaatca tcttcctcac tagatgatga 2100

aggtcctgat gagctcgatt gcgcagatga taaacttttg actttcgatc cagaaatgac 2160

tgttttattg gttaaaactg gtgtagaagc cttttgtaca ggagcagtaa aagacttctt 2220

ggtgacttca gtcttcacca attggtctgc agccattata gtttttttctc cttgacgtta 2280

aagtatagag gtatattaac aatttttttgt tgatactttt atgacatttg aataagaagt 2340

aatacaaacc gaaaatgttg aaagtattag ttaaagtggt tatgcagctt ttgcatttat 2400

atatctgtta atagatcaaa aatcatcgct tcgctgatta attaccccag aaataaggct 2460

aaaaaactaa tcgcattatt atcctatggt tgttaatttg attcgttgat ttgaaggttt 2520

gtggggccag gttactgcca atttttcctc ttcataacca taaaagctag tattgtagaa 2580

tctttattgt tcggagcagt gcggcgcgag gcacatctgc gtttcaggaa cgcgaccggt 2640

gaagaccagg acgcacggag gagagtcttc cgtcggaggg ctgtcgcccg ctcggcggct 2700

tctaatccgt acttcaatat agcaatgagc agttaagcgt attactgaaa gttccaaaga 2760

gaaggttttt ttaggctaag ataatggggc tctttacatt tccacaacat ataagtaaga 2820

ttagatatgg atatgtatat ggtggtattg ccatgtaata tgattattaa acttctttgc 2880

gtccatccaa aaaaaaagta agaatttttg aaaattcaat ataaatgaaa ctctcaacta 2940

aactttgttg gtgtggtatt aaaggaagac ttaggccgca aaagcaacaa caattacaca 3000

atacaaactt gcaaatgact gaactaaaaa aacaaaagac cgctgaacaa aaaaccagac 3060

ctcaaaatgt cggtattaaa ggtatccaaa tttacatccc aactcaatgt gtcaaccaat 3120

ctgagctaga gaaatttgat ggcgtttctc aaggtaaata cacaattggt ctgggccaaa 3180

ccaacatgtc ttttgtcaat gacagagaag atatctactc gatgtcccta actgttttgt 3240

ctaagttgat caagagttac aacatcgaca ccaacaaaat tggtagatta gaagtcggta 3300

ctgaaactct gattgacaag tccaagtctg tcaagtctgt cttgatgcaa ttgtttggtg 3360

aaaacactga cgtcgaaggt attgacacgc ttaatgcctg ttacggtggt accaacgcgt 3420

tgttcaactc tttgaactgg attgaatcta acgcatggga tggtagagac gccattgtag 3480

tttgcggtga tattgccatc tacgataagg gtgccgcaag accaaccggt ggtgccggta 3540

ctgttgctat gtggatcggt cctgatgctc caattgtatt tgactctgta agagcttctt 3600

acatggaaca cgcctacgat ttttacaagc cagatttcac cagcgaatat ccttacgtcg 3660

atggtcattt ttcattaact tgttacgtca aggctcttga tcaagtttac aagagttatt 3720

ccaagaaggc tatttctaaa gggttggtta gcgatcccgc tggttcggat gctttgaacg 3780

ttttgaaata tttcgactac aacgttttcc atgttccaac ctgtaaattg gtcacaaaat 3840

catacggtag attactatat aacgatttca gagccaatcc tcaattgttc ccagaagttg 3900

acgccgaatt agctactcgc gattatgacg aatctttaac cgataagaac attgaaaaaa 3960

cttttgttaa tgttgctaag ccattccaca aagagagagt tgcccaatct ttgattgttc 4020

caacaaacac aggtaacatg tacaccgcat ctgtttatgc cgcctttgca tctctattaa 4080

actatgttgg atctgacgac ttacaaggca agcgtgttgg tttattttct tacggttccg 4140

gtttagctgc atctctatat tcttgcaaaa ttgttggtga cgtccaacat attatcaagg 4200

aattagatat tactaacaaa ttagccaaga gaatcaccga aactccaaag gattacgaag 4260

ctgccatcga attgagagaa aatgcccatt tgaagaagaa cttcaaacct caaggttcca 4320

ttgagcattt gcaaagtggt gtttactact tgaccaacat cgatgacaaa tttagaagat 4380

cttacgatgt taaaaaataa tcttccccca tcgattgcat cttgctgaac ccccttcata 4440

aatgctttat ttttttggca gcctgctttt tttagctctc atttaataga gtagtttttt 4500

aatctatata ctaggaaaac tctttattta ataacaatga tatatatata cccgggaagc 4560

ttttcaattc atctttttt tttttgttct tttttttgat tccggtttct ttgaaatttt 4620

tttgattcgg taatctccga gcagaaggaa gaacgaagga aggagcacag acttagattg 4680

gtatatatac gcatatgtgg tgttgaagaa acatgaaatt gcccagtatt cttaacccaa 4740

ctgcacagaa caaaaacctg caggaaacga agataaatca tgtcgaaagc tacatataag 4800

gaacgtgctg ctactcatcc tagtcctgtt gctgccaagc tatttaatat catgcacgaa 4860

aagcaaacaa acttgtgtgc ttcattggat gttcgtacca ccaaggaatt actggagtta 4920

gttgaagcat taggtcccaa aatttgttta ctaaaaacac atgtggatat cttgactgat 4980

ttttccatgg agggcacagt taagccgcta aaggcattat ccgccaagta caatttttta 5040

ctcttcgaag acagaaaatt tgctgacatt ggtaatacag tcaaattgca gtactctgcg 5100

ggtgtataca gaatagcaga atgggcagac attacgaatg cacacggtgt ggtgggccca 5160

ggtattgtta gcggtttgaa gcaggcggcg gaagaagtaa caaaggaacc tagaggcctt 5220

ttgatgttag cagaattgtc atgcaagggc tccctagcta ctggagaata tactaagggt 5280

actgttgaca ttgcgaagag cgacaaagat tttgttatcg gctttattgc tcaaagagac 5340

atgggtggaa gagatgaagg ttacgattgg ttgattatga cacccggtgt gggtttagat 5400

gacaagggag acgcattggg tcaacagtat agaaccgtgg atgatgtggt ctctacagga 5460

tctgacatta ttattgttgg gtttaaac 5488

<210> 14
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK005-G

<400> 14
gtttaaactt gctaaattcg agtgaaacac 30

<210> 15
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK006-G

<400> 15
aaagatgaat tgaaaagctt cccgggtatg gaccctgaaa ccacag 46

<210> 16
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK007-G

<400> 16

ctgtggtttc agggtccata cccgggaagc ttttcaattc atcttt 46

<210> 17
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK008-G

<400> 17
gtttaaaccc aacaataata atgtcagatc 30

<210> 18
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK032-G

<400> 18
tccccccggg tatatatata tcattgttat 30

<210> 19
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK054-G

<400> 19
aatttttgaa aattcaatat aaatgaaact ctcaactaaa ctttgtt 47

<210> 20
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK052-G

<400> 20
agttttcacc aattggtctg cagccattat agtttttct ccttgacgtt a 51

<210> 21
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK055-G

<400> 21
aacaaagttt agttgagagt ttcatttata ttgaattttc aaaaatt 47

<210> 22
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK031-G

<400> 22
tccccccggg agttatgaca attacaacaa cagaa 35

<210> 23
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK053-G

<400> 23
taacgtcaag gagaaaaaac tataatggct gcagaccaat tggtgaaaac t 51

<210> 24
<211> 4933
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, ADE1_PGAL10-IDI1_PGAL1-tHMGR_ADE1 insert of expression plasmid pAM493

<400> 24
gtttaaacta ctcagtatat taagtttcga attgaagggc gaactcttat tcgaagtcgg 60

agtcaccaca acacttccgc ccatactctc cgaatcctcg tttcctaaag taagtttact 120

tccacttgta ggcctattat taatgatatc tgaataatcc tctattaggg ttggatcatt 180

cagtagcgcg tgcgattgaa aggagtccat gcccgacgtc gacgtgatta gcgaaggcgc 240

gtaaccattg tcatgtctag cagctataga actaacctcc ttgacaccac ttgcggaagt 300

ctcatcaaca tgctcttcct tattactcat tctcttacca agcagagaat gttatctaaa 360

aactacgtgt atttcacctc tttctcgact tgaacacgtc caactcctta agtactacca 420

cagccaggaa agaatggatc cagttctaca cgatagcaaa gcagaaaaca caaccagcgt 480

acccctgtag aagcttcttt gtttacagca cttgatccat gtagccatac tcgaaatttc 540

aactcatctg aaacttttcc tgaaggttga aaaagaatgc cataagggtc acccgaagct 600

tattcacgcc cgggagttat gacaattaca acaacagaat tctttctata tatgcacgaa 660

cttgtaatat ggaagaaatt atgacgtaca aactataaag taaatatttt acgtaacaca 720

tggtgctgtt gtgcttcttt ttcaagagaa taccaatgac gtatgactaa gtttaggatt 780

taatgcaggt gacggaccca tctttcaaac gatttatatc agtggcgtcc aaattgttag 840

gttttgttgg ttcagcaggt ttcctgttgt gggtcatatg actttgaacc aaatggccgg 900

ctgctagggc agcacataag gataattcac ctgccaagac ggcacaggca actattcttg 960

ctaattgacg tgcgttggta ccaggagcgg tagcatgtgg gcctcttaca cctaataagt 1020

ccaacatggc accttgtggt tctagaacag taccaccacc gatggtacct acttcgatgg 1080

atggcatgga tacggaaatt ctcaaatcac cgtccacttc tttcatcaat gttatacagt 1140

tggaactttc gacattttgt gcaggatctt gtcctaatgc caagaaaaca gctgtcacta 1200

aattagctgc atgtgcgtta aatccaccaa cagacccagc cattgcagat ccaaccaaat 1260

tcttagcaat gttcaactca accaatgcgg aaacatcact ttttaacact tttctgacaa 1320

catcaccagg aatagtagct tctgcgacga cactcttacc acgaccttcg atccagttga 1380

tggcagctgg ttttttgtcg gtacagtagt taccagaaac ggagacaacc tccatatctt 1440

cccagccata ctcttctacc atttgcttta atgagtattc gacaccctta gaaatcatat 1500

tcatacccat tgcgtcacca gtagttgttc taaatctcat gaagagtaaa tctcctgcta 1560

gacaagtttg aatatgttgc agacgtgcaa atcttgatgt agagttaaaa gctttttaa 1620

ttgcgttttg tccctcttct gagtctaacc atatcttaca ggcaccagat cttttcaaag 1680

ttgggaaacg gactactggg cctcttgtca taccatcctt agttaaaaca gttgttgcac 1740

caccgccagc attgattgcc ttacagccac gcatggcaga agctaccaaa caaccctctg 1800

tagttgccat tggtatatga taagatgtac catcgataac caaggggcct ataacaccaa 1860

cgggcaaagg catgtaacct ataacatttt cacaacaagc gccaaatacg cggtcgtagt 1920

cataattttt atatggtaaa cgatcagatg ctaatacagg agcttctgcc aaaattgaaa 1980

gagccttcct acgtaccgca accgctctcg tagtatcacc taatttttc tccaaagcgt 2040

acaaaggtaa cttaccgtga ataaccaagg cagcgacctc tttgttcttc aattgttttg 2100

tatttccact acttaataat gcttctaatt cttctaaagg acgtattttc ttatccaagc 2160

tttcaatatc gcgggaatca tcttcctcac tagatgatga aggtcctgat gagctcgatt 2220

gcgcagatga taaacttttg actttcgatc cagaaatgac tgttttattg gttaaaactg 2280

gtgtagaagc cttttgtaca ggagcagtaa aagacttctt ggtgacttca gttttcacca 2340

attggtctgc agccattata gtttttttctc cttgacgtta aagtatagag gtatattaac 2400

aatttttttgt tgatactttt atgacatttg aataagaagt aatacaaacc gaaaatgttg 2460

aaagtattag ttaaagtggt tatgcagctt ttgcatttat atatctgtta atagatcaaa 2520

aatcatcgct tcgctgatta attaccccag aaataaggct aaaaaactaa tcgcattatt 2580

atcctatggt tgttaatttg attcgttgat ttgaaggttt gtggggccag gttactgcca 2640

atttttcctc ttcataacca taaaagctag tattgtagaa tctttattgt tcggagcagt 2700

gcggcgcgag gcacatctgc gtttcaggaa cgcgaccggt gaagaccagg acgcacggag 2760

gagagtcttc cgtcggaggg ctgtcgcccg ctcggcggct tctaatccgt acttcaatat 2820

agcaatgagc agttaagcgt attactgaaa gttccaaaga gaaggttttt ttaggctaag 2880

ataatggggc tctttacatt tccacaacat ataagtaaga ttagatatgg atatgtatat 2940

ggtggtattg ccatgtaata tgattattaa acttctttgc gtccatccaa aaaaaaagta 3000

agaatttttg aaaattcaat ataaatgact gccgacaaca atagtatgcc ccatggtgca 3060

gtatctagtt acgccaaatt agtgcaaaac caaacacctg aagacatttt ggaagagttt 3120

cctgaaatta ttccattaca acaaagacct aatacccgat ctagtgagac gtcaaatgac 3180

gaaagcggag aaacatgttt ttctggtcat gatgaggagc aaattaagtt aatgaatgaa 3240

aattgtattg ttttggattg ggacgataat gctattggtg ccggtaccaa gaaagtttgt 3300

catttaatgg aaaatattga aaagggttta ctacatcgtg cattctccgt ctttattttc 3360

aatgaacaag gtgaattact tttacaacaa agagccactg aaaaaataac tttccctgat 3420

ctttggacta acacatgctg ctctcatcca ctatgtattg atgacgaatt aggtttgaag 3480

ggtaagctag acgataagat taagggcgct attactgcgg cggtgagaaa actagatcat 3540

gaattaggta ttccagaaga tgaaactaag acaaggggta agtttcactt tttaaacaga 3600

atccattaca tggcaccaag caatgaacca tggggtgaac atgaaattga ttacatccta 3660

ttttataaga tcaacgctaa agaaaacttg actgtcaacc caaacgtcaa tgaagttaga 3720

gacttcaaat gggtttcacc aaatgatttg aaaactatgt ttgctgaccc aagttacaag 3780

tttacgcctt ggtttaagat tatttgcgag aattacttat tcaactggtg ggagcaatta 3840

gatgaccttt ctgaagtgga aaatgacagg caaattcata gaatgctata acaacgcgtc 3900

aataatatag gctacataaa aatcataata actttgttat catagcaaaa tgtgatataa 3960

aacgtttcat ttcacctgaa aaatagtaaa aataggcgac aaaaatcctt agtaatatgt 4020

aaactttatt ttctttattt acccgggagt cagtctgact cttgcgagag atgaggatgt 4080

aataatacta atctcgaaga tgccatctaa tacatataga catacatata tatatatata 4140

cattctatat attcttaccc agattctttg aggtaagacg gttgggtttt atcttttgca 4200

gttggtacta ttaagaacaa tcgaatcata agcattgctt acaaagaata cacatacgaa 4260

atattaacga taatgtcaat tacgaagact gaactggacg gtatattgcc attggtggcc 4320

agaggtaaag ttagagacat atatgaggta gacgctggta cgttgctgtt tgttgctacg 4380

gatcgtatct ctgcatatga cgttattatg gaaaacagca ttcctgaaaa ggggatccta 4440

ttgaccaaac tgtcagagtt ctggttcaag ttcctgtcca acgatgttcg taatcatttg 4500

gtcgacatcg ccccaggtaa gactattttc gattatctac ctgcaaaatt gagcgaacca 4560

aagtacaaaa cgcaactaga agaccgctct ctattggttc acaaacataa actaattcca 4620

ttggaagtaa ttgtcagagg ctacatcacc ggatctgctt ggaaagagta cgtaaaaaca 4680

ggtactgtgc atggtttgaa acaacctcaa ggacttaaag aatctcaaga gttcccagaa 4740

ccaatcttca ccccatcgac caaggctgaa caaggtgaac atgacgaaaa catctctcct 4800

gcccaggccg ctgagctggt gggtgaagat ttgtcacgta gagtggcaga actggctgta 4860

aaactgtact ccaagtgcaa agattatgct aaggagaagg gcatcatcat cgcagacact 4920

aaattgttta aac 4933

<210> 25
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK009-G

<400> 25
gtttaaacta ctcagtatat taagtttcga 30

<210> 26
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK010-G

<400> 26
atctctcgca agagtcagac tgactcccgg gcgtgaataa gcttcgggtg acccttatgg 60

cattcttttt 70

<210> 27
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK011-G

<400> 27
aaaaagaatg ccataagggt cacccgaagc ttattcacgc ccgggagtca gtctgactct 60

tgcgagagat 70

<210> 28
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK012-G

<400> 28
gtttaaacaa tttagtgtct gcgatgatga 30

<210> 29
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK047-G

<400> 29
tccccccggg taaataaaga aaataaagtt 30

<210> 30
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK064-G

<400> 30
aatttttgaa aattcaatat aaatgactgc cgacaacaat agtatgc 47

<210> 31
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK052-G

<400> 31
agttttcacc aattggtctg cagccattat agtttttct ccttgacgtt a 51

<210> 32
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK065-G

<400> 32
gcatactatt gttgtcggca gtcatttata ttgaattttc aaaaatt 47

<210> 33
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK053-G

<400> 33
taacgtcaag gagaaaaaac tataatggct gcagaccaat tggtgaaaac t 51

<210> 34
<211> 6408
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, HIS3_PGAL10-ERG10_PGAL1-ERG12_HIS3 insert of expression plasmid pAM495

<400> 34
gtttaaacta ttgtgagggt cagttatttc atccagatat aacccgagag gaaacttctt 60

agcgtctgtt ttcgtaccat aaggcagttc atgaggtata ttttcgttat tgaagcccag 120

ctcgtgaatg cttaatgctg ctgaactggt gtccatgtcg cctaggtacg caatctccac 180

aggctgcaaa ggttttgtct caagagcaat gttattgtgc accccgtaat tggtcaacaa 240

gtttaatctg tgcttgtcca ccagctctgt cgtaaccttc agttcatcga ctatctgaag 300

aaatttacta ggaatagtgc catggtacag caaccgagaa tggcaatttc tactcgggtt 360

cagcaacgct gcataaacgc tgttggtgcc gtagacatat tcgaagatag gattatcatt 420

cataagtttc agagcaatgt ccttattctg gaacttggat ttatggctct tttggtttaa 480

tttcgcctga ttcttgatct cctttagctt ctcgacgtgg gccttttttct tgccatatgg 540

atccgctgca cggtcctgtt ccctagcatg tacgtgagcg tatttccttt taaaccacga 600

cgctttgtct tcattcaacg tttcccattg ttttttttcta ctattgcttt gctgtgggaa 660

aaacttatcg aaagatgacg acttttttctt aattctcgtt ttaagagctt ggtgagcgct 720

aggagtcact gccaggtatc gtttgaacac ggcattagtc agggaagtca taacacagtc 780

ctttcccgca attttctttt tctattactc ttggcctcct ctagtacact ctatattttt 840

ttatgcctcg gtaatgattt tcatttttttt tttttccacc tagcggatga ctctttttttt 900

ttcttagcga ttggcattat cacataatga attatacatt atataaagta atgtgatttc 960

ttcgaagaat atactaaagt ttagcttgcc tcgtccccgc cgggtcaccc ggccagcgac 1020

atggaggccc agaataccct ccttgacagt cttgacgtgc gcagctcagg ggcatgatgt 1080

gactgtcgcc cgtacattta gcccatacat ccccatgtat aatcatttgc atccatacat 1140

tttgatggcc gcacggcgcg aagcaaaaat tacggctcct cgctgcagac ctgcgagcag 1200

ggaaacgctc ccctcacaga cgcgttgaat tgtccccacg ccgcgcccct gtagagaaat 1260

ataaaaggtt aggatttgcc actgaggttc ttctttcata tacttccttt taaaatcttg 1320

ctaggataca gttctcacat cacatccgaa cataaacaac catggcagaa ccagcccaaa 1380

aaaagcaaaa acaaactgtt caggagcgca aggcgtttat ctcccgtatc actaatgaaa 1440

ctaaaattca aatcgctatt tcgctgaatg gtggttatat tcaaataaaa gattcgattc 1500

ttcctgcaaa gaaggatgac gatgtagctt cccaagctac tcagtcacag gtcatcgata 1560

ttcacacagg tgttggcttt ttggatcata tgatccatgc gttggcaaaa cactctggtt 1620

ggtctcttat tgttgaatgt attggtgacc tgcacattga cgatcaccat actaccgaag 1680

attgcggtat cgcattaggg caagcgttca aagaagcaat gggtgctgtc cgtggtgtaa 1740

aaagattcgg tactgggttc gcaccattgg atgaggcgct atcacgtgcc gtagtcgatt 1800

tatctagtag accatttgct gtaatcgacc ttggattgaa gagagagatg attggtgatt 1860

tatccactga aatgattcca cacttttgg aaagtttcgc ggaggcggcc agaattactt 1920

tgcatgttga ttgtctgaga ggtttcaacg atcaccacag aagtgagagt gcgttcaagg 1980

ctttggctgt tgccataaga gaagctattt ctagcaatgg caccaatgac gttccctcaa 2040

ccaaaggtgt tttgatgtga agtactgaca ataaaaagat tcttgttttc aagaacttgt 2100

catttgtata gtttttttat attgtagttg ttctatttta atcaaatgtt agcgtgattt 2160

atatttttttt tcgcctcgac atcatctgcc cagatgcgaa gttaagtgcg cagaaagtaa 2220

tatcatgcgt caatcgtatg tgaatgctgg tcgctatact gctgtcgatt cgatactaac 2280

gccgccatcc acccgggatg gtctgcttaa atttcattct gtcttcgaaa gctgaattga 2340

tactacgaaa aatttttttt tgtttctctt tctatcttta ttacataaaa cttcatacac 2400

agttaagatt aaaaacaact aataaataat gcctatcgca aattagctta tgaagtccat 2460

ggtaaattcg tgtttcctgg caataataga tcgtcaattt gttgctttgt ggtagtttta 2520

ttttcaaata attggaatac tagggatttg attttaagat ctttattcaa atttttttgcg 2580

cttaacaaac agcagccagt cccacccaag tctgtttcaa atgtctcgta actaaaatca 2640

tcttgcaatt tctttttgaa actgtcaatt tgctcttgag taatgtctct tcgtaacaaa 2700

gtcaaagagc aaccgccgcc accagcaccg gtaagttttg tggagccaat tctcaaatca 2760

tcgctcagat ttttaataag ttctaatcca ggatgagaaa caccgattga gacaagcagt 2820

ccatgattta ttcttatcaa ttccaatagt tgttcataca gttcattatt agtttctaca 2880

gcctcgtcat cggtgccttt acatttactt aacttagtca tgatctctaa gccttgtagg 2940

gcacattcac ccatggcatc tagaattggc ttcataactt caggaaattt ctcggtgacc 3000

aacacacgaa cgcgagcaac aagatctttt gtagaccttg gaattctagt ataggttagg 3060

atcattggaa tggctgggaa atcatctaag aacttaaaat tgtttgtgtt tattgttcca 3120

ttatgtgagt ctttttcaaa tagcagggca ttaccataag tggccacagc gttatctatt 3180

cctgaagggg taccgtgaat acacttttca cctatgaagg cccattgatt cactatatgc 3240

ttatcgtttt ctgacagctt ttccaagtca ttagatccta ttaacccccc caagtaggcc 3300

atagctaagg ccagtgatac agaaatagag gcgcttgagc ccaacccagc accgatgggt 3360

aaagtagact ttaaagaaaa cttaatattc ttggcatggg ggcataggca aacaaacata 3420

tacaggaaac aaaacgctgc atggtagtgg aaggattcgg atagttgagc taacaacgga 3480

tccaaaagac taacgagttc ctgagacaag ccatcggtgg cttgttgagc cttggccaat 3540

ttttgggagt ttacttgatc ctcggtgatg gcattgaaat cattgatgga ccacttatga 3600

ttaaagctaa tgtccgggaa gtccaattca atagtatctg gtgcagatga ctcgcttatt 3660

agcaggtagg ttctcaacgc agacacacta gcagcgacgg caggcttgtt gtacacagca 3720

gagtgttcac caaaaataat aacctttccc ggtgcagaag ttaagaacgg taatgacatt 3780

atagtttttt ctccttgacg ttaaagtata gaggtatatt aacaattttt tgttgatact 3840

tttatgacat ttgaataaga agtaatacaa accgaaaatg ttgaaagtat tagttaaagt 3900

ggttatgcag cttttgcatt tatatatctg ttaatagatc aaaaatcatc gcttcgctga 3960

ttaattaccc cagaaataag gctaaaaaac taatcgcatt attatcctat ggttgttaat 4020

ttgattcgtt gatttgaagg tttgtggggc caggttactg ccaatttttc ctcttcataa 4080

ccataaaagc tagtattgta gaatctttat tgttcggagc agtgcggcgc gaggcacatc 4140

tgcgtttcag gaacgcgacc ggtgaagacc aggacgcacg gaggagagtc ttccgtcgga 4200

gggctgtcgc ccgctcggcg gcttctaatc cgtacttcaa tatagcaatg agcagttaag 4260

cgtattactg aaagttccaa agagaaggtt tttttaggct aagataatgg ggctctttac 4320

atttccacaa catataagta agattagata tggatatgta tatggtggta ttgccatgta 4380

atatgattat taaacttctt tgcgtccatc caaaaaaaaa gtaagaattt ttgaaaattc 4440

aatataaatg tctcagaacg tttacattgt atcgactgcc agaaccccaa ttggttcatt 4500

ccagggttct ctatcctcca agacagcagt ggaattgggt gctgttgctt taaaaggcgc 4560

cttggctaag gttccagaat tggatgcatc caaggatttt gacgaaatta tttttggtaa 4620

cgttctttct gccaatttgg gccaagctcc ggccagacaa gttgctttgg ctgccggttt 4680

gagtaatcat atcgttgcaa gcacagttaa caaggtctgt gcatccgcta tgaaggcaat 4740

cattttgggt gctcaatcca tcaaatgtgg taatgctgat gttgtcgtag ctggtggttg 4800

tgaatctatg actaacgcac catactacat gccagcagcc cgtgcgggtg ccaaatttgg 4860

ccaaactgtt cttgttgatg gtgtcgaaag agatgggttg aacgatgcgt acgatggtct 4920

agccatgggt gtacacgcag aaaagtgtgc ccgtgattgg gatattacta gagaacaaca 4980

agacaatttt gccatcgaat cctaccaaaa atctcaaaaa tctcaaaagg aaggtaaatt 5040

cgacaatgaa attgtacctg ttaccattaa gggatttaga ggtaagcctg atactcaagt 5100

cacgaaggac gaggaacctg ctagattaca cgttgaaaaa ttgagatctg caaggactgt 5160

tttccaaaaa gaaaacggta ctgttactgc cgctaacgct tctccaatca acgatggtgc 5220

tgcagccgtc atcttggttt ccgaaaaagt tttgaaggaa aagaatttga agcctttggc 5280

tattatcaaa ggttggggtg aggccgctca tcaaccagct gattttacat gggctccatc 5340

tcttgcagtt ccaaaggctt tgaaacatgc tggcatcgaa gacatcaatt ctgttgatta 5400

ctttgaattc aatgaagcct tttcggttgt cggtttggtg aacactaaga ttttgaagct 5460

agacccatct aaggttaatg tatatggtgg tgctgttgct ctaggtcacc cattgggttg 5520

ttctggtgct agagtggttg ttacactgct atccatctta cagcaagaag gaggtaagat 5580

cggtgttgcc gccatttgta atggtggtgg tggtgcttcc tctattgtca ttgaaaagat 5640

atgattacgt tctgcgattt tctcatgatc tttttcataa aatacataaa tatataaatg 5700

gctttatgta taacaggcat aatttaaagt tttatttgcg attcatcgtt tttcaggtac 5760

tcaaacgctg aggtgtgcct tttgacttac ttttcccggg agaggctagc agaattaccc 5820

tccacgttga ttgtctgcga ggcaagaatg atcatcaccg tagtgagagt gcgttcaagg 5880

ctcttgcggt tgccataaga gaagccacct cgcccaatgg taccaacgat gttccctcca 5940

ccaaaggtgt tcttatgtag tgacaccgat tatttaaagc tgcagcatac gatatatata 6000

catgtgtata tatgtatacc tatgaatgtc agtaagtatg tatacgaaca gtatgatact 6060

gaagatgaca aggtaatgca tcattctata cgtgtcattc tgaacgaggc gcgctttcct 6120

tttttctttt tgctttttct tttttttct cttgaactcg agaaaaaaaa tataaaagag 6180

atggaggaac gggaaaaagt tagttgtggt gataggtggc aagtggtatt ccgtaagaac 6240

aacaagaaaa gcatttcata ttatggctga actgagcgaa caagtgcaaa atttaagcat 6300

caacgacaac aacgagaatg gttatgttcc tcctcactta agaggaaaac caagaagtgc 6360

cagaaataac agtagcaact acaataacaa caacggcggc gtttaaac 6408

<210> 35
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK013-G

<400> 35
gtttaaacta ttgtgagggt cagttatttc 30

<210> 36
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK014alt-G

<400> 36
gcggggacga ggcaagctaa actttagtat attcttcgaa gaaa 44

<210> 37
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK017-G

<400> 37
cgatactaac gccgccatcc acccgggaga ggctagcaga ttaccctcc acgttgattg 60

<210> 38
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK018-G

<400> 38
gtttaaacgc cgccgttgtt gttattgtag 30

<210> 39
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK035-G

<400> 39
tccccccggg aaaagtaagt caaaaggcac 30

<210> 40
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK056-G

<400> 40
aatttttgaa aattcaatat aaatgtctca gaacgtttac attgtat 47

<210> 41
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK057-G

<400> 41
atacaatgta aacgttctga gacatttata ttgaattttc aaaaatt 47

<210> 42
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK058-G

<400> 42
tgcagaagtt aagaacggta atgacattat agtttttct ccttgacgtt a 51

<210> 43
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK040-G

<400> 43
tccccccggg atggtctgct taaatttcat 30

<210> 44
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK059-G

<400> 44
taacgtcaag gagaaaaaac tataatgtca ttaccgttct taacttctgc a 51

<210> 45
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK015alt-G

<400> 45
tttcttcgaa gaatatacta aagtttagct tgcctcgtcc ccgc 44

<210> 46
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK016-G

<400> 46
caatcaacgt ggagggtaat tctgctagcc tctcccgggt ggatggcggc gttagtatcg 60

<210> 47
<211> 6087
<212> DNA

<213> Artificial Sequence

<220>
<223> Synthetic, LEU2_PGAL10-ERG8_PGAL1-ERG19_LEU2 insert of expression plasmid pAM497

<400> 47
gtttaaactt ttccaatagg tggttagcaa tcgtcttact ttctaacttt tcttaccttt 60

tacatttcag caatatatat atatatattt caaggatata ccattctaat gtctgcccct 120

aagaagatcg tcgttttgcc aggtgaccac gttggtcaag aaatcacagc cgaagccatt 180

aaggttctta aagctatttc tgatgttcgt tccaatgtca agttcgattt cgaaaatcat 240

ttaattggtg gtgctgctat cgatgctaca ggtgttccac ttccagatga ggcgctggaa 300

gcctccaaga aggctgatgc cgttttgtta ggtgctgtgg gtggtcctaa atggggtacc 360

ggtagtgtta gacctgaaca aggtttacta aaaatccgta aagaacttca attgtacgcc 420

aacttaagac catgtaactt tgcatccgac tctcttttag acttatctcc aatcaagcca 480

caatttgcta aaggtactga cttcgttgtt gtcagagaat tagtgggagg tatttacttt 540

ggtaagagaa aggaagacgt ttagcttgcc tcgtccccgc cgggtcaccc ggccagcgac 600

atggaggccc agaataccct ccttgacagt cttgacgtgc gcagctcagg ggcatgatgt 660

gactgtcgcc cgtacattta gcccatacat ccccatgtat aatcatttgc atccatacat 720

tttgatggcc gcacggcgcg aagcaaaaat tacggctcct cgctgcagac ctgcgagcag 780

ggaaacgctc ccctcacaga cgcgttgaat tgtccccacg ccgcgcccct gtagagaaat 840

ataaaaggtt aggatttgcc actgaggttc ttctttcata tacttccttt taaaatcttg 900

ctaggataca gttctcacat cacatccgaa cataaacaac catggcagaa ccagcccaaa 960

aaaagcaaaa acaaactgtt caggagcgca aggcgtttat ctcccgtatc actaatgaaa 1020

ctaaaattca aatcgctatt tcgctgaatg gtggttatat tcaaataaaa gattcgattc 1080

ttcctgcaaa gaaggatgac gatgtagctt cccaagctac tcagtcacag gtcatcgata 1140

ttcacacagg tgttggcttt ttggatcata tgatccatgc gttggcaaaa cactctggtt 1200

ggtctcttat tgttgaatgt attggtgacc tgcacattga cgatcaccat actaccgaag 1260

attgcggtat cgcattaggg caagcgttca aagaagcaat gggtgctgtc cgtggtgtaa 1320

aaagattcgg tactgggttc gcaccattgg atgaggcgct atcacgtgcc gtagtcgatt 1380

tatctagtag accatttgct gtaatcgacc ttggattgaa gagagagatg attggtgatt 1440

tatccactga aatgattcca cacttttgg aaagtttcgc ggaggcggcc agaattactt 1500

tgcatgttga ttgtctgaga ggtttcaacg atcaccacag aagtgagagt gcgttcaagg 1560

ctttggctgt tgccataaga gaagctattt ctagcaatgg caccaatgac gttccctcaa 1620

ccaaaggtgt tttgatgtga agtactgaca ataaaaagat tcttgttttc aagaacttgt 1680

catttgtata gtttttttat attgtagttg ttctatttta atcaaatgtt agcgtgattt 1740

atatttttt tcgcctcgac atcatctgcc cagatgcgaa gttaagtgcg cagaaagtaa 1800

tatcatgcgt caatcgtatg tgaatgctgg tcgctatact gctgtcgatt cgatactaac 1860

gccgccatcc acccgggttt ctcattcaag tggtaactgc tgttaaaatt aagatattta 1920

taaattgaag cttggtcgtt ccgaccaata ccgtagggaa acgtaaatta gctattgtaa 1980

aaaaaggaaa agaaaagaaa agaaaaatgt tacatatcga attgatctta ttcctttggt 2040

agaccagtct ttgcgtcaat caaagattcg tttgtttctt gtgggcctga accgacttga 2100

gttaaaatca ctctggcaac atccttttgc aactcaagat ccaattcacg tgcagtaaag 2160

ttagatgatt caaattgatg gttgaaagcc tcaagctgct cagtagtaaa tttcttgtcc 2220

catccaggaa cagagccaaa caatttatag ataaatgcaa agagtttcga ctcattttca 2280

gctaagtagt acaacacagc atttggacct gcatcaaacg tgtatgcaac gattgtttct 2340

ccgtaaaact gattaatggt gtggcaccaa ctgatgatac gcttggaagt gtcattcatg 2400

tagaatattg gagggaaaga gtccaaacat gtggcatgga aagagttgga atccatcatt 2460

gtttcctttg caaaggtggc gaaatctttt tcaacaatgg ctttacgcat gacttcaaat 2520

ctctttggta cgacatgttc aattctttct ttaaatagtt cggaggttgc cacggtcaat 2580

tgcataccct gagtggaact cacatccttt ttaatatcgc tgacaactag gacacaagct 2640

ttcatctgag gccagtcaga gctgtctgcg atttgtactg ccatggaatc atgaccatct 2700

tcagcttttc ccatttccca ggccacgtat ccgccaaaca acgatctaca agctgaacca 2760

gacccctttc ttgctattct agatatttct gaagttgact gtggtaattg gtataactta 2820

gcaattgcag agaccaatgc agcaaagcca gcagcggagg aagctaaacc agctgctgta 2880

ggaaagttat tttcggagac aatgtggagt ttccattgag ataatgtggg caatgaggcg 2940

tccttcgatt ccatttcctt tcttaattgg cgtaggtcgc gcagacaatt ttgagttctt 3000

tcattgtcga tgctgtgtgg ttctccattt aaccacaaag tgtcgcgttc aaactcaggt 3060

gcagtagccg cagaggtcaa cgttctgagg tcatcttgcg ataaagtcac tgatatggac 3120

gaattggtgg gcagattcaa cttcgtgtcc cttttccccc aatacttaag ggttgcgatg 3180

ttgacgggtg cggtaacgga tgctgtgtaa acggtcatta tagtttttc tccttgacgt 3240

taaagtatag aggtatatta acaatttttt gttgatactt ttatgacatt tgaataagaa 3300

gtaatacaaa ccgaaaatgt tgaaagtatt agttaaagtg gttatgcagc ttttgcattt 3360

atatatctgt taatagatca aaaatcatcg cttcgctgat taattacccc agaaataagg 3420

ctaaaaaact aatcgcatta ttatcctatg gttgttaatt tgattcgttg atttgaaggt 3480

ttgtggggcc aggttactgc caatttttcc tcttcataac cataaaagct agtattgtag 3540

aatctttatt gttcggagca gtgcggcgcg aggcacatct gcgtttcagg aacgcgaccg 3600

gtgaagacca ggacgcacgg aggagagtct tccgtcggag ggctgtcgcc cgctcggcgg 3660

cttctaatcc gtacttcaat atagcaatga gcagttaagc gtattactga aagttccaaa 3720

gagaaggttt ttttaggcta agataatggg gctctttaca tttccacaac atataagtaa 3780

gattagatat ggatatgtat atggtggtat tgccatgtaa tatgattatt aaacttcttt 3840

gcgtccatcc aaaaaaaaag taagaatttt tgaaaattca atataaatgt cagagttgag 3900

agccttcagt gccccaggga aagcgttact agctggtgga tatttagttt tagatccgaa 3960
atatgaagca tttgtagtcg gattatcggc aagaatgcat gctgtagccc atccttacgg 4020
ttcattgcaa gagtctgata agtttgaagt gcgtgtgaaa agtaaacaat ttaaagatgg 4080
ggagtggctg taccatataa gtcctaaaac tggcttcatt cctgtttcga taggcggatc 4140
taagaaccct ttcattgaaa aagttatcgc taacgtattt agctacttta agcctaacat 4200
ggacgactac tgcaatagaa acttgttcgt tattgatatt ttctctgatg atgcctacca 4260
ttctcaggag gacagcgtta ccgaacatcg tggcaacaga agattgagtt ttcattcgca 4320
cagaattgaa gaagttccca aaacagggct gggctcctcg gcaggtttag tcacagtttt 4380
aactacagct ttggcctcct tttttgtatc ggacctggaa aataatgtag acaaatatag 4440
agaagttatt cataatttat cacaagttgc tcattgtcaa gctcagggta aaattggaag 4500
cgggtttgat gtagcggcgg cagcatatgg atctatcaga tatagaagat tcccacccgc 4560
attaatctct aatttgccag atattggaag tgctacttac ggcagtaaac tggcgcattt 4620
ggttaatgaa gaagactgga atataacgat taaaagtaac catttacctt cgggattaac 4680
tttatggatg ggcgatatta agaatggttc agaaacagta aaactggtcc agaaggtaaa 4740
aaattggtat gattcgcata tgccggaaag cttgaaaata tatacagaac tcgatcatgc 4800
aaattctaga tttatggatg gactatctaa actagatcgc ttacacgaga ctcatgacga 4860
ttacagcgat cagatatttg agtctcttga gaggaatgac tgtacctgtc aaaagtatcc 4920
tgagatcaca gaagttagag atgcagttgc cacaattaga cgttccttta gaaaaataac 4980
taaagaatct ggtgccgata tcgaacctcc cgtacaaact agcttattgg atgattgcca 5040
gaccttaaaa ggagttctta cttgcttaat acctggtgct ggtggttatg acgccattgc 5100
agtgattgct aagcaagatg ttgatcttag ggctcaaacc gctgatgaca aaagattttc 5160
taaggttcaa tggctggatg taactcaggc tgactggggt gttaggaaag aaaaagatcc 5220
ggaaacttat cttgataaat aacttaaggt agataatagt ggtccatgtg acatctttat 5280
aaatgtgaag tttgaagtga ccgcgcttaa catctaacca ttcatcttcc gatagtactt 5340
gaaattgttc ctttcggcgg catgataaaa ttcttttaat gggtacaagc tacccgggcc 5400
cgggaaagat tctctttttt tatgatattt gtacataaac tttataaatg aaattcataa 5460
tagaaacgac acgaaattac aaaatggaat atgttcatag ggtagacgaa actatatacg 5520
caatctacat acatttatca agaaggagaa aaaggaggat gtaaaggaat acaggtaagc 5580
aaattgatac taatggctca acgtgataag gaaaaagaat tgcactttaa cattaatatt 5640
gacaaggagg agggcaccac acaaaaagtt aggtgtaaca gaaaatcatg aaactatgat 5700
tcctaattta tatattggag gattttctct aaaaaaaaaa aaatacaaca aataaaaaac 5760
actcaatgac ctgaccattt gatggagttt aagtcaatac cttcttgaac catttcccat 5820
aatggtgaaa gttccctcaa gaattttact ctgtcagaaa cggccttaac gacgtagtcg 5880
acctcctctt cagtactaaa tctaccaata ccaaatctga tggaagaatg ggctaatgca 5940

tcatccttac ccagcgcatg taaaacataa gaaggttcta gggaagcaga tgtacaggct 6000

gaacccgagg ataatgcgat atcccttagt gccatcaata aagattctcc ttccacgtag 6060

gcgaaagaaa cgttaacacg tttaaac 6087

<210> 48
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK019-G

<400> 48
gtttaaactt ttccaatagg tggttagcaa 30

<210> 49
<211> 55
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK020-G

<400> 49
gggtgacccg gcggggacga ggcaagctaa acgtcttcct ttctcttacc aaagt 55

<210> 50
<211> 62
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK023-G

<400> 50
gctgtcgatt cgatactaac gccgccatcc acccgggaaa gattctcttt ttttatgata 60

tt 62

<210> 51
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK024-G

<400> 51
gtttaaacgt gttaacgttt ctttcgccta cgtggaagga gaatc 45

<210> 52
<211> 55
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK021-G

<400> 52
actttggtaa gagaaaggaa gacgtttagc ttgcctcgtc cccgccgggt caccc 55

<210> 53
<211> 62
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK022-G

<400> 53
aatatcataa aaaaagagaa tctttcccgg gtggatggcg gcgttagtat cgaatcgaca 60

gc 62

<210> 54
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK041-G

<400> 54
tccccccggg tagcttgtac ccattaaaag aattttatca tgccg 45

<210> 55
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK060-G

<400> 55
aatttttgaa aattcaatat aaatgtcaga gttgagagcc ttcagtg 47

<210> 56
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK061-G

<400> 56
cactgaaggc tctcaactct gacatttata ttgaattttc aaaaatt 47

<210> 57
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK062-G

<400> 57
ggtaacggat gctgtgtaaa cggtcattat agtttttct ccttgacgtt a 51

<210> 58
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK046-G

<400> 58
tccccccggg tttctcattc aagtggtaac 30

<210> 59
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK063-G

<400> 59
taacgtcaag gagaaaaaac tataatgacc gtttacacag catccgttac c 51

<210> 60
<211> 4178
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Expression plasmid pAM1419

<400> 60
gtttgacagc ttatcatcga ctgcacggtg caccaatgct tctggcgtca ggcagccatc 60

ggaagctgtg gtatggctgt gcaggtcgta aatcactgca taattcgtgt cgctcaaggc 120

gcactcccgt tctggataat gtttttgcg ccgacatcat aacggttctg gcaaatattc 180

tgaaatgagc tgttgacaat taatcatccg gctcgtataa tgtgtggaat tgtgagcgga 240

taacaatttc acacaggaaa cagacatatg ggaattcgag ctcggtaccc ggggatcctc 300

tagagtcgac ctgcaggcat gcaagcttgg ctgttttggc ggatgagaga agattttcag 360

cctgatacag attaaatcag aacgcagaag cggtctgata aaacagaatt tgcctggcgg 420

cagtagcgcg gtggtcccac ctgaccccat gccgaactca gaagtgaaac gccgtagcgc 480

cgatggtagt gtggggtctc cccatgcgag agtagggaac tgccaggcat caaataaaac 540

gaaaggctca gtcgaaagac tgggcctttc gttttatctg ttgtttgtcg gtgaacgctc 600

tcctgagtag gacaaatccg ccgggagcgg atttgaacgt tgcgaagcaa cggcccggag 660

ggtggcgggc aggacgcccg ccataaactg ccaggcatca aattaagcag aaggccatcc 720

tgacggatgg cctttttgcg tttctacaaa ctcttttgt ttatttttct aaatacattc 780

aaatatgtat ccgctcatga gacaataacc ctgataaatg cttcaataat attgaaaaag 840

gaagagtatg agtattcaac atttccgtgt cgcccttatt ccctttttg cggcattttg 900

ccttcctgtt tttgctcacc cagaaacgct ggtgaaagta aaagatgctg aagatcagtt 960

gggtgcacga gtgggttaca tcgaactgga tctcaacagc ggtaagatcc ttgagagttt 1020

tcgccccgaa gaacgttttc caatgatgag cacttttaaa gttctgctat gtggcgcggt 1080

attatcccgt gttgacgccg ggcaagagca actcggtcgc cgcatacact attctcagaa 1140

tgacttggtt gagtactcac cagtcacaga aaagcatctt acggatggca tgacagtaag 1200

agaattatgc agtgctgcca taaccatgag tgataacact gcggccaact tacttctgac 1260

aacgatcgga ggaccgaagg agctaaccgc ttttttgcac aacatggggg atcatgtaac 1320

tcgccttgat cgttgggaac cggagctgaa tgaagccata ccaaacgacg agcgtgacac 1380

cacgatgcct acagcaatgg caacaacgtt gcgcaaacta ttaactggcg aactacttac 1440

tctagcttcc cggcaacaat taatagactg gatggaggcg gataaagttg caggaccact 1500

tctgcgctcg gcccttccgg ctggctggtt tattgctgat aaatctggag ccggtgagcg 1560

tgggtctcgc ggtatcattg cagcactggg gccagatggt aagccctccc gtatcgtagt 1620

tatctacacg acggggagtc aggcaactat ggatgaacga aatagacaga tcgctgagat 1680

aggtgcctca ctgattaagc attggtaact gtcagaccaa gtttactcat atatacttta 1740

gattgattta aaacttcatt tttaatttaa aaggatctag gtgaagatcc tttttgataa 1800

tctcatgacc aaaatccctt aacgtgagtt ttcgttccac tgagcgtcag accccgtaga 1860

aaagatcaaa ggatcttctt gagatccttt ttttctgcgc gtaatctgct gcttgcaaac 1920

aaaaaaacca ccgctaccag cggtggtttg tttgccggat caagagctac caactctttt 1980

tccgaaggta actggcttca gcagagcgca gataccaaat actgtccttc tagtgtagcc 2040

gtagttaggc caccacttca agaactctgt agcaccgcct acatacctcg ctctgctaat 2100

cctgttacca gtggctgctg ccagtggcga taagtcgtgt cttaccgggt tggactcaag 2160

acgatagtta ccggataagg cgcagcggtc gggctgaacg gggggttcgt gcacacagcc 2220

cagcttggag cgaacgacct acaccgaact gagataccta cagcgtgagc tatgagaaag 2280

cgccacgctt cccgaaggga gaaaggcgga caggtatccg gtaagcggca gggtcggaac 2340

aggagagcgc acgagggagc ttccaggggg aaacgcctgg tatctttata gtcctgtcgg 2400

gtttcgccac ctctgacttg agcgtcgatt tttgtgatgc tcgtcagggg ggcggagcct 2460

atggaaaaac gccagcaacg cggccttttt acggttcctg gcctttgct ggccttttgc 2520

tcacatgttc tttcctgcgt tatcccctga ttctgtggat aaccgtatta ccgcctttga 2580

gtgagctgat accgctcgcc gcagccgaac gaccgagcgc agcgagtcag tgagcgagga 2640

agcggaagag cgcctgatgc ggtattttct ccttacgcat ctgtgcggta tttcacaccg 2700

cacatggtgc actctcagta caatctgctc tgatgccgca tagttaagcc agtatacact 2760

ccgctatcgc tacgtgactg ggtcatggct gcgccccgac acccgccaac acccgctgac 2820

gcgccctgac gggcttgtct gctcccggca tccgcttaca gacaagctgt gaccgtctcc 2880

gggagctgca tgtgtcagag gttttcaccg tcatcaccga aacgcgcgag gcagcagatc 2940

aattcgcgcg cgaaggcgaa gcggcatgca tttacgttga caccatcgaa tggtgcaaaa 3000

cctttcgcgg tatggcatga tagcgcccgg aagagagtca attcagggtg gtgaatgtga 3060

aaccagtaac gttatacgat gtcgcagagt atgccggtgt ctcttatcag accgtttccc 3120

gcgtggtgaa ccaggccagc cacgtttctg cgaaaacgcg ggaaaaagtg gaagcggcga 3180

tggcggagct gaattacatt cccaaccgcg tggcacaaca actggcgggc aaacagtcgt 3240

tgctgattgg cgttgccacc tccagtctgg ccctgcacgc gccgtcgcaa attgtcgcgg 3300

cgattaaatc tcgcgccgat caactgggtg ccagcgtggt ggtgtcgatg gtagaacgaa 3360

gcggcgtcga agcctgtaaa gcggcggtgc acaatcttct cgcgcaacgc gtcagtgggc 3420

tgatcattaa ctatccgctg gatgaccagg atgccattgc tgtggaagct gcctgcacta 3480

atgttccggc gttatttctt gatgtctctg accagacacc catcaacagt attattttct 3540

cccatgaaga cggtacgcga ctgggcgtgg agcatctggt cgcattgggt caccagcaaa 3600

tcgcgctgtt agcgggccca ttaagttctg tctcggcgcg tctgcgtctg gctggctggc 3660

ataaatatct cactcgcaat caaattcagc cgatagcgga acgggaaggc gactggagtg 3720

ccatgtccgg ttttcaacaa accatgcaaa tgctgaatga gggcatcgtt cccactgcga 3780

tgctggttgc caacgatcag atggcgctgg gcgcaatgcg cgccattacc gagtccgggc 3840

tgcgcgttgg tgcggatatc tcggtagtgg gatacgacga taccgaagac agctcatgtt 3900

atatcccgcc gtcaaccacc atcaaacagg attttcgcct gctggggcaa accagcgtgg 3960

accgcttgct gcaactctct cagggccagg cggtgaaggg caatcagctg ttgcccgtct 4020

cactggtgaa aagaaaaacc accctggcgc ccaatacgca aaccgcctct ccccgcgcgt 4080

tggccgattc attaatgcag ctggcacgac aggtttcccg actggaaagc gggcagtgag 4140

cgcaacgcaa ttaatgtgag ttagcgcgaa ttgatctg 4178

<210> 61
<211> 1725
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, FS_S2D_Ec coding sequence

<400> 61
atggacactc tgccgatctc ttccgtaagc ttttcttcct ctacttcccc gctggtagtc 60

gatgacaagg tttctaccaa acctgatgta attcgtcaca ctatgaactt caacgcatct 120

atctggggcg atcagttcct gacttatgat gaaccggaag atctggtaat gaaaaagcaa 180

ctggtagaag aactgaaaga agaagttaaa aaggaactga tcaccattaa gggtagcaac 240

gaaccgatgc agcacgtgaa actgattgaa ctgatcgatg cggttcagcg tctgggtatt 300

gcttatcatt ttgaagagga aatcgaggaa gctctgcaac acatccacgt aacctacggc 360

gaacaatggg tggataaaga gaatctgcag tctatcagcc tgtggttccg cctgctgcgt 420

cagcaaggtt tcaatgtctc ttctggcgtt ttcaaagact tcatggatga aaagggcaaa 480

ttcaaggaat ccctgtgtaa cgatgcgcaa ggtatcctgg cactgtacga agcggccttc 540

atgcgtgtgg aagacgaaac cattctggac aacgcgctgg aattcactaa agtgcatctg 600

gacatcatcg cgaaagatcc gtcctgcgac tcctctctgc gtactcagat ccatcaagcg 660

ctgaaacagc cgctgcgtcg tcgcctggca cgtattgagg ctctgcacta tatgccgatt 720

taccagcagg aaacctctca cgacgaagtc ctgctgaaac tggctaaact ggacttcagc 780

gttctgcaat ctatgcacaa gaaagaactg tcccacatct gcaaatggtg gaaagatctg 840

gatctgcaaa acaaactgcc gtacgttcgt gaccgtgttg ttgagggcta tttttggatt 900

ctgtccatct actatgaacc acagcacgcg cgtactcgca tgtttctgat gaaaacctgc 960

atgtggctgg ttgtcctgga cgacaccttt gacaactatg gtacgtacga agaactggaa 1020

atcttcaccc aggccgtgga acgttggtct atttcctgcc tggatatgct gccggaatac 1080

atgaaactga tctatcaaga actggttaac ctgcacgtgg aaatggaaga gtctctggag 1140

aaagaaggta aaacttacca gatccactac gtcaaggaga tggcgaaaga actggtccgt 1200

aactatctgg tcgaggcgcg ttggctgaaa gagggctata tgccgactct ggaagaatac 1260

atgagcgtat ccatggttac cggcacctac ggcctgatga ttgcgcgttc ctacgtcggc 1320

cgtggtgata ttgttaccga agataccttt aagtgggttt cttcctaccc gccgatcatc 1380

aaagcgtctt gtgtcatcgt tcgcctgatg gacgacatcg tttctcacaa agaggagcaa 1440

gaacgtggtc acgtagcatc tagcatcgaa tgctactcca aagaatccgg cgcgtccgaa 1500

gaagaagctt gcgaatacat cagccgtaaa gttgaagatg cctggaaagt tatcaaccgc 1560

gaaagcctgc gtccgacggc ggtcccgttt ccgctgctga tgccggcaat caacctggca 1620

cgcatgtgtg aggttctgta cagcgtgaac gatggtttta ctcacgcgga aggtgacatg 1680

aagagctata tgaagagctt cttcgtacac cctatggtcg tatga 1725

<210> 62
<211> 1725
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, FS_Aa_Ec coding sequence

<400> 62
atgtctactc tgccgatctc ttccgtaagc ttttcttcct ctacttcccc gctggtagtc 60

gatgacaagg tttctaccaa acctgatgta attcgtcaca ctatgaactt caacgcatct 120

atctggggcg atcagttcct gacttatgat gaaccggaag atctggtaat gaaaaagcaa 180

ctggtagaag aactgaaaga agaagttaaa aaggaactga tcaccattaa gggtagcaac 240

gaaccgatgc agcacgtgaa actgattgaa ctgatcgatg cggttcagcg tctgggtatt 300

gcttatcatt ttgaagagga aatcgaggaa gctctgcaac acatccacgt aacctacggc 360

gaacaatggg tggataaaga gaatctgcag tctatcagcc tgtggttccg cctgctgcgt 420

cagcaaggtt tcaatgtctc ttctggcgtt ttcaaagact tcatggatga aaagggcaaa 480

ttcaaggaat ccctgtgtaa cgatgcgcaa ggtatcctgg cactgtacga agcggccttc 540

atgcgtgtgg aagacgaaac cattctggac aacgcgctgg aattcactaa agtgcatctg 600

gacatcatcg cgaaagatcc gtcctgcgac tcctctctgc gtactcagat ccatcaagcg 660

ctgaaacagc cgctgcgtcg tcgcctggca cgtattgagg ctctgcacta tatgccgatt 720

taccagcagg aaacctctca cgacgaagtc ctgctgaaac tggctaaact ggacttcagc 780

gttctgcaat ctatgcacaa gaaagaactg tcccacatct gcaaatggtg gaaagatctg 840

gatctgcaaa acaaactgcc gtacgttcgt gaccgtgttg ttgagggcta tttttggatt 900

ctgtccatct actatgaacc acagcacgcg cgtactcgca tgtttctgat gaaaacctgc 960

atgtggctgg ttgtcctgga cgacaccttt gacaactatg gtacgtacga agaactggaa 1020

atcttcaccc aggccgtgga acgttggtct atttcctgcc tggatatgct gccggaatac 1080

atgaaactga tctatcaaga actggttaac ctgcacgtgg aaatggaaga gtctctggag 1140

aaagaaggta aaacttacca gatccactac gtcaaggaga tggcgaaaga actggtccgt 1200

aactatctgg tcgaggcgcg ttggctgaaa gagggctata tgccgactct ggaagaatac 1260

atgagcgtat ccatggttac cggcacctac ggcctgatga ttgcgcgttc ctacgtcggc 1320

cgtggtgata ttgttaccga agataccttt aagtgggttt cttcctaccc gccgatcatc 1380

aaagcgtctt gtgtcatcgt tcgcctgatg gacgacatcg tttctcacaa agaggagcaa 1440

gaacgtggtc acgtagcatc tagcatcgaa tgctactcca aagaatccgg cgcgtccgaa 1500

gaagaagctt gcgaatacat cagccgtaaa gttgaagatg cctggaaagt tatcaaccgc 1560

gaaagcctgc gtccgacggc ggtcccgttt ccgctgctga tgccggcaat caacctggca 1620

cgcatgtgtg aggttctgta cagcgtgaac gatggtttta ctcacgcgga aggtgacatg 1680

aagagctata tgaagagctt cttcgtacac cctatggtcg tatga 1725

<210> 63
<211> 1683
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, FS_Cj_Ec coding sequence

<400> 63
atgaaagata tgagcatccc gctgttagcc gcggtttcta gctctaccga ggagacggtc 60

cgtccgatcg cggatttcca tccgacgctg tggggcaacc atttcctgaa gtctgcggca 120

gatgttgaga cgattgatgc ggcaacgcaa gagcagcacg cggcactgaa acaagaggtt 180

cgccgcatga ttaccaccac ggcgaataag ctggcgcaga aactgcacat gattgacgcc 240

gtccagcgct taggtgtggc gtaccacttc gagaaggaga ttgaagacga actgggcaaa 300

gttagccatg acctggactc tgacgatctg tatgtggtca gcctgcgttt tcgtctgttt 360

cgtcaacagg gcgtcaagat tagctgcgat gtgttcgaca agttcaagga cgacgagggc 420

aaattcaaag agagcctgat taacgacatc cgtggcatgt tatctttata cgaggcggcc 480

tatctggcaa ttcgcggtga ggatatctta gacgaggcaa ttgtcttcac cacgacccat 540

ctaaagagcg tcatcagcat tagcgaccat tctcatgcga atagcaatct ggcggagcag 600

atccgtcata gcctgcaaat tccactgcgc aaagccgccg cccgtctgga ggcccgctac 660

ttcctggaca tctattctcg tgacgacctg catgacgaga ccttactgaa attcgccaaa 720

ctggacttca acatcttaca agccgcgcac caaaaggagg caagcatcat gacccgctgg 780

tggaatgacc tgggcttccc aaaaaaggtg ccgtacgcgc gcgaccgcat tattgagacc 840

tacatttgga tgctgctggg cgtgagctac gagccaaacc tggcctttgg ccgtatcttc 900

gcgagcaaag tggtctgcat gatcacgacg atcgacgata ccttcgacgc gtacggtacg 960

ttcgaggaac tgaccctgtt tacggaggcg gtgacgcgct gggacatcgg cctgatcgac 1020

acgctgccgg agtacatgaa gttcatcgtc aaggccctgc tggacattta ccgtgaagcg 1080

gaggaggaat tagcgaagga aggccgcagc tatggtatcc cgtacgcgaa gcagatgatg 1140

caggagctga tcatcctgta ctttaccgaa gcgaaatggc tgtacaaggg ctacgtgccg 1200

acgttcgacg agtacaaaag cgttgccctg cgcagcattg gtctgcgcac gctggccgtt 1260

gcaagcattg tggacctggg cgacttcatt gcgaccaagg acaacttcga gtgcatcctg 1320

aagaacgcca agagcctgaa agccacggag accatcggcc gtctgatgga tgatatcgcg 1380

ggctacaagt tcgagcagaa acgcggccat aacccatctg cggtggagtg ttacaagaat 1440

cagcacggcg tcagcgaaga ggaggcggtt aaagagctgc tgctggaggt ggcgaacagc 1500

tggaaggaca tcaatgagga gctgttaaac ccgaccaccg tcccactgcc gatgctgcag 1560

cgtctgctgt acttcgcacg cagcggtcat ttcatttacg acgacggcca tgatcgctac 1620

acccacagcc tgatgatgaa gcgccaggtc gcgttactgt taacggaacc actggcgatc 1680

taa 1683

<210> 64
<211> 1014
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, PS_S_Ec coding sequence

<400> 64
atgccgcagg acgtcgactt ccatattccg ctgccaggcc gtcagtcacc ggaccatgcc 60

cgcgctgaag cggagcaatt agcgtggccg cgcagcttgg gcctgattcg ttccgatgct 120

gcggcagagc gtcatctccg tggtggttac gcagatctgg caagccgctt ttatccgcat 180

gcgaccggcg cagaccttga tttaggggtg gacctgatga gctggttttt cctctttgat 240

gacctgttcg atggcccgcg cggtgaaaac ccggaggata ccaaacagct gaccgaccaa 300

gtggctgcag cactggatgg cccgctcccc gataccgccc cccccatcgc tcacggtttt 360

gcagatattt ggcgccgtac gtgtgaaggt atgacgccgg cgtggtgcgc ccgtagcgcg 420

cgccattggc gtaattattt tgatggctac gtagatgaag ccgagagccg cttttggaac 480

gctccatgcg attcggccgc ccaatacctg gcgatgcgcc gtcacacgat cggtgtacaa 540

cctaccgtcg atttggcgga gcgtgcgggc cgtttcgaag tgccacaccg tgtgttcgat 600

tctgcagtga tgtctgcaat gctgcagatt gcggtagacg tgaacctgct gctgaacgac 660

atcgccagcc tggaaaaaga ggaagcccgt ggtgagcaaa acaatatggt catgatcctg 720

cgtcgcgaac acggctggtc aaagagccgc agcgtcagcc acatgcaaaa tgaagttcgc 780

gcccgccttg aacagtattt gttactggaa agctgtctcc cgaaagtcgg cgaaatttat 840

cagctggata ccgcagaacg cgaggcactg gaacgttatc gtacggatgc tgtccgtacc 900

gttatccgtg gttcctatga ctggcatcgc agcagtgggc gctatgacgc cgagttcgct 960

ctggcggcag gtgcacaggg atacctggaa gaactgggct ccagcgccca ttaa 1014

<210> 65
<211> 1125
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, TDS_Fs_Ec coding sequence

<400> 65
atggaaaatt ttcctacgga atacttcctg aataccacgg tccgcttgct ggaatacatt 60

cgctaccgtg attctaatta tacgcgcgag gagcgtatcg aaaacctcca ttatgcgtac 120

aacaaagcgg ctcatcattt tgcacagccg cgtcagcaac aactcctgaa agtggaccct 180

aaacgtctcc aggcaagcct gcaaactatt gttggcatgg tggtttatag ctgggccaaa 240

gtttcaaaag agtgcatggc ggatctgagt atccattata cgtatacgct ggtgttagat 300

gactcaaaag atgacccgta cccaactatg gtgaattact ttgacgactt gcaagcgggc 360

cgtgaacagg cacatccgtg gtgggctctg gtgaacgaac attttccgaa tgttcttcgc 420

catttcggcc cgttttgctc gttaaattta atccgtagca ccctggattt ctttgaagga 480

tgctggatcg aacagtataa ttttggcggt tttccaggga gccacgacta cccgcagttt 540

ctgcgccgca tgaatggtct tggacattgt gttggtgcct cgttatggcc gaaggaacag 600

tttaatgaac gcagcctgtt cctggaaatc acctctgcca ttgcacagat ggaaaattgg 660

atggtatggg tcaacgatct gatgtccttc tataaagagt tcgatgatga acgcgaccag 720

atttcgttag tcaaaaatta tgtcgtgtca gatgaaatct ccttgcacga agccctggag 780

aagttgacgc aggacaccct gcactccagt aaacaaatgg tagccgtttt ttctgacaaa 840

gatccgcaag taatggacac catcgagtgt ttcatgcatg ggtatgtgac ctggcatttg 900

tgcgaccgtc gttatcgtct gtccgaaatt tacgaaaaag ttaaggagga gaaaaccgaa 960

gacgcacaaa aattctgcaa attttacgaa caggccgcga atgtaggcgc tgtcagccct 1020

tccgaatggg catatccgcc tgtggcccag ctggcgaacg ttcgttcaaa agatgtgaaa 1080

gaagtccaga aaccgtttct gagctctatt gaattagtcg agtaa 1125

<210> 66
<211> 1686
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, FS_Cs_Ec coding sequence

<400> 66
atgagctcta acgtgagcgc catcccaaac tcttttgaac tgattcgccg ctctgcgcaa 60

ttccaggcaa gcgtctgggg cgattatttc ctgagctacc acagcctgcc accggagaag 120

ggcaacaagg tgatggaaaa acaaacggag gagctgaagg aggagatcaa aatggagctg 180

gtgtctacca ccaaggacga gccggagaaa ttacgcctga ttgatctgat ccaacgttta 240

ggcgtgtgct accacttcga gaacgaaatc aacaatatcc tgcagcagct gcatcacatc 300

acgattacca gcgagaaaaa tggcgacgac aatccataca acatgacgct gtgctttcgt 360

ttactgcgtc agcagggcta caacgtgtct tctgagccgt ttgaccgctt ccgcggcaag 420

tgggagagca gctacgacaa caatgtggaa gaactgctga gcctgtatga agcaagccaa 480

ctgcgcatgc aaggcgagga ggccctggat gaggcgtttt gcttcgccac cgcgcaactg 540

gaagcgatcg tgcaagaccc gaccaccgat ccgatggtcg ccgcggagat tcgtcaggcc 600

ttaaaatggc caatgtacaa gaatttaccg cgtctgaaag cccgtcacca cattggtctg 660

tattctgaga aaccgtggcg taacgagagc ttactgaact ttgcgaagat ggacttcaac 720

aagctgcaaa acctgcatca gaccgagatc gcatacatct ctaagtggtg ggacgattat 780

ggctttgcgg agaaactgtc ttttgcccgt aatcgcattg tggaaggtta tttctttgcc 840

ctgggtatct tcttcgaacc gcaattatta accgcacgcc tgatcatgac gaaagttatt 900

gcgattggta gcatgctgga tgacatctac gacgtctacg gtacgtttga ggaactgaag 960

ctgttaacgt tagcgttaga acgctgggac aagagcgaaa cgaagcaatt accgaactac 1020

atgaaaatgt actacgaggc cctgctggac gtgtttgaag agattgagca ggaaatgtct 1080

caaaaagaga cggaaacgac cccgtattgc attcatcaca tgaaagaagc cacgaaggaa 1140

ttaggtcgtg ttttcttagt cgaggcgacc tggtgtaagg agggttatac cccgaaggtc 1200

gaagaatatc tggacattgc gctgatcagc ttcggccaca agctgctgat ggttacggca 1260

ctgctgggta tgggttctca catggccacg cagcagattg tccagtggat cacgagcatg 1320

ccgaatatcc tgaaggcaag cgccgttatt tgtcgcctga tgaacgatat cgtctctcac 1380

aagtttgagc aggaacgcgg ccacgttgcg agcgcgatcg agtgctacat ggagcaaaat 1440

cacttatctg agtacgaggc actgatcgcc ttacgtaagc agatcgatga tctgtggaaa 1500

gacatggtcg aaaactactg tgcggtgatc acggaggacg aggttccgcg cggcgtcctg 1560

atgcgcgtgt taaatttaac ccgtttattt aacgtgattt acaaagatgg cgatggctat 1620

acgcagtctc atggtagcac gaaggcacat attaagagcc tgttagttga ctctgttcca 1680

ttataa 1686

<210> 67
<211> 1725
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, FS_Pt_Ec coding sequence

<400> 67
atgagctctt tagcggttga tgacgccgaa cgccgtgtgg gcgactacca cccgaactta 60

tgggacgacg cactgatcca gagcttaagc acgccatacg gcgcaagccc gtatcgcgat 120

gttgccgaga agctgatcgg cgagatcaag gagatgtttg cgagcatctc tatcgaggat 180

ggcgatgacg agatctgcta cttcctgcag cgcctgtgga tgattgacaa cgtcgagcgc 240

ctgggcatta gccgtcattt cgaaaatgag attaaggcgg cgatggagga cgtgtattct 300

cgtcattgga gcgacaaagg catcgcgtgt ggccgccaca gcgtggttgc agacctgaac 360

tctaccgcac tggcgttccg caccctgcgc ctgcacggct acagcgtttg cagcgacgtg 420

ttcaagattt tccaagatca gaaaggtgag ttcgcatgtt ctgcggatca gaccgagggt 480

gagattaaag gcattctgaa cctgttacgc gccagcctga tcgcctttcc gggcgagcgt 540

atcctgcagg aggccgagat ctttgcgacg acctatctga aagaggcctt accgaagatc 600

cagggcagcc gcttatctca ggaaattgaa tacgtgctgg agtacggctg gctgaccgat 660

ctgccgcgcc tggagacgcg taactacatc gaggtcctgg ccgaggagat cacgccgtac 720

ttcaagaagc cgtgcatggc cgtcgagaaa ctgctgaaac tggcgaaaat cgagttcaac 780

ctgtttcaca gcctgcagca aaccgagctg aagcacctgt ctcgctggtg gaaggacagc 840

ggttttgcgc agctgacgtt cacgcgtcac cgccatgttg aattttatac cctggccagc 900

tgcatcgcca tggagccgaa gcactctgcg ttccgcctgg gcttcgccaa actgtgctat 960

ctgggcatcg tgctggacga tatctatgac acctacggca agatggagga gctggagctg 1020

ttcaccgcgg caatcaaacg ttgggatacg agcacgacgg agtgcctgcc ggagtacatg 1080

aagggcgttt acatggcgtt ttatgactgt gtcaacgaga tggcccgcca agcagagaag 1140

acccaaggct gggacaccct ggactacgcg cgcaagacct gggaggccct gatcgacgca 1200

ttcatggagg aggcgaagtg gatcagctct ggctacgtcc caaccttcca gaagtacctg 1260

gacaacggca aggtcagctt cggttaccgt gcagcgacgc tgcagccaat cttaacgctg 1320

gacatcccgc tgccgctgca catcctgcaa gagattgact tcccgagcag cttcaacgac 1380

ctggcgagct ctattctgcg cttacgtggc gacatttgcg gttatcaggc cgaacgttct 1440

cgtggtgagc aggcgtctag catcagctgc tacatgaagg ataacccggg tagcacggaa 1500

gaggatgccc tgagccacgt caacgccatg atcggcgaca agatcccgga gttcaattgg 1560

gagttcatga aaccaagcaa ggccccgatt agcagcaaaa agtacgcctt cgacatcctg 1620

cgcgcattct accacctgta caagtaccgc gatggcttca gcatcgccaa gatcgagacc 1680

aaaaaactgg tgatgcgcac ggtcctggac ccggtcccaa tgtaa 1725

<210> 68
<211> 1725
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, FS_Aa_Sc coding sequence

<400> 68
atgtcaactt tgcctatttc ttctgtgtca ttttcctctt ctacatcacc attagtcgtg 60

gacgacaaag tctcaaccaa gcccgacgtt atcagacata caatgaattt caatgcttct 120

atttggggag atcaattctt gacctatgat gagcctgaag atttagttat gaagaaacaa 180

ttagtggagg aattaaaaga ggaagttaag aaggaattga taactatcaa aggttcaaat 240

gagcccatgc agcatgtgaa attgattgaa ttaattgatg ctgttcaacg tttaggtata 300

gcttaccatt ttgaagaaga gatcgaggaa gctttgcaac atatacatgt tacctatggt 360

gaacagtggg tggataagga aaatttacag agtatttcat tgtggttcag gttgttgcgt 420

caacagggct ttaacgtctc ctctggcgtt ttcaaagact ttatggacga aaaaggtaaa 480

ttcaaagagt ctttatgcaa tgatgcacaa ggaatattag ccttatatga agctgcattt 540

atgagggttg aagatgaaac catcttagac aatgctttgg aattcacaaa agttcattta 600

gatatcatag caaaagaccc atcttgcgat tcttcattgc gtacacaaat ccatcaagcc 660

ttaaaacaac ctttaagaag gagattagca aggattgaag cattacatta catgccaatc 720

taccaacagg aaacatctca tgatgaagta ttgttgaaat tagccaagtt ggatttcagt 780

gttttgcagt ctatgcataa aaaggaattg tcacatatct gtaagtggtg gaaagattta 840

gatttacaaa ataagttacc ttatgtacgt gatcgtgttg tcgaaggcta cttctggata 900

ttgtccatat actatgagcc acaacacgct agaacaagaa tgtttttgat gaaaacatgc 960

atgtggttag tagttttgga cgatactttt gataattatg gaacatacga agaattggag 1020

atttttactc aagccgtcga gagatggtct atctcatgct tagatatgtt gcccgaatat 1080

atgaaattaa tctaccaaga attagtcaat ttgcatgtgg aaatggaaga atctttggaa 1140

aaggagggaa agacctatca gattcattac gttaaggaga tggctaaaga attagttcgt 1200

aattacttag tagaagcaag atggttgaag gaaggttata tgcctacttt agaagaatac 1260

atgtctgttt ctatggttac tggtacttat ggtttgatga ttgcaaggtc ctatgttggc 1320

agaggagaca ttgttactga agacacattc aaatgggttt ctagttaccc acctattatt 1380

aaagcttcct gtgtaatagt aagattaatg gacgatattg tatctcacaa ggaagaacaa 1440

gaaagaggac atgtggcttc atctatagaa tgttactcta aagaatcagg tgcttctgaa 1500

gaggaagcat gtgaatatat tagtaggaaa gttgaggatg cctggaaagt aatcaataga 1560

gaatctttgc gtccaacagc cgttcccttc cctttgttaa tgccagcaat aaacttagct 1620

agaatgtgtg aggtcttgta ctctgttaat gatggtttta ctcatgctga gggtgacatg 1680

aaatcttata tgaagtcctt cttcgttcat cctatggtcg tttga 1725

<210> 69
<211> 7348
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Expression plasmid pAM178

<400> 69
tcgcgcgttt cggtgatgac ggtgaaaacc tctgacacat gcagctcccg gagacggtca 60

cagcttgtct gtaagcggat gccgggagca gacaagcccg tcagggcgcg tcagcgggtg 120

ttggcgggtg tcggggctgg cttaactatg cggcatcaga gcagattgta ctgagagtgc 180

accatatcga ctacgtcgta aggccgtttc tgacagagta aaattcttga gggaactttc 240

accattatgg gaaatgcttc aagaaggtat tgacttaaac tccatcaaat ggtcaggtca 300

ttgagtgttt tttatttgtt gtatttttt ttttttagag aaaatcctcc aatatcaaat 360

taggaatcgt agtttcatga ttttctgtta cacctaactt tttgtgtggt gccctcctcc 420

ttgtcaatat taatgttaaa gtgcaattct ttttccttat cacgttgagc cattagtatc 480

aatttgctta cctgtattcc tttactatcc tccttttttct ccttcttgat aaatgtatgt 540

agattgcgta tatagtttcg tctaccctat gaacatattc cattttgtaa tttcgtgtcg 600

tttctattat gaatttcatt tataaagttt atgtacaaat atcataaaaa aagagaatct 660

ttttaagcaa ggattttctt aacttcttcg gcgacagcat caccgacttc ggtggtactg 720

ttggaaccac ctaaatcacc agttctgata cctgcatcca aaacctttt aactgcatct 780

tcaatggcct taccttcttc aggcaagttc aatgacaatt tcaacatcat tgcagcagac 840

aagatagtgg cgatagggtc aaccttattc tttggcaaat ctggagcaga accgtggcat 900

ggttcgtaca aaccaaatgc ggtgttcttg tctggcaaag aggccaagga cgcagatggc 960

aacaaaccca aggaacctgg gataacggag gcttcatcgg agatgatatc accaaacatg 1020

ttgctggtga ttataatacc atttaggtgg gttgggttct taactaggat catggcggca 1080

gaatcaatca attgatgttg aaccttcaat gtagggaatt cgttcttgat ggtttcctcc 1140

acagtttttc tccataatct tgaagaggcc aaaagattag ctttatccaa ggaccaaata 1200

ggcaatggtg gctcatgttg tagggccatg aaagcggcca ttcttgtgat tctttgcact 1260

tctggaacgg tgtattgttc actatcccaa gcgacaccat caccatcgtc ttcctttctc 1320

ttaccaaagt aaatacctcc cactaattct ctgacaacaa cgaagtcagt acctttagca 1380

aattgtggct tgattggaga taagtctaaa agagagtcgg atgcaaagtt acatggtctt 1440

aagttggcgt acaattgaag ttctttacgg atttttagta aaccttgttc aggtctaaca 1500

ctaccggtac cccatttagg accagccaca gcacctaaca aaacggcatc aaccttcttg 1560

gaggcttcca gcgcctcatc tggaagtgga acacctgtag catcgatagc agcaccacca 1620

attaaatgat tttcgaaatc gaacttgaca ttggaacgaa catcagaaat agctttaaga 1680

accttaatgg cttcggctgt gatttcttga ccaacgtggt cacctggcaa aacgacgatc 1740

ttcttagggg cagacattac aatggtatat ccttgaaata tatataaaaa aaggcgcctt 1800

agaccgctcg gccaaacaac caattacttg ttgagaaata gagtataatt atcctataaa 1860

tataacgttt ttgaacacac atgaacaagg aagtacagga caattgattt tgaagagaat 1920

gtggattttg atgtaattgt tgggattcca tttttaataa ggcaataata ttaggtatgt 1980

ggatatacta gaagttctcc tcgaccgtcg atatgcggtg tgaaataccg cacagatgcg 2040

taaggagaaa ataccgcatc aggaaattgt aaacgttaat attttgttaa aattcgcgtt 2100

aaatttttgt taaatcagct catttttaa ccaataggcc gaaatcggca aaatccctta 2160
taaatcaaaa gaatagaccg agatagggtt gagtgttgtt ccagtttgga acaagagtcc 2220
actattaaag aacgtggact ccaacgtcaa agggcgaaaa accgtctatc agggcgatgg 2280
cccactacgt gaaccatcac cctaatcaag ttttttgggg tcgaggtgcc gtaaagcact 2340
aaatcggaac cctaaaggga gcccccgatt tagagcttga cggggaaagc cggcgaacgt 2400
ggcgagaaag gaagggaaga aagcgaaagg agcgggcgct agggcgctgg caagtgtagc 2460
ggtcacgctg cgcgtaacca ccacacccgc cgcgcttaat gcgccgctac agggcgcgtc 2520
gcgccattcg ccattcaggc tgcgcaactg ttgggaaggg cgatcggtgc gggcctcttc 2580
gctattacgc cagctgaatt ggagcgacct catgctatac ctgagaaagc aacctgacct 2640
acaggaaaga gttactcaag aataagaatt ttcgttttaa aacctaagag tcactttaaa 2700
atttgtatac acttattttt tttataactt atttaataat aaaaatcata aatcataaga 2760
aattcgctta tttagaagtg tcaacaacgt atctaccaac gatttgaccc ttttccatct 2820
tttcgtaaat ttctggcaag gtagacaagc cgacaacctt gattggagac ttgaccaaac 2880
ctctggcgaa gaattgttaa ttaagagctc agatcttatc gtcgtcatcc ttgtaatcca 2940
tcgatactag tgcggccgcc ctttagtgag ggttgaattc gaattttcaa aaattcttac 3000
ttttttttg gatggacgca aagaagttta ataatcatat tacatggcat taccaccata 3060
tacatatcca tatacatatc catatctaat cttacttata tgttgtggaa atgtaaagag 3120
ccccattatc ttagcctaaa aaaaccttct ctttggaact ttcagtaata cgcttaactg 3180
ctcattgcta tattgaagta cggattagaa gccgccgagc gggtgacagc cctccgaagg 3240
aagactctcc tccgtgcgtc ctcgtcttca ccggtcgcgt tcctgaaacg cagatgtgcc 3300
tcgcgccgca ctgctccgaa caataaagat tctacaatac tagcttttat ggttatgaag 3360
aggaaaaatt ggcagtaacc tggccccaca aaccttcaaa tgaacgaatc aaattaacaa 3420
ccataggatg ataatgcgat tagtttttta gccttatttc tggggtaatt aatcagcgaa 3480
gcgatgattt ttgatctatt aacagatata taaatgcaaa aactgcataa ccactttaac 3540
taatactttc aacattttcg gtttgtatta cttcttattc aaatgtaata aaagtatcaa 3600
caaaaaattg ttaatatacc tctatacttt aacgtcaagg agaaaaaacc ccggatccgt 3660
aatacgactc actatagggc ccgggcgtcg acatggaaca gaagttgatt tccgaagaag 3720
acctcgagta agcttggtac cgcggctagc taagatccgc tctaaccgaa aaggaaggag 3780
ttagacaacc tgaagtctag gtccctattt atttttttat agttatgtta gtattaagaa 3840
cgttatttat atttcaaatt tttctttttt ttctgtacag acgcgtgtac gcatgtaaca 3900
ttatactgaa aaccttgctt gagaaggttt tgggacgctc gaagatccag ctgcattaat 3960
gaatcggcca acgcgcgggg agaggcggtt tgcgtattgg gcgctcttcc gcttcctcgc 4020
tcactgactc gctgcgctcg gtcgttcggc tgcggcgagc ggtatcagct cactcaaagg 4080
cggtaatacg gttatccaca gaatcagggg ataacgcagg aaagaacatg tgagcaaaag 4140

gccagcaaaa ggccaggaac cgtaaaaagg ccgcgttgct ggcgtttttc cataggctcc 4200

gccccccctga cgagcatcac aaaaatcgac gctcaagtca gaggtggcga aacccgacag 4260

gactataaag ataccaggcg tttccccctg gaagctccct cgtgcgctct cctgttccga 4320

ccctgccgct taccggatac ctgtccgcct ttctcccttc gggaagcgtg gcgctttctc 4380

atagctcacg ctgtaggtat ctcagttcgg tgtaggtcgt tcgctccaag ctgggctgtg 4440

tgcacgaacc ccccgttcag cccgaccgct gcgccttatc cggtaactat cgtcttgagt 4500

ccaacccggt aagacacgac ttatcgccac tggcagcagc cactggtaac aggattagca 4560

gagcgaggta tgtaggcggt gctacagagt tcttgaagtg gtggcctaac tacggctaca 4620

ctagaaggac agtatttggt atctgcgctc tgctgaagcc agttaccttc ggaaaaagag 4680

ttggtagctc ttgatccggc aaacaaacca ccgctggtag cggtggtttt tttgtttgca 4740

agcagcagat tacgcgcaga aaaaaaggat ctcaagaaga tcctttgatc ttttctacgg 4800

ggtctgacgc tcagtggaac gaaaactcac gttaagggat tttggtcatg agattatcaa 4860

aaaggatctt cacctagatc cttttaaatt aaaaatgaag ttttaaatca atctaaagta 4920

tatatgagta aacttggtct gacagttacc aatgcttaat cagtgaggca cctatctcag 4980

cgatctgtct atttcgttca tccatagttg cctgactccc cgtcgtgtag ataactacga 5040

tacgggaggg cttaccatct ggccccagtg ctgcaatgat accgcgagac ccacgctcac 5100

cggctccaga tttatcagca ataaaccagc cagccggaag ggccgagcgc agaagtggtc 5160

ctgcaacttt atccgcctcc atccagtcta ttaattgttg ccgggaagct agagtaagta 5220

gttcgccagt taatagtttg cgcaacgttg ttgccattgc tacaggcatc gtggtgtcac 5280

gctcgtcgtt tggtatggct tcattcagct ccggttccca acgatcaagg cgagttacat 5340

gatcccccat gttgtgcaaa aaagcggtta gctccttcgg tcctccgatc gttgtcagaa 5400

gtaagttggc cgcagtgtta tcactcatgg ttatggcagc actgcataat tctcttactg 5460

tcatgccatc cgtaagatgc ttttctgtga ctggtgagta ctcaaccaag tcattctgag 5520

aatagtgtat gcggcgaccg agttgctctt gcccggcgtc aatacgggat aataccgcgc 5580

cacatagcag aactttaaaa gtgctcatca ttggaaaacg ttcttcgggg cgaaaactct 5640

caaggatctt accgctgttg agatccagtt cgatgtaacc cactcgtgca cccaactgat 5700

cttcagcatc ttttactttc accagcgttt ctgggtgagc aaaaacagga aggcaaaatg 5760

ccgcaaaaaa gggaataagg gcgacacgga aatgttgaat actcatactc ttccttttc 5820

aatattattg aagcatttat cagggttatt gtctcatgag cggatacata tttgaatgta 5880

tttagaaaaa taaacaaata ggggttccgc gcacatttcc ccgaaaagtg ccacctgaac 5940

gaagcatctg tgcttcattt tgtagaacaa aaatgcaacg cgagagcgct aatttttcaa 6000

acaaagaatc tgagctgcat ttttacagaa cagaaatgca acgcgaaagc gctattttac 6060

caacgaagaa tctgtgcttc atttttgtaa aacaaaaatg caacgcgaga gcgctaattt 6120

ttcaaacaaa gaatctgagc tgcatttta cagaacagaa atgcaacgcg agagcgctat 6180

tttaccaaca aagaatctat acttcttttt tgttctacaa aaatgcatcc cgagagcgct 6240

atttttctaa caaagcatct tagattactt tttttctcct ttgtgcgctc tataatgcag 6300

tctcttgata actttttgca ctgtaggtcc gttaaggtta gaagaaggct actttggtgt 6360

ctattttctc ttccataaaa aaagcctgac tccacttccc gcgtttactg attactagcg 6420

aagctgcggg tgcatttttt caagataaag gcatccccga ttatattcta taccgatgtg 6480

gattgcgcat actttgtgaa cagaaagtga tagcgttgat gattcttcat tggtcagaaa 6540

attatgaacg gtttcttcta ttttgtctct atatactacg tataggaaat gtttacattt 6600

tcgtattgtt ttcgattcac tctatgaata gttcttacta caatttttt gtctaaagag 6660

taatactaga gataaacata aaaaatgtag aggtcgagtt tagatgcaag ttcaaggagc 6720

gaaaggtgga tgggtaggtt atatagggat atagcacaga gatatatagc aaagagatac 6780

ttttgagcaa tgtttgtgga agcggtattc gcaatatttt agtagctcgt tacagtccgg 6840

tgcgtttttg gtttttgaa agtgcgtctt cagagcgctt ttggttttca aaagcgctct 6900

gaagttccta tactttctag agaataggaa cttcggaata ggaacttcaa agcgtttccg 6960

aaaacgagcg cttccgaaaa tgcaacgcga gctgcgcaca tacagctcac tgttcacgtc 7020

gcacctatat ctgcgtgttg cctgtatata tatatacatg agaagaacgg catagtgcgt 7080

gtttatgctt aaatgcgtac ttatatgcgt ctatttatgt aggatgaaag gtagtctagt 7140

acctcctgtg atattatccc attccatgcg gggtatcgta tgcttccttc agcactaccc 7200

tttagctgtt ctatatgctg ccactcctca attggattag tctcatcctt caatgctatc 7260

atttcctttg atattggatc atactaagaa accattatta tcatgacatt aacctataaa 7320

aataggcgta tcacgaggcc ctttcgtc 7348

<210> 70
<211> 1125
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, TDS_Fs_Sc coding sequence

<400> 70
atggaaaact ttccaaccga gtacttcttg aacaccaccg tcaggttgtt ggagtacatt 60

aggtacaggg actcaaacta taccagggag gagaggattg agaacttaca ctacgcctac 120

aacaaagccg cccaccactt cgcccagcca agacagcagc agttgttgaa ggtcgaccct 180

aagagattgc aagcttcatt gcagaccatt gtcggtatgg ttgtatattc atgggccaag 240

gtatctaaag agtgtatggc agacttgtca atccactata cctacacctt ggtattggac 300

gattcaaaag acgacccata ccctactatg gtaaactact tcgatgactt acaagcaggt 360

agagaacagg ctcatccttg gtgggcttta gtaaacgagc actttccaaa cgtattgagg 420

cattttggtc ctttttgctc attgaacttg atcaggtcta ccttagactt cttcgagggt 480

tgctggatag aacaatacaa ttttggagga ttcccaggtt ctcacgacta cccacagttc 540

ttgagaagaa tgaacggttt aggacactgc gtcggtgcct ctttgtggcc aaaggagcag 600

ttcaatgaaa gatcattgtt tttggagatc acttcagcca tagctcaaat ggaaaattgg 660

atggtctggg ttaatgattt gatgtcattt tacaaggagt tcgacgacga gagggatcag 720

atctctttgg taaagaacta cgttgtttct gacgagatat cattacacga ggccttagaa 780

aaattgaccc aggatacctt gcactcttca aagcaaatgg ttgcagtttt ctcagacaag 840

gaccctcaag taatggacac catagagtgc ttcatgcatg gttatgtcac atggcattta 900

tgcgacagga ggtacaggtt gtctgaaatc tacgagaaag tcaaggagga aaagactgag 960

gatgcccaaa aattttgcaa gttctacgag caagctgcca atgtaggagc cgtttcacct 1020

tctgagtggg cctatccacc agtcgcccag ttagctaacg taagatcaaa ggacgtcaaa 1080

gaggtccaga aaccattttt atcatctata gaattagttg aataa 1125

<210> 71
<211> 1788
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, IS_Pn_Sc coding sequence

<400> 71
atggctaccg agttgttgtg cttgcacagg ccaatatctt tgacccacaa attgttcagg 60

aatccattgc caaaagtcat acaagcaaca ccattgacct tgaagttaag gtgctctgta 120

tcaaccgaga acgtttcatt cacagagaca gaaacagaaa caaggaggtc agctaattac 180

gagccaaact catgggatta tgactacttg ttgtcttctg acaccgacga gtctattgag 240

gtatataaag acaaggcaaa gaagttggag gctgaagtca ggagggagat caacaacgaa 300

aaggcagagt tcttgacttt gccagagttg attgacaacg tacagaggtt gggattgggt 360

tataggtttg agtcagacat aagaagggct ttggacaggt ttgtatcttc aggtggattc 420

gacgcagtta ctaagacctc attgcatgct accgctttat cttttaggtt attgagacag 480

catggtttcg aagtatcaca ggaggcattc tcaggattca aagaccagaa cggaaacttt 540

ttgaagaact tgaaggagga cataaaagcc atcttgtctt tatacgaagc ctcatttttg 600

gccttagagg gtgagaatat tttagacgag gctaaggtct tcgccatatc tcacttgaag 660

gagttgtctg aggagaaaat aggaaaggac ttagccgaac aagtaaacca cgcattggaa 720

ttaccattgc ataggagaac tcaaaggtta gaagcagtct ggtctatcga ggcctacagg 780

aagaaagagg atgctgatca ggttttattg gagttggcca tcttagacta caacatgatc 840

cagtcagtct atcagagaga cttgagagaa acttctaggt ggtggagaag agtcggatta 900

gccactaaat tgcacttcgc tagggatagg ttaatagagt cattctattg ggctgttgga 960

gtagcttttg aaccacaata ctcagattgt aggaactcag tagccaagat gttctcattc 1020

gtcaccataa tcgatgacat ctacgacgta tacggaactt tggatgaatt ggaattattc 1080

actgatgcag tcgagagatg ggacgtaaat gccattgatg acttgcctga ttacatgaag 1140

ttgtgcttct tagctttgta caacaccata aacgagatcg catacgacaa cttgaaggac 1200

aagggtgaaa atatattgcc ttacttaacc aaggcctggg ctgatttgtg taacgcattc 1260

ttacaggaag caaaatggtt gtataacaaa tcaacaccta ctttcgacga gtattttggt 1320

aacgcttgga agtcttcatc tggaccttta caattggtat ttgcttactt cgccgtcgta 1380

caaaacatta agaaagagga gattgataac ttgcaaaagt accacgatat catctcaaga 1440

ccatcacaca ttttcaggtt atgtaacgac ttggcctctg cttcagctga aatagctaga 1500

ggagagactg caaattcagt ttcatgttac atgaggacca agggtatatc agaagaatta 1560

gcaaccgaat ctgtcatgaa tttaatcgac gagacctgga agaagatgaa caaggaaaag 1620

ttgggaggtt ctttattcgc aaaacctttt gtcgaaacag ccatcaattt agccaggcag 1680

tcacactgta catatcacaa tggtgatgcc cacacctcac ctgacgagtt gaccaggaaa 1740

agagttttgt cagttattac tgaacctata ttacctttg agaggtga 1788

<210> 72
<211> 9905
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Expression plasmid pAM1812

<400> 72
gacgaaaggg cctcgtgata cgcctatttt tataggttaa tgtcatgata ataatggttt 60

cttagtatga tccaatatca aaggaaatga tagcattgaa ggatgagact aatccaattg 120

aggagtggca gcatatagaa cagctaaagg gtagtgctga aggaagcata cgataccccg 180

catggaatgg gataatatca caggaggtac tagactacct ttcatcctac ataaatagac 240

gcatataagt acgcatttaa gcataaacac gcactatgcc gttcttctca tgtatatata 300

tatacaggca acacgcagat ataggtgcga cgtgaacagt gagctgtatg tgcgcagctc 360

gcgttgcatt ttcggaagcg ctcgttttcg gaaacgcttt gaagttccta ttccgaagtt 420

cctattctct agaaagtata ggaacttcag agcgcttttg aaaaccaaaa gcgctctgaa 480

gacgcacttt caaaaaacca aaaacgcacc ggactgtaac gagctactaa aatattgcga 540

ataccgcttc cacaaacatt gctcaaaagt atctctttgc tatatatctc tgtgctatat 600

ccctatataa cctacccatc caccttttcgc tccttgaact tgcatctaaa ctcgacctct 660

acatttttta tgtttatctc tagtattact ctttagacaa aaaaattgta gtaagaacta 720

ttcatagagt gaatcgaaaa caatacgaaa atgtaaacat ttcctatacg tagtatatag 780

agacaaaata gaagaaaccg ttcataattt tctgaccaat gaagaatcat caacgctatc 840

actttctgtt cacaaagtat gcgcaatcca catcggtata gaatataatc ggggatgcct 900

ttatcttgaa aaaatgcacc cgcagcttcg ctagtaatca gtaaacgcgg gaagtggagt 960

caggcttttt ttatggaaga gaaaatagac accaaagtag ccttcttcta accttaacgg 1020

acctacagtg caaaaagtta tcaagagact gcattataga gcgcacaaag gagaaaaaaa 1080

gtaatctaag atgctttgtt agaaaaatag cgctctcggg atgcattttt gtagaacaaa 1140

aaagaagtat agattctttg ttggtaaaat agcgctctcg cgttgcattt ctgttctgta 1200

aaaatgcagc tcagattctt tgtttgaaaa attagcgctc tcgcgttgca tttttgtttt 1260

acaaaaatga agcacagatt cttcgttggt aaaatagcgc tttcgcgttg catttctgtt 1320

ctgtaaaaat gcagctcaga ttctttgttt gaaaaattag cgctctcgcg ttgcattttt 1380

gttctacaaa atgaagcaca gatgcttcgt tcaggtggca cttttcgggg aaatgtgcgc 1440

ggaaccccta tttgtttatt tttctaaata cattcaaata tgtatccgct catgagacaa 1500

taaccctgat aaatgcttca ataatattga aaaaggaaga gtatgagtat tcaacatttc 1560

cgtgtcgccc ttattccctt ttttgcggca ttttgccttc ctgtttttgc tcacccagaa 1620

acgctggtga aagtaaaaga tgctgaagat cagttgggtg cacgagtggg ttacatcgaa 1680

ctggatctca acagcggtaa gatccttgag agttttcgcc ccgaagaacg ttttccaatg 1740

atgagcactt ttaaagttct gctatgtggc gcggtattat cccgtattga cgccgggcaa 1800

gagcaactcg gtcgccgcat acactattct cagaatgact tggttgagta ctcaccagtc 1860

acagaaaagc atcttacgga tggcatgaca gtaagagaat tatgcagtgc tgccataacc 1920

atgagtgata acactgcggc caacttactt ctgacaacga tcggaggacc gaaggagcta 1980

accgcttttt tgcacaacat gggggatcat gtaactcgcc ttgatcgttg ggaaccggag 2040

ctgaatgaag ccataccaaa cgacgagcgt gacaccacga tgcctgtagc aatggcaaca 2100

acgttgcgca aactattaac tggcgaacta cttactctag cttcccggca acaattaata 2160

gactggatgg aggcggataa agttgcagga ccacttctgc gctcggccct tccggctggc 2220

tggtttattg ctgataaatc tggagccggt gagcgtgggt ctcgcggtat cattgcagca 2280

ctggggccag atggtaagcc ctcccgtatc gtagttatct acacgacggg gagtcaggca 2340

actatggatg aacgaaatag acagatcgct gagataggtg cctcactgat taagcattgg 2400

taactgtcag accaagttta ctcatatata ctttagattg atttaaaact tcatttttaa 2460

tttaaaagga tctaggtgaa gatccttttt gataatctca tgaccaaaat cccttaacgt 2520

gagttttcgt tccactgagc gtcagacccc gtagaaaaga tcaaaggatc ttcttgagat 2580

ccttttttc tgcgcgtaat ctgctgcttg caaacaaaaa aaccaccgct accagcggtg 2640

gtttgtttgc cggatcaaga gctaccaact ctttttccga aggtaactgg cttcagcaga 2700

gcgcagatac caaatactgt ccttctagtg tagccgtagt taggccacca cttcaagaac 2760

tctgtagcac cgcctacata cctcgctctg ctaatcctgt taccagtggc tgctgccagt 2820

ggcgataagt cgtgtcttac cgggttggac tcaagacgat agttaccgga taaggcgcag 2880

cggtcgggct gaacgggggg ttcgtgcaca cagcccagct tggagcgaac gacctacacc 2940

gaactgagat acctacagcg tgagctatga gaaagcgcca cgcttcccga agggagaaag 3000

gcggacaggt atccggtaag cggcagggtc ggaacaggag agcgcacgag ggagcttcca 3060

gggggaaacg cctggtatct ttatagtcct gtcgggtttc gccacctctg acttgagcgt 3120

cgatttttgt gatgctcgtc agggggggcgg agcctatgga aaaacgccag caacgcggcc 3180

tttttacggt tcctggcctt ttgctggcct tttgctcaca tgttctttcc tgcgttatcc 3240

cctgattctg tggataaccg tattaccgcc tttgagtgag ctgataccgc tcgccgcagc 3300

cgaacgaccg agcgcagcga gtcagtgagc gaggaagcgg aagagcgccc aatacgcaaa 3360

ccgcctctcc ccgcgcgttg gccgattcat taatgcagct ggatcttcga gcgtcccaaa 3420

accttctcaa gcaaggtttt cagtataatg ttacatgcgt acacgcgtct gtacagaaaa 3480

aaaagaaaaa tttgaaatat aaataacgtt cttaatacta acataactat aaaaaaataa 3540

atagggacct agacttcagg ttgtctaact ccttcctttt cggttagagc ggatcttagc 3600

tagctcaaac gaccatagga tgaacgaaga aggacttcat ataagatttc atgtcaccct 3660

cagcatgagt aaaaccatca ttaacagagt acaagacctc acacattcta gctaagttta 3720

ttgctggcat taacaaaggg aagggaacgg ctgttggacg caaagattct ctattgatta 3780

ctttccaggc atcctcaact ttcctactaa tatattcaca tgcttcctct tcagaagcac 3840

ctgattcttt agagtaacat tctatagatg aagccacatg tcctctttct tgttcttcct 3900

tgtgagatac aatatcgtcc attaatctta ctattacaca ggaagcttta ataataggtg 3960

ggtaactaga aacccatttg aatgtgtctt cagtaacaat gtctcctctg ccaacatagg 4020

accttgcaat catcaaacca taagtaccag taaccataga aacagacatg tattcttcta 4080

aagtaggcat ataaccttcc ttcaaccatc ttgcttctac taagtaatta cgaactaatt 4140

ctttagccat ctccttaacg taatgaatct gataggtctt tccctccttt tccaaagatt 4200

cttccatttc cacatgcaaa ttgactaatt cttggtagat taatttcata tattcgggca 4260

acatatctaa gcatgagata gaccatctct cgacggcttg agtaaaaatc tccaattctt 4320

cgtatgttcc ataattatca aaagtatcgt ccaaaactac taaccacatg catgttttca 4380

tcaaaaacat tcttgttcta gcgtgttgtg gctcatagta tatggacaat atccagaagt 4440

agccttcgac aacacgatca cgtacataag gtaacttatt ttgtaaatct aaatctttcc 4500

accacttaca gatatgtgac aattcctttt tatgcataga ctgcaaaaca ctgaaatcca 4560

acttggctaa tttcaacaat acttcatcat gagatgtttc ctgttggtag attggcatgt 4620

aatgtaatgc ttcaatcctt gctaatctcc ttcttaaagg ttgttttaag gcttgatgga 4680

tttgtgtacg caatgaagaa tcgcaagatg ggtcttttgc tatgatatct aaatgaactt 4740

ttgtgaattc caaagcattg tctaagatgg tttcatcttc aaccctcata aatgcagctt 4800

catataaggc taatattcct tgtgcatcat tgcataaaga ctctttgaat ttacctttt 4860

cgtccataaa gtctttgaaa acgccagagg agacgttaaa gccctgttga cgcaacaacc 4920

tgaaccacaa tgaaatactc tgtaaatttt ccttatccac ccactgttca ccataggtaa 4980

catgtatatg ttgcaaagct tcctcgatct cttcttcaaa atggtaagct atacctaaac 5040

gttgaacagc atcaattaat tcaatcaatt tcacatgctg catgggctca tttgaacctt 5100

tgatagttat caattccttc ttaacttcct cttttaattc ctccactaat tgtttcttca 5160

taactaaatc ttcaggctca tcataggtca agaattgatc tccccaaata gaagcattga 5220
aattcattgt atgtctgata acgtcgggct tggttgagac tttgtcgtcc acgactaatg 5280
gtgatgtaga agaggaaaat gacacagaag aaataggcaa agttgacatg gatccggggt 5340
tttttctcct tgacgttaaa gtatagaggt atattaacaa ttttttgttg atacttttat 5400
tacatttgaa taagaagtaa tacaaaccga aaatgttgaa agtattagtt aaagtggtta 5460
tgcagttttt gcatttatat atctgttaat agatcaaaaa tcatcgcttc gctgattaat 5520
taccccagaa ataaggctaa aaaactaatc gcattatcat cctatggttg ttaatttgat 5580
tcgttcattt gaaggtttgt ggggccaggt tactgccaat ttttcctctt cataaccata 5640
aaagctagta ttgtagaatc tttattgttc ggagcagtgc ggcgcgaggc acatctgcgt 5700
ttcaggaacg cgaccggtga agacgaggac gcacggagga gagtcttcct tcggagggct 5760
gtcacccgct cggcggcttc taatccgtac ttcaatatag caatgagcag ttaagcgtat 5820
tactgaaagt tccaaagaga aggttttttt aggctaagat aatggggctc tttacatttc 5880
cacaacatat aagtaagatt agatatggat atgtatatgg atatgtatat ggtggtaatg 5940
ccatgtaata tgattattaa acttctttgc gtccatccaa aaaaaaagta agaatttttg 6000
aaaattcgaa ttcatggaaa actttccaac cgagtacttc ttgaacacca ccgtcaggtt 6060
gttggagtac attaggtaca gggactcaaa ctataccagg gaggagagga ttgagaactt 6120
acactacgcc tacaacaaag ccgcccacca cttcgcccag ccaagacagc agcagttgtt 6180
gaaggtcgac cctaagagat tgcaagcttc attgcagacc attgtcggta tggttgtata 6240
ttcatgggcc aaggtatcta aagagtgtat ggcagacttg tcaatccact atacctacac 6300
cttggtattg gacgattcaa aagacgaccc ataccctact atggtaaact acttcgatga 6360
cttacaagca ggtagagaac aggctcatcc ttggtgggct ttagtaaacg agcactttcc 6420
aaacgtattg aggcattttg gtccttttg ctcattgaac ttgatcaggt ctaccttaga 6480
cttcttcgag ggttgctgga tagaacaata caattttgga ggattcccag gttctcacga 6540
ctacccacag ttcttgagaa gaatgaacgg tttaggacac tgcgtcggtg cctctttgtg 6600
gccaaaggag cagttcaatg aaagatcatt gtttttggag atcacttcag ccatagctca 6660
aatggaaaat tggatggtct gggttaatga tttgatgtca ttttacaagg agttcgacga 6720
cgagagggat cagatctctt tggtaaagaa ctacgttgtt tctgacgaga tatcattaca 6780
cgaggcctta gaaaaattga cccaggatac cttgcactct tcaaagcaaa tggttgcagt 6840
tttctcagac aaggaccctc aagtaatgga caccatagag tgcttcatgc atggttatgt 6900
cacatggcat ttatgcgaca ggaggtacag gttgtctgaa atctacgaga aagtcaagga 6960
ggaaaagact gaggatgccc aaaaattttg caagttctac gagcaagctg ccaatgtagg 7020
agccgtttca ccttctgagt gggcctatcc accagtcgcc cagttagcta acgtaagatc 7080
aaaggacgtc aaagaggtcc agaaaccatt tttatcatct atagaattag ttgaataagc 7140
gaatttctta tgatttatga tttttattat taaataagtt ataaaaaaaa taagtgtata 7200

caaattttaa agtgactctt aggttttaaa acgaaaattc ttattcttga gtaactcttt 7260
cctgtaggtc aggttgcttt ctcaggtata gcatgaggtc gctccaattc agctggcgta 7320
atagcgaaga ggcccgcacc gatcgccctt cccaacagtt gcgcagcctg aatggcgaat 7380
ggcgcgacgc gccctgtagc ggcgcattaa gcgcggcggg tgtggtggtt acgcgcagcg 7440
tgaccgctac acttgccagc gccctagcgc ccgctccttt cgctttcttc ccttcctttc 7500
tcgccacgtt cgccggcttt ccccgtcaag ctctaaatcg ggggctccct ttagggttcc 7560
gatttagtgc tttacggcac ctcgacccca aaaaacttga ttagggtgat ggttcacgta 7620
gtgggccatc gccctgatag acggtttttc gccctttgac gttggagtcc acgttcttta 7680
atagtggact cttgttccaa actggaacaa cactcaaccc tatctcggtc tattcttttg 7740
atttataagg gattttgccg atttcggcct attggttaaa aaatgagctg atttaacaaa 7800
aatttaacgc gaattttaac aaaatattaa cgtttacaat ttcctgatgc ggtattttct 7860
ccttacgcat ctgtgcggta tttcacaccg catatcgacg gtcgaggaga acttctagta 7920
tatccacata cctaatatta ttgccttatt aaaaatggaa tcccaacaat tacatcaaaa 7980
tccacattct cttcaaaatc aattgtcctg tacttccttg ttcatgtgtg ttcaaaaacg 8040
ttatatttat aggataatta tactctattt ctcaacaagt aattggttgt ttggccgagc 8100
ggtctaaggc gccttttttt atatatattt caaggatata ccattgtaat gtctgcccct 8160
aagaagatcg tcgttttgcc aggtgaccac gttggtcaag aaatcacagc cgaagccatt 8220
aaggttctta aagctatttc tgatgttcgt tccaatgtca agttcgattt cgaaaatcat 8280
ttaattggtg gtgctgctat cgatgctaca ggtgttccac ttccagatga ggcgctggaa 8340
gcctccaaga aggttgatgc cgttttgtta ggtgctgtgg ctggtcctaa atggggtacc 8400
ggtagtgtta gacctgaaca aggtttacta aaaatccgta aagaacttca attgtacgcc 8460
aacttaagac catgtaactt tgcatccgac tctcttttag acttatctcc aatcaagcca 8520
caatttgcta aaggtactga cttcgttgtt gtcagagaat tagtgggagg tatttacttt 8580
ggtaagagaa aggaagacga tggtgatggt gtcgcttggg atagtgaaca atacaccgtt 8640
ccagaagtgc aaagaatcac aagaatggcc gctttcatgg ccctacaaca tgagccacca 8700
ttgcctattt ggtccttgga taaagctaat cttttggcct cttcaagatt atggagaaaa 8760
actgtggagg aaaccatcaa gaacgaattc cctacattga aggttcaaca tcaattgatt 8820
gattctgccg ccatgatcct agttaagaac ccaacccacc taaatggtat tataatcacc 8880
agcaacatgt ttggtgatat catctccgat gaagcctccg ttatcccagg ttccttgggt 8940
ttgttgccat ctgcgtcctt ggcctctttg ccagacaaga acaccgcatt tggtttgtac 9000
gaaccatgcc acggttctgc tccagatttg ccaaagaata aggttgaccc tatcgccact 9060
atcttgtctg ctgcaatgat gttgaaattg tcattgaact tgcctgaaga aggtaaggcc 9120
attgaagatg cagttaaaaa ggttttggat gcaggtatca gaactggtga tttaggtggt 9180
tccaacagta ccaccgaagt cggtgatgct gtcgccgaag aagttaagaa aatccttgct 9240

taaaaagatt ctctttttt atgatatttg tacataaact ttataaatga aattcataat 9300

agaaacgaca cgaaattaca aaatggaata tgttcatagg gtagacgaaa ctatatacgc 9360

aatctacata catttatcaa gaaggagaaa aaggaggata gtaaaggaat acaggtaagc 9420

aaattgatac taatggctca acgtgataag gaaaaagaat tgcactttaa cattaatatt 9480

gacaaggagg agggcaccac acaaaaagtt aggtgtaaca gaaaatcatg aaactacgat 9540

tcctaatttg atattggagg attttctcta aaaaaaaaaa aatacaacaa ataaaaaaca 9600

ctcaatgacc tgaccatttg atggagttta agtcaatacc ttcttgaagc atttcccata 9660

atggtgaaag ttccctcaag aattttactc tgtcagaaac ggccttacga cgtagtcgat 9720

atggtgcact ctcagtacaa tctgctctga tgccgcatag ttaagccagc cccgacaccc 9780

gccaacaccc gctgacgcgc cctgacgggc ttgtctgctc ccggcatccg cttacagaca 9840

agctgtgacc gtctccggga gctgcatgtg tcagaggttt tcaccgtcat caccgaaacg 9900

cgcga 9905

<210> 73
<211> 2307
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, FS_Ad_Sc coding sequence

<400> 73
atggaacctc tgctattctc aatccaaaca ctagtgcatc aagtgaaaca ggaaattttc 60

tcatctactt ttgatttgta tagctttgta agcccatctg cctatgatac agcatggtta 120

gccatgattc cccatccaaa acaaaactct tgccctaaat ttaaaggctg tttggattgg 180

atcttagata accaaaagga agcaggatac tggggtgaat gtgatcacga tggattacca 240

actatagata gcctgcccgc aactctagcc tgtatggtag ctttgaagac gtggggtgtg 300

tcagagaagc atataaataa aggacttgct tttattcacg caaactcaac cacattgttg 360

aaagaaaaat acgaccattt gccaaggtgg tttgtcatag tttttcccgc gatggtcgaa 420

gtcgctcaag ccgccggcct aaaagttttg tttagtaacg gattagaaga ggtggttctt 480

aatatttctc tggaaagaga aaaaatacta gaaagagaag agttcgtcga taaatatcat 540

tacccacctc ttgcatctta tttagaagcc ctgcctccaa gttataccat agacagaaag 600

gatataacta tgaacctatc aggcgatggc tcctgctttc agtccccgtc agctactgct 660

tgcgcctttt tggcaaccgg aaatcaaaaa tgcatggctt acctggaatc tttggtacag 720

aagagacccg gtggtgtgcc gaccatgtat ccgatggatg gagaattggt gagcctttgc 780

ttagtaaatc aaattcaaag attgggttta gcggagcatt tcacagaaga aattgaggag 840

aatttaaaat tgatatatga aaattataag aaccaagaat cacgtgaaat gaaagattca 900

tatttggtgc caactaagat ttataaggat agtttagcct tcagattgct acgtatgcac 960

ggttataatg ttacgcccag acgtttctgt tggtttttat accaagaaga tatacgtgtc 1020

cacatagaga aaaattacga gtgttttaca tcagcgctgt acaatgtcta ccgtgccaca 1080

gacttaatgt tttctggtga atatgaattg gaagaagcca gggtcttctc taggaaattg 1140

ctggagaaat caatgaaatt gaagtcttta aacgataatt tggttaattt tccatctttc 1200

aggtcagtta ttgatcatga gttgtctgtg ccttggatcg cccgtttgga gcatcttgat 1260

catagaatgt ggattgaaga aaataaggtg gatacacttt ggatcggtaa agcctctttt 1320

tatcgtctgc gtgcgcttaa cgataagtta atgacattag ctgtggagtc atataagttt 1380

agacaatctt tttatagaaa cgaacttgaa gaattgaaaa gatggagtaa ggactggggt 1440

ttgacagatt taggattcgg tagaaaaaaa acgacatatt gttattatgc aattgctgct 1500

tcctctagtt taccacacaa ttctatggtc agattgattg tggcaaaatc cgcattactt 1560

gtgaccattg cagatgattt ctttgatatg gaagggtccc tagaggattt acaaagtttg 1620

acacaggctg tacaaagatg ggatggcaac agtttgtccg gtcacggtaa aataatattc 1680

tgcgcattag acaacttggt tagtgatatc gccaaacccc atttacacct agaagggtca 1740

catgtagccg agaatgtcaa aaacatgtgg tctgaaacta tcgccagctg gttgactgag 1800

actacctgga gtcacacagg ttacgtccct agtctggatg aatacctaca gacaggtaag 1860

atttctgttg cttctcagtt gatgaccgtc ccagctttat gtttttatc tccaaacgtt 1920

caccctatct gtaagcttga agctaatcac tatcaaatta taactaagtt gttgatggtc 1980

tctacaagat tgcttaacga tactcaaaca tacgaaaagg agttaaaaga cggtaaaaga 2040

aattttgtta tccttcattc taaggggtca ccacagacag gaatcgagaa atcagttgct 2100

tttgttaagg aaattttgga tcaaatagaa aaagagttct tagaacatac tttgatggac 2160

ggtcataacg atctacctaa gccttgtaag catttacatt tgtctatatt aagagcattt 2220

cacatgttct ataactcagg agacttattc gatagcgata caggattgct tcatgatatc 2280

aataaggcgt tttatgtccc cttgtaa 2307

<210> 74
<211> 8671
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Expression plasmid pAM1764

<400> 74
tcgcgcgttt cggtgatgac ggtgaaaacc tctgacacat gcagctcccg gagacggtca 60

cagcttgtct gtaagcggat gccgggagca gacaagcccg tcagggcgcg tcagcgggtg 120

ttggcgggtg tcggggctgg cttaactatg cggcatcaga gcagattgta ctgagagtgc 180

accatatcga ctacgtcgta aggccgtttc tgacagagta aaattcttga gggaactttc 240

accattatgg gaaatggttc aagaaggtat tgacttaaac tccatcaaat ggtcaggtca 300

ttgagtgttt tttatttgtt gtatttttt ttttttagag aaaatcctcc aatatcaaat 360

taggaatcgt agtttcatga ttttctgtta cacctaactt tttgtgtggt gccctcctcc 420

ttgtcaatat taatgttaaa gtgcaattct ttttccttat cacgttgagc cattagtatc 480
aatttgctta cctgtattcc tttactatcc tccttttttct ccttcttgat aaatgtatgt 540
agattgcgta tatagtttcg tctaccctat gaacatattc cattttgtaa tttcgtgtcg 600
tttctattat gaatttcatt tataaagttt atgtacaaat atcataaaaa aagagaatct 660
ttttaagcaa ggattttctt aacttcttcg gcgacagcat caccgacttc ggtggtactg 720
ttggaaccac ctaaatcacc agttctgata cctgcatcca aaacctttttt aactgcatct 780
tcaatggcct taccttcttc aggcaagttc aatgacaatt tcaacatcat tgcagcagac 840
aagatagtgg cgatagggtc aaccttattc tttggcaaat ctggagcaga accgtggcat 900
ggttcgtaca aaccaaatgc ggtgttcttg tctggcaaag aggccaagga cgcagatggc 960
aacaaaccca aggaacctgg gataacggag gcttcatcgg agatgatatc accaaacatg 1020
ttgctggtga ttataatacc atttaggtgg gttgggttct taactaggat catggcggca 1080
gaatcaatca attgatgttg aaccttcaat gtagggaatt cgttcttgat ggtttcctcc 1140
acagtttttc tccataatct tgaagaggcc aaaacattag ctttatccaa ggaccaaata 1200
ggcaatggtg gctcatgttg tagggccatg aaagcggcca ttcttgtgat tctttgcact 1260
tctggaacgg tgtattgttc actatcccaa gcgacaccat caccatcgtc ttcctttctc 1320
ttaccaaagt aaatacctcc cactaattct ctgacaacaa cgaagtcagt acctttagca 1380
aattgtggct tgattggaga taagtctaaa agagagtcgg atgcaaagtt acatggtctt 1440
aagttggcgt acaattgaag ttctttacgg atttttagta aaccttgttc aggtctaaca 1500
ctaccggtac cccatttagg accacccaca gcacctaaca aaacggcatc aaccttcttg 1560
gaggcttcca gcgcctcatc tggaagtggg acacctgtag catcgatagc agcaccacca 1620
attaaatgat tttcgaaatc gaacttgaca ttggaacgaa catcagaaat agctttaaga 1680
accttaatgg cttcggctgt gatttcttga ccaacgtggt cacctggcaa aacgacgatc 1740
ttcttagggg cagacatagg ggcagacatt agaatggtat atccttgaaa tatatatata 1800
tattgctgaa atgtaaaagg taagaaaagt tagaaagtaa gacgattgct aaccacctat 1860
tggaaaaaac aataggtcct taaataatat tgtcaacttc aagtattgtg atgcaagcat 1920
ttagtcatga acgcttctct attctatatg aaaagccggt tccggcctct caccttttcct 1980
ttttctccca atttttcagt tgaaaaaggt atatgcgtca ggcgacctct gaaattaaca 2040
aaaaatttcc agtcatcgaa tttgattctg tgcgatagcg cccctgtgtg ttctcgttat 2100
gttgaggaaa aaaataatgg ttgctaagag attcgaactc ttgcatctta cgatacctga 2160
gtattcccac agttaactgc ggtcaagata tttcttgaat caggcgcctt agaccgctcg 2220
gccaaacaac caattacttg ttgagaaata gagtataatt atcctataaa tataacgttt 2280
ttgaacacac atgaacaagg aagtacagga caattgattt tgaagagaat gtggattttg 2340
atgtaattgt tgggattcca tttttaataa ggcaataata ttaggtatgt ggatatacta 2400
gaagttctcc tcgaccgtcg atatgcggtg tgaaataccg cacagatgcg taaggagaaa 2460

ataccgcatc aggaaattgt aaacgttaat attttgttaa aattcgcgtt aaatttttgt 2520

taaatcagct catttttaa ccaataggcc gaaatcggca aaatccctta taaatcaaaa 2580

gaatagaccg agatagggtt gagtgttgtt ccagtttgga acaagagtcc actattaaag 2640

aacgtggact ccaacgtcaa agggcgaaaa accgtctatc agggcgatgg cccactacgt 2700

gaaccatcac cctaatcaag ttttttgggg tcgaggtgcc gtaaagcact aaatcggaac 2760

cctaaaggga gcccccgatt tagagcttga cggggaaagc cggcgaacgt ggcgagaaag 2820

gaagggaaga aagcgaaagg agcgggcgct agggcgctgg caagtgtagc ggtcacgctg 2880

cgcgtaacca ccacacccgc cgcgcttaat gcgccgctac agggcgcgtc gcgccattcg 2940

ccattcaggc tgcgcaactg ttgggaaggg cgatcggtgc gggcctcttc gctattacgc 3000

cagctggcga aaggggatg tgctgcaagg cgattaagtt gggtaacgcc agggttttcc 3060

cagtcacgac gttgtaaaac gacggccagt gagcgcgcgt aatacgactc actatagggc 3120

gaattgggta ccgggccccc cctcgaggtc gacggtatcg ataagctcta gagcggccgc 3180

cctttagtga gggttgaatt cgaattttca aaaattctta ctttttttt ggatggacgc 3240

aaagaagttt aataatcata ttacatggca ttaccaccat atacatatcc atatacatat 3300

ccatatctaa tcttacttat atgttgtgga aatgtaaaga gccccattat cttagcctaa 3360

aaaaaccttc tctttggaac tttcagtaat acgcttaact gctcattgct atattgaagt 3420

acggattaga agccgccgag cgggtgacag ccctccgaag gaagactctc ctccgtgcgt 3480

cctcgtcttc accggtcgcg ttcctgaaac gcagatgtgc ctcgcgccgc actgctccga 3540

acaataaaga ttctacaata ctagctttta tggttatgaa gaggaaaaat tggcagtaac 3600

ctggccccac aaaccttcaa atgaacgaat caaattaaca accataggat gataatgcga 3660

ttagtttttt agccttattt ctggggtaat taatcagcga agcgatgatt tttgatctat 3720

taacagatat ataaatgcaa aaactgcata accactttaa ctaatacttt caacattttc 3780

ggtttgtatt acttcttatt caaatgtaat aaaagtatca acaaaaaatt gttaatatac 3840

ctctatactt taacgtcaag gagaaaaaac cccggatcca tggatacttt gcctatttct 3900

tctgtgtcat tttcctcttc tacatcacca ttagtcgtgg acgacaaagt ctcaaccaag 3960

cccgacgtta tcagacatac aatgaatttc aatgcttcta tttggggaga tcaattcttg 4020

acctatgatg agcctgaaga tttagttatg aagaaacaat tagtggagga attaaaagag 4080

gaagttaaga aggaattgat aactatcaaa ggttcaaatg agcccatgca gcatgtgaaa 4140

ttgattgaat taattgatgc tgttcaacgt ttaggtatag cttaccattt tgaagaagag 4200

atcgaggaag ctttgcaaca tatacatgtt acctatggtg aacagtgggt ggataaggaa 4260

aatttacaga gtatttcatt gtggttcagg ttgttgcgtc aacagggctt taacgtctcc 4320

tctggcgttt tcaaagactt tatggacgaa aaaggtaaat tcaaagagtc tttatgcaat 4380

gatgcacaag gaatattagc cttatatgaa gctgcattta tgagggttga agatgaaacc 4440

atcttagaca atgctttgga attcacaaaa gttcatttag atatcatagc aaaagaccca 4500

tcttgcgatt cttcattgcg tacacaaatc catcaagcct taaaacaacc tttaagaagg 4560
agattagcaa ggattgaagc attacattac atgccaatct accaacagga aacatctcat 4620
gatgaagtat tgttgaaatt agccaagttg gatttcagtg ttttgcagtc tatgcataaa 4680
aaggaattgt cacatatctg taagtggtgg aaagatttag atttacaaaa taagttacct 4740
tatgtacgtg atcgtgttgt cgaaggctac ttctggatat tgtccatata ctatgagcca 4800
caacacgcta gaacaagaat gtttttgatg aaaacatgca tgtggttagt agttttggac 4860
gatacttttg ataattatgg aacatacgaa gaattggaga tttttactca agccgtcgag 4920
agatggtcta tctcatgctt agatatgttg cccgaatata tgaaattaat ctaccaagaa 4980
ttagtcaatt tgcatgtgga aatggaagaa tctttggaaa aggagggaaa gacctatcag 5040
attcattacg ttaaggagat ggctaaagaa ttagttcgta attacttagt agaagcaaga 5100
tggttgaagg aaggttatat gcctacttta gaagaataca tgtctgtttc tatggttact 5160
ggtacttatg gtttgatgat tgcaaggtcc tatgttggca gaggagacat tgttactgaa 5220
gacacattca aatgggtttc tagttaccca cctattatta aagcttcctg tgtaatagta 5280
agattaatgg acgatattgt atctcacaag gaagaacaag aaagaggaca tgtggcttca 5340
tctatagaat gttactctaa agaatcaggt gcttctgaag aggaagcatg tgaatatatt 5400
agtaggaaag ttgaggatgc ctggaaagta atcaatagag aatctttgcg tccaacagcc 5460
gttcccttcc ctttgttaat gccagcaata aacttagcta gaatgtgtga ggtcttgtac 5520
tctgttaatg atggttttac tcatgctgag ggtgacatga aatcttatat gaagtccttc 5580
ttcgttcatc ctatggtcgt ttgagctagc taagatccgc tctaaccgaa aaggaaggag 5640
ttagacaacc tgaagtctag gtccctattt atttttttat agttatgtta gtattaagaa 5700
cgttatttat atttcaaatt tttctttttt ttctgtacag acgcgtgtac gcatgtaaca 5760
ttatactgaa aaccttgctt gagaaggttt tgggacgctc gaagatccag ctgcattaat 5820
gaatcggcca acgcgcgggg agaggcggtt tgcgtattgg gcgctcttcc gctcggtgga 5880
gctccagctt ttgttccctt tagtgagggt taattgcgcg cttggcgtaa tcatggtcat 5940
agctgtttcc tgtgtgaaat tgttatccgc tcacaattcc acacaacata ggagccggaa 6000
gcataaagtg taaagcctgg ggtgcctaat gagtgaggta actcacatta attgcgttgc 6060
gctcactgcc cgctttccag tcgggaaacc tgtcgtgcca gctgcattaa tgaatcggcc 6120
aacgcgcggg gagaggcggt ttgcgtattg ggcgctcttc cgcttcctcg ctcactgact 6180
cgctgcgctc ggtcgttcgg ctgcggcgag cggtatcagc tcactcaaag gcggtaatac 6240
ggttatccac agaatcaggg gataacgcag gaaagaacat gtgagcaaaa ggccagcaaa 6300
aggccaggaa ccgtaaaaag gccgcgttgc tggcgttttt ccataggctc cgcccccctg 6360
acgagcatca caaaaatcga cgctcaagtc agaggtggcg aaacccgaca ggactataaa 6420
gataccaggc gtttcccccc ggaagctccc tcgtgcgctc tcctgttccg accctgccgc 6480
ttaccggata cctgtccgcc tttctccctt cgggaagcgt ggcgctttct catagctcac 6540

gctgtaggta tctcagttcg gtgtaggtcg ttcgctccaa gctgggctgt gtgcacgaac 6600

cccccgttca gcccgaccgc tgcgccttat ccggtaacta tcgtcttgag tccaacccgg 6660

taagacacga cttatcgcca ctggcagcag ccactggtaa caggattagc agagcgaggt 6720

atgtaggcgg tgctacagag ttcttgaagt ggtggcctaa ctacggctac actagaagga 6780

cagtatttgg tatctgcgct ctgctgaagc cagttacctt cggaaaaaga gttggtagct 6840

cttgatccgg caaacaaacc accgctggta gcggtggttt ttttgtttgc aagcagcaga 6900

ttacgcgcag aaaaaaagga tctcaagaag atcctttgat cttttctacg gggtctgacg 6960

ctcagtggaa cgaaaactca cgttaaggga ttttggtcat gagattatca aaaaggatct 7020

tcacctagat cctttttaaat taaaaatgaa gttttaaatc aatctaaagt atatatgagt 7080

aaacttggtc tgacagttac caatgcttaa tcagtgaggc acctatctca gcgatctgtc 7140

tatttcgttc atccatagtt gcctgactcc ccgtcgtgta gataactacg atacgggagg 7200

gcttaccatc tggccccagt gctgcaatga taccgcgaga cccacgctca ccggctccag 7260

atttatcagc aataaaccag ccagccggaa gggccgagcg cagaagtggt cctgcaactt 7320

tatccgcctc catccagtct attaattgtt gccgggaagc tagagtaagt agttcgccag 7380

ttaatagttt gcgcaacgtt gttgccattg ctacaggcat cgtggtgtca cgctcgtcgt 7440

ttggtatggc ttcattcagc tccggttccc aacgatcaag gcgagttaca tgatccccca 7500

tgttgtgcaa aaaagcggtt agctccttcg gtcctccgat cgttgtcaga agtaagttgg 7560

ccgcagtgtt atcactcatg gttatggcag cactgcataa ttctcttact gtcatgccat 7620

ccgtaagatg cttttctgtg actggtgagt actcaaccaa gtcattctga gaatagtgta 7680

tgcggcgacc gagttgctct tgcccggcgt caatacggga taataccgcg ccacatagca 7740

gaactttaaa agtgctcatc attggaaaac gttcttcggg gcgaaaactc tcaaggatct 7800

taccgctgtt gagatccagt tcgatgtaac ccactcgtgc acccaactga tcttcagcat 7860

cttttacttt caccagcgtt tctgggtgag caaaaacagg aaggcaaaat gccgcaaaaa 7920

agggaataag ggcgacacgg aaatgttgaa tactcatact cttccttttt caatattatt 7980

gaagcattta tcagggttat tgtctcatga gcggatacat atttgaatgt atttagaaaa 8040

ataaacaaat aggggttccg cgcacatttc cccgaaaagt gccacctggg tccttttcat 8100

cacgtgctat aaaaataatt ataatttaaa ttttttaata taaatatata aattaaaaat 8160

agaaagtaaa aaaagaaatt aaagaaaaaa tagtttttgt tttccgaaga tgtaaaagac 8220

tctaggggga tcgccaacaa atactacctt ttatcttgct cttcctgctc tcaggtatta 8280

atgccgaatt gtttcatctt gtctgtgtag aagaccacac acgaaaatcc tgtgatttta 8340

cattttactt atcgttaatc gaatgtatat ctatttaatc tgcttttctt gtctaataaa 8400

tatatatgta aagtacgctt tttgttgaaa ttttttaaac ctttgtttat tttttttct 8460

tcattccgta actcttctac cttctttatt tactttctaa aatccaaata caaaacataa 8520

aaataaataa acacagagta aattcccaaa ttattccatc attaaaagat acgaggcgcg 8580

tgtaagttac aggcaagcga tccgtcctaa gaaaccatta ttatcatgac attaacctat 8640

aaaaataggc gtatcacgag gccctttcgt c 8671

<210> 75
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-90-CPK1621

<400> 75
cttggcacat cctcttccgt agcttcgagc gtcccaaaac cttc 44

<210> 76
<211> 1725
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, FS_S2D_Sc coding sequence

<400> 76
atggatactt tgcctatttc ttctgtgtca ttttcctctt ctacatcacc attagtcgtg 60

gacgacaaag tctcaaccaa gcccgacgtt atcagacata caatgaattt caatgcttct 120

atttggggag atcaattctt gacctatgat gagcctgaag atttagttat gaagaaacaa 180

ttagtggagg aattaaaaga ggaagttaag aaggaattga taactatcaa aggttcaaat 240

gagcccatgc agcatgtgaa attgattgaa ttaattgatg ctgttcaacg tttaggtata 300

gcttaccatt ttgaagaaga gatcgaggaa gctttgcaac atatacatgt tacctatggt 360

gaacagtggg tggataagga aaatttacag agtatttcat tgtggttcag gttgttgcgt 420

caacagggct ttaacgtctc ctctggcgtt ttcaaagact ttatggacga aaaaggtaaa 480

ttcaaagagt ctttatgcaa tgatgcacaa ggaatattag ccttatatga agctgcattt 540

atgagggttg aagatgaaac catcttagac aatgctttgg aattcacaaa agttcattta 600

gatatcatag caaaagaccc atcttgcgat tcttcattgc gtacacaaat ccatcaagcc 660

ttaaaacaac ctttaagaag gagattagca aggattgaag cattacatta catgccaatc 720

taccaacagg aaacatctca tgatgaagta ttgttgaaat tagccaagtt ggatttcagt 780

gttttgcagt ctatgcataa aaaggaattg tcacatatct gtaagtggtg gaaagattta 840

gatttacaaa ataagttacc ttatgtacgt gatcgtgttg tcgaaggcta cttctggata 900

ttgtccatat actatgagcc acaacacgct agaacaagaa tgtttttgat gaaaacatgc 960

atgtggttag tagttttgga cgatactttt gataattatg gaacatacga agaattggag 1020

atttttactc aagccgtcga gagatggtct atctcatgct tagatatgtt gcccgaatat 1080

atgaaattaa tctaccaaga attagtcaat ttgcatgtgg aaatggaaga atctttggaa 1140

aaggagggaa agacctatca gattcattac gttaaggaga tggctaaaga attagttcgt 1200

aattacttag tagaagcaag atggttgaag gaaggttata tgcctacttt agaagaatac 1260

atgtctgttt ctatggttac tggtacttat ggtttgatga ttgcaaggtc ctatgttggc 1320

agaggagaca ttgttactga agacacattc aaatgggttt ctagttaccc acctattatt 1380

aaagcttcct gtgtaatagt aagattaatg gacgatattg tatctcacaa ggaagaacaa 1440

gaaagaggac atgtggcttc atctatagaa tgttactcta aagaatcagg tgcttctgaa 1500

gaggaagcat gtgaatatat tagtaggaaa gttgaggatg cctggaaagt aatcaataga 1560

gaatctttgc gtccaacagc cgttcccttc cctttgttaa tgccagcaat aaacttagct 1620

agaatgtgtg aggtcttgta ctctgttaat gatggtttta ctcatgctga gggtgacatg 1680

aaatcttata tgaagtcctt cttcgttcat cctatggtcg tttga 1725

<210> 77
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer PW-091-144-CPK640

<400> 77
gtttaaactg cgaaaagaaa cgtggataa 29

<210> 78
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-90-CPK1615

<400> 78
aagttccctc aagaatttta ctgacaggcc tcgagatatt tgag 44

<210> 79
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-90-CPK1620

<400> 79
gaaggttttg ggacgctcga agctacggaa gaggatgtgc caag 44

<210> 80
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer PW-091-144-CPK649

<400> 80
gtttaaaccg tttaagtgtc actgtgct 28

<210> 81
<211> 41

<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-90-CPK1616

<400> 81
actagaagtt ctcctcgacc gttttcaaaa attcttactt t 41

<210> 82
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-90-CPK1638

<400> 82
gtatagaggt atattaacaa 20

<210> 83
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-90-CPK1618

<400> 83
ttgttaatat acctctatac tttaacgtca aggagaaaaa accccggatc c 51

<210> 84
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-90-CPK1619

<400> 84
aggttgtctg actccttcct tttcggttag agcggatctt agctagc 47

<210> 85
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-90-CPK1639

<400> 85
gaaaaggaag gagtcagaca 20

<210> 86
<211> 6365
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Construct A

<400> 86
ctgcgaaaag aaacgtggat aagtattata gaaacagcac ttcttcggcc aacaatatca 60

cgcaaattga gcaagatagt gctataaaag gtcttttgcc ctttttgcc tattatgcaa 120

gcattgcttt actagtgtgg atgcaaccaa gctttattac actctctttc atcctttccg 180

ttggtttcac gggagcattt accgtcggaa gaataatcgt ttgccattta actaagcaga 240

gctttcccat gttcaatgca cccatgttaa ttcctttgtg ccagatagta ttgtacaaaa 300

tatgtctatc cctttgggga attgagtcta ataaaatcgt ctttgcccta tcttggcttg 360

ggttcggtct ctcactaggt gttcacatta tgtttatgaa tgacattatc catgaattta 420

ctgagtacct ggacgtttat gctttatcca tcaagcgctc caagctgaca taaatcgcac 480

tttgtatcta ctttttttta ttcgaaaaca aggcacaaca atgaatctat cgccctgtga 540

gattttcaat ctcaagtttg tgtaatagat agcgttatat tatagaacta taaaggtcct 600

tgaatataca tagtgtttca ttcctattac tgtatatgtg actttacatt gttacttccg 660

cggctatttg acgttttctg cttcaggtgc ggcttggagg gcaaagtgtc agaaaatcgg 720

ccaggccgta tgacacaaaa gagtagaaaa cgagatctca aatatctcga ggcctgtcag 780

taaaattctt gagggaactt tcaccattat gggaaatggt tcaagaaggt attgacttaa 840

actccatcaa atggtcaggt cattgagtgt tttttatttg ttgtattttt tttttttag 900

agaaaatcct ccaatatcaa attaggaatc gtagtttcat gattttctgt tacacctaac 960

tttttgtgtg gtgccctcct ccttgtcaat attaatgtta aagtgcaatt ctttttcctt 1020

atcacgttga gccattagta tcaatttgct tacctgtatt cctttactat cctccttttt 1080

ctccttcttg ataaatgtat gtagattgcg tatatagttt cgtctaccct atgaacatat 1140

tccattttgt aatttcgtgt cgtttctatt atgaatttca tttataaagt ttatgtacaa 1200

atatcataaa aaaagagaat ctttttaagc aaggattttc ttaacttctt cggcgacagc 1260

atcaccgact tcggtggtac tgttggaacc acctaaatca ccagttctga tacctgcatc 1320

caaaaccttt ttaactgcat cttcaatggc cttaccttct tcaggcaagt tcaatgacaa 1380

tttcaacatc attgcagcag acaagatagt ggcgataggg tcaaccttat tctttggcaa 1440

atctggagca gaaccgtggc atggttcgta caaaccaaat gcggtgttct tgtctggcaa 1500

agaggccaag gacgcagatg gcaacaaacc caaggaacct gggataacgg aggcttcatc 1560

ggagatgata tcaccaaaca tgttgctggt gattataata ccatttaggt gggttgggtt 1620

cttaactagg atcatggcgg cagaatcaat caattgatgt tgaaccttca atgtagggaa 1680

ttcgttcttg atggtttcct ccacagtttt tctccataat cttgaagagg ccaaaacatt 1740

agctttatcc aaggaccaaa taggcaatgg tggctcatgt tgtagggcca tgaaagcggc 1800

cattcttgtg attctttgca cttctggaac ggtgtattgt tcactatccc aagcgacacc 1860

atcaccatcg tcttcctttc tcttaccaaa gtaaatacct cccactaatt ctctgacaac 1920

aacgaagtca gtacctttag caaattgtgg cttgattgga gataagtcta aaagagagtc 1980

ggatgcaaag ttacatggtc ttaagttggc gtacaattga agttctttac ggatttttag 2040

taaaccttgt tcaggtctaa cactaccggt accccattta ggaccaccca cagcacctaa 2100

caaaacggca tcaaccttct tggaggcttc cagcgcctca tctggaagtg ggacacctgt 2160
agcatcgata gcagcaccac caattaaatg attttcgaaa tcgaacttga cattggaacg 2220
aacatcagaa atagctttaa gaaccttaat ggcttcggct gtgatttctt gaccaacgtg 2280
gtcacctggc aaaacgacga tcttcttagg ggcagacata ggggcagaca ttagaatggt 2340
atatccttga aatatatata tatattgctg aaatgtaaaa ggtaagaaaa gttagaaagt 2400
aagacgattg ctaaccacct attggaaaaa acaataggtc cttaaataat attgtcaact 2460
tcaagtattg tgatgcaagc atttagtcat gaacgcttct ctattctata tgaaaagccg 2520
gttccggcct ctcacctttc ctttttctcc caatttttca gttgaaaaag gtatatgcgt 2580
caggcgacct ctgaaattaa caaaaaattt ccagtcatcg aatttgattc tgtgcgatag 2640
cgcccctgtg tgttctcgtt atgttgagga aaaaaataat ggttgctaag agattcgaac 2700
tcttgcatct tacgatacct gagtattccc acagttaact gcggtcaaga tatttcttga 2760
atcaggcgcc ttagaccgct cggccaaaca accaattact tgttgagaaa tagagtataa 2820
ttatcctata aatataacgt ttttgaacac acatgaacaa ggaagtacag gacaattgat 2880
tttgaagaga atgtggattt tgatgtaatt gttgggattc catttttaat aaggcaataa 2940
tattaggtat gtggatatac tagaagttct cctcgaccgt tttcaaaaat tcttactttt 3000
tttttggatg gacgcaaaga agtttaataa tcatattaca tggcattacc accatataca 3060
tatccatata catatccata tctaatctta cttatatgtt gtggaaatgt aaagagcccc 3120
attatcttag cctaaaaaaa ccttctcttt ggaactttca gtaatacgct taactgctca 3180
ttgctatatt gaagtacgga ttagaagccg ccgagcgggt gacagccctc cgaaggaaga 3240
ctctcctccg tgcgtcctcg tcttcaccgg tcgcgttcct gaaacgcaga tgtgcctcgc 3300
gccgcactgc tccgaacaat aaagattcta caatactagc ttttatggtt atgaagagga 3360
aaaattggca gtaacctggc cccacaaacc ttcaaatgaa cgaatcaaat taacaaccat 3420
aggatgataa tgcgattagt tttttagcct tatttctggg gtaattaatc agcgaagcga 3480
tgatttttga tctattaaca gatatataaa tgcaaaaact gcataaccac tttaactaat 3540
actttcaaca ttttcggttt gtattacttc ttattcaaat gtaataaaag tatcaacaaa 3600
aaattgttaa tatacctcta tactttaacg tcaaggagaa aaaaccccgg atccatgtca 3660
actttgccta tttcttctgt gtcattttcc tcttctacat caccattagt cgtggacgac 3720
aaagtctcaa ccaagcccga cgttatcaga catacaatga atttcaatgc ttctatttgg 3780
ggagatcaat tcttgaccta tgatgagcct gaagatttag ttatgaagaa acaattagtg 3840
gaggaattaa aagaggaagt taagaaggaa ttgataacta tcaaaggttc aaatgagccc 3900
atgcagcatg tgaaattgat tgaattaatt gatgctgttc aacgtttagg tatagcttac 3960
cattttgaag aagagatcga ggaagctttg caacatatac atgttaccta tggtgaacag 4020
tgggtggata aggaaaattt acagagtatt tcattgtggt tcaggttgtt gcgtcaacag 4080
ggctttaacg tctcctctgg cgttttcaaa gactttatgg acgaaaaagg taaattcaaa 4140

gagtctttat gcaatgatgc acaaggaata ttagccttat atgaagctgc atttatgagg 4200

gttgaagatg aaaccatctt agacaatgct ttggaattca caaaagttca tttagatatc 4260

atagcaaaag acccatcttg cgattcttca ttgcgtacac aaatccatca agccttaaaa 4320

caacctttaa gaaggagatt agcaaggatt gaagcattac attacatgcc aatctaccaa 4380

caggaaacat ctcatgatga agtattgttg aaattagcca agttggattt cagtgttttg 4440

cagtctatgc ataaaaagga attgtcacat atctgtaagt ggtggaaaga tttagattta 4500

caaaataagt taccttatgt acgtgatcgt gttgtcgaag gctacttctg gatattgtcc 4560

atatactatg agccacaaca cgctagaaca agaatgtttt tgatgaaaac atgcatgtgg 4620

ttagtagttt tggacgatac ttttgataat tatggaacat acgaagaatt ggagattttt 4680

actcaagccg tcgagagatg gtctatctca tgcttagata tgttgcccga atatatgaaa 4740

ttaatctacc aagaattagt caatttgcat gtggaaatgg aagaatcttt ggaaaaggag 4800

ggaaagacct atcagattca ttacgttaag gagatggcta aagaattagt tcgtaattac 4860

ttagtagaag caagatggtt gaaggaaggt tatatgccta ctttagaaga atacatgtct 4920

gtttctatgg ttactggtac ttatggtttg atgattgcaa ggtcctatgt tggcagagga 4980

gacattgtta ctgaagacac attcaaatgg gtttctagtt acccacctat tattaaagct 5040

tcctgtgtaa tagtaagatt aatggacgat attgtatctc acaaggaaga acaagaaaga 5100

ggacatgtgg cttcatctat agaatgttac tctaaagaat caggtgcttc tgaagaggaa 5160

gcatgtgaat atattagtag gaaagttgag gatgcctgga aagtaatcaa tagagaatct 5220

ttgcgtccaa cagccgttcc cttccctttg ttaatgccag caataaactt agctagaatg 5280

tgtgaggtct tgtactctgt taatgatggt tttactcatg ctgagggtga catgaaatct 5340

tatatgaagt ccttcttcgt tcatcctatg gtcgtttgag ctagctaaga tccgctctaa 5400

ccgaaaagga aggagtcaga caacctgaag tctaggtccc tatttatttt tttatagtta 5460

tgttagtatt aagaacgtta tttatatttc aaatttttct ttttttctg tacagacgcg 5520

tgtacgcatg taacattata ctgaaaacct tgcttgagaa ggttttggga cgctcgaagc 5580

tacggaagag gatgtgccaa ggacattttc aagaatatta gaaacaggtt cgtttcaaaa 5640

ttattatcaa aaaatggatg cagaaaatgc agatagggta tattcgaaag gggtcaagtt 5700

gattgcaagc ggtactctac catctggtat atttaatagg gaagaattgt ttgaggaaga 5760

tagtttctat aagtattaaa taaactaatg attttaaatc gttaaaaaaa tatgcgaatt 5820

ctgtggatcg aacacaggac ctccagataa cttgaccgaa gtttttttctt cagtctggcg 5880

ctctcccaac tgagctaaat ccgcttacta tttgttatca gttcccttca tatctacata 5940

gaataggtta agtattttat tagttgccag aagaactact gatagttggg aatatttggt 6000

gaataatgaa gattgggtga ataatttgat aattttgaga ttcaattgtt aatcaatgtt 6060

acaatattat gtatacagag tatactagaa gttctcttcg gagatcttga agttcacaaa 6120

agggaatcga tatttctaca taatattatc attacttctt ccccatctta tatttgtcat 6180

tcattattga ttatgatcaa tgcaataatg attggtagtt gccaaacatt taatacgatc 6240

ctctgtaata tttctatgaa taattatcac agcaacgttc aattatcttc aattcggctt 6300

cagtactgta tgaaatactc gctaacattt tctttattct ataatagcac agtgacactt 6360

aaacg 6365

<210> 87
<211> 5251
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i8

<400> 87
ttgcctatgc tttgtttgct ttgaacactt gtttccgctc tccttttact tattggctac 60

taaaactacg tgtaaaagat cgcccagcgc aaaaaggtcc ggcggtttca aataatctcg 120

aactattcct ataatatgca aaatagtagg taggaacaag tcgactctag gcagataagg 180

aagatgtccg gtaaatggag actagtgctg accgggatag gcaatccaga gcctcagtac 240

gctggtaccc gtcacaatgt agggctatat atgctggagc tgctacgaaa gcggcttggt 300

ctgcagggga gaacttattc ccctgtgcct aatacgggcg gcaaagtgca ttatatagaa 360

gacgaacatt gtacgatact aagatcggat ggccagtaca tgaatctaag tggagaacag 420

gtgtgcaagg tctgggcccg gtacgccaag taccaagccc gacacgtagt tattcatgac 480

gagttaagtg tggcgtgtgg aaaagtgcag ctcagagccc ccagcaccag tattagaggt 540

cataatgggc tgcgaagcct gctaaaatgc agtggaggcc gtgtaccctt tgccaaattg 600

gctattggaa tcggcagaga acctgggtcc cgttctagag accctgcgag cgtgtcccgg 660

tgggttctgg gagctctaac tccgcaggaa ctacaaacct tgcttacaca gagtgaacct 720

gctgcctggc gtgctctgac tcagtacatt tcatagtgga tggcggcgtt agtatcgaat 780

cgacagcagt atagcgacca gcattcacat acgattgacg catgatatta ctttctgcgc 840

acttaacttc gcatctgggc agatgatgtc gaggcgaaaa aaaatataaa tcacgctaac 900

atttgattaa aatagaacaa ctacaatata aaaaaactat acaaatgaca agttcttgaa 960

aacaagaatc tttttattgt cagtactgat tagaaaaact catcgagcat caaatgaaac 1020

tgcaatttat tcatatcagg attatcaata ccatattttt gaaaaagccg tttctgtaat 1080

gaaggagaaa actcaccgag gcagttccat aggatggcaa gatcctggta tcggtctgcg 1140

attccgactc gtccaacatc aatacaacct attaatttcc cctcgtcaaa aataaggtta 1200

tcaagtgaga aatcaccatg agtgacgact gaatccggtg agaatggcaa aagcttatgc 1260

atttctttcc agacttgttc aacaggccag ccattacgct cgtcatcaaa atcactcgca 1320

tcaaccaaac cgttattcat tcgtgattgc gcctgagcga gacgaaatac gcgatcgctg 1380

ttaaaaggac aattacaaac aggaatcgaa tgcaaccggc gcaggaacac tgccagcgca 1440

tcaacaatat tttcacctga atcaggatat tcttctaata cctggaatgc tgttttgccg 1500

gggatcgcag tggtgagtaa ccatgcatca tcaggagtac ggataaaatg cttgatggtc 1560

ggaagaggca taaattccgt cagccagttt agtctgacca tctcatctgt aacatcattg 1620

gcaacgctac ctttgccatg tttcagaaac aactctggcg catcgggctt cccatacaat 1680

cgatagattg tcgcacctga ttgcccgaca ttatcgcgag cccatttata cccatataaa 1740

tcagcatcca tgttggaatt taatcgcggc ctcgaaacgt gagtcttttc cttacccatg 1800

gttgtttatg ttcggatgtg atgtgagaac tgtatcctag caagatttta aaaggaagta 1860

tatgaaagaa gaacctcagt ggcaaatcct aacctttttat atttctctac aggggcgcgg 1920

cgtggggaca attcaacgcg tctgtgaggg gagcgtttcc ctgctcgcag gtctgcagcg 1980

aggagccgta atttttgctt cgcgccgtgc ggccatcaaa atgtatggat gcaaatgatt 2040

atacatgggg atgtatgggc taaatgtacg ggcgacagtc acatcatgcc cctgagctgc 2100

gcacgtcaag actgtcaagg agggtattct gggcctccat gtcgctggcc gggtgacccg 2160

gcggggacga ggcaagctaa acagatctga tcttgaaact gagtaagatg ctcagaatac 2220

ccgtcaagat aagagtataa tgtagagtaa tataccaagt attcagcata ttctcctctt 2280

cttttgtata aatcacggaa gggatgattt ataagaaaaa tgaatactat tacacttcat 2340

ttaccaccct ctgatctaga ttttccaacg atatgtacgt agtggtataa ggtgaggggg 2400

tccacagata taacatcgtt taatttagta ctaacagaga cttttgtcac aactacatat 2460

aagtgtacaa atatagtaca gatatgacac acttgtagcg ccaacgcgca tcctacggat 2520

tgctgacaga aaaaaaggtc acgtgaccag aaaagtcacg tgtaattttg taactcaccg 2580

cattctagcg gtccctgtcg tgcacactgc actcaacacc ataaacctta gcaacctcca 2640

aaggaaatca ccgtataaca aagccacagt tttacaactt agtctcttat gaagttactt 2700

accaatgaga aatagaggct ctttctcgag aaatatgaat atggatatat atatatatat 2760

atatatatat atatatatat gtaaacttgg ttctttttta gcttgtgatc tctagcttgg 2820

gtctctctct gtcgtaacag ttgtgatatc ggaagaagag aaaagacgaa gagcagaagc 2880

ggaaaacgta tacacgtcac atatcacaca cacacaatgg gaaagctatt acaattggca 2940

ttgcatccgg tcgagatgaa ggcagctttg aagctgaagt tttgcagaac accgctattc 3000

tccatctatg atcagtccac gtctccatat ctcttgcact gtttcgaact gttgaacttg 3060

acctccagat cgtttgctgc tgtgatcaga gagctgcatc cagaattgag aaactgtgtt 3120

actctctttt atttgatttt aagggctttg gataccatcg aagacgatat gtccatcgaa 3180

cacgatttga aaattgactt gttgcgtcac ttccacgaga aattgttgtt aactaaatgg 3240

agtttcgacg gaaatgcccc cgatgtgaag gacagagccg ttttgacaga tttcgaatcg 3300

attcttattg aattccacaa attgaaacca gaatatcaag aagtcatcaa ggagatcacc 3360

gagaaaatgg gtaatggtat ggccgactac atcttagatg aaaattacaa cttgaatggg 3420

ttgcaaaccg tccacgacta cgacgtgtac tgtcactacg tagctggttt ggtcggtgat 3480

ggtttgaccc gtttgattgt cattgccaag tttgccaacg aatctttgta ttctaatgag 3540

caattgtatg aaagcatggg tcttttccta caaaaaacca acatcatcag agattacaat 3600

gaagatttgg tcgatggtag atccttctgg cccaaggaaa tctggtcaca atacgctcct 3660

cagttgaagg acttcatgaa acctgaaaac gaacaactgg ggttggactg tataaaccac 3720

ctcgtcttaa acgcattgag tcatgttatc gatgtgttga cttatttggc cggtatccac 3780

gagcaatcca ctttccaatt ttgtgccatt ccccaagtta tggccattgc aaccttggct 3840

ttggtattca acaaccgtga agtgctacat ggcaatgtaa agattcgtaa gggtactacc 3900

tgctatttaa ttttgaaatc aaggactttg cgtggctgtg tcgagatttt tgactattac 3960

ttacgtgata tcaaatctaa attggctgtg caagatccaa atttcttaaa attgaacatt 4020

caaatctcca agatcgaaca gtttatggaa gaaatgtacc aggataaatt acctcctaac 4080

gtgaagccaa atgaaactcc aattttcttg aaagttaaag aaagatccag atacgatgat 4140

gaattggttc caacccaaca agaagaagag tacaagttca atatggtttt atctatcatc 4200

ttgtccgttc ttcttgggtt ttattatata tacactttac acagagcgtg aagtctgcgc 4260

caaataacat aaacaaacaa ctccgaacaa taactaagta cttacataat aggtagaggc 4320

ctatccttaa agataacctt atatttcatt acatcaacta attcgacctt attatctttc 4380

gaattgaaat gcattatacc catcggtacg tctagctttg tcaccttccc cagtaaacgc 4440

tgtttcttgc cgacaaacaa tgtggccctc tctccgtcaa tctgtaacga cccaaatcgt 4500

attaaagttt cgccgtcctg ttcactgaac cttccctcat ttggagaatc tctcctcgcc 4560

agcgacgcaa agtccttagg caactctagt tcaccttgaa tctccagcat catcatccca 4620

agcggtgtta tcaccgtggt ctgcttttct cttgactgtg tcaacttctg ccattgacta 4680

gcatctatat ctacactagg cattcttttc agctgtttat tgggctgaat gatagtgata 4740

attctttttt ctatcactcc tttggctata ttagtggtta gcttactaaa aaagattaaa 4800

ggaaaaatga aattcaagat gctaacgttg acatgtatat tttaagaaaa caaaaatcat 4860

acaaagagga gatcggatat aaaagaataa cataaatatg tttagtgcat taggtaaatg 4920

ggtccgaggc tctcgcaatg ataaggactt tgtgacgaag tataccgcag atttatcaca 4980

aataacttca cagatccatc aattagatgt cgcgttaaag aaaagccaat ccatcttgag 5040

tcaatggcaa tcaaatctga ccttttatgg tattgcgtta acggtattgg ccctgagcta 5100

cacatattgg gagtaccatg gttatcgacc ataccttgtg gtgactgcgc tactatgcat 5160

aggctcgcta atcttgttca aatgggcatt aaccaaactc tatgcatttt ataacaacaa 5220

taggttacgc aagttggcaa aactccgtgc a 5251

<210> 88
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK066-G

<400> 88
ggtaagacgg ttgggtttta tcttttgcag ttggtactat taagaacaat cacaggaaac 60

agctatgacc 70

<210> 89
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer 61-67-CPK067-G

<400> 89
ttgcgttttg tactttggtt cgctcaattt tgcaggtaga taatcgaaaa gttgtaaaac 60

gacggccagt 70

<210> 90
<211> 4162
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i32

<400> 90
gcctgtctac aggataaaga cgggtcggat acctgcacaa gcaatttggc acctgcatac 60

cccatttccc cagtagataa cttcaacaca cacatcaatg tccctcacca gtttatttcc 120

aaaagagacg ctttttacta cctgactaga ttttcatttt gtttcttttg gattgcgctt 180

gcctttgtag gtgtgtcgtt tatcctttac gttttgactt ggtgctcgaa gatgctttca 240

gagatggtgc ttatcctcat gtcttttggg tttgtcttca atacggcagc cgttgtcttg 300

caaacggccg cctctgccat ggcaaagaat gctttccatg acgatcatcg tagtgcccaa 360

ttgggtgcct ctatgatggg tatggcttgg gcaagtgtct ttttatgtat cgtggaattt 420

atcctgctgg tcttctggtc tgttagggca aggttggcct ctacttactc catcgacaat 480

tcaagataca gaacctcctc cagatggaat cccttccata gagagaagga gcaagcaact 540

gacccaatat tgactgccac tggacctgaa gacatgcaac aaagtgcaag catagtgggg 600

ccttcttcca atgctaatcc ggtcactgcc actgctgcta cggaaaacca acctaaaggt 660

attaacttct tcactataag aaaatcacac gagcgcccgg acgatgtctc tgtttaaatg 720

gcgcaagttt tccgctttgt aatatatatt tatacccctt tcttctctcc cctgcaatat 780

aatagtttaa ttctaatatt aataatatcc tatattttct tcatttaccg gcgcactctc 840

gcccgaacga cctcaaaatg tctgctacat tcataataac caaaagctca taacttttt 900

ttttgaacct gaatatatat acatcacata tcactgctgg tccttgccga ccagcgtata 960

caatctcgat agttggtttc ccgttctttc cactcccgtc cacaggaaac agctatgacc 1020

atgattacgc caagctattt aggtgacact atagaatact caagctatgc atcaagcttg 1080

gtaccgagct cggatccact agtaacggcc gccagtgtgc tggaattcgc cctgtcgaca 1140

ctagtaatac acatcatcgt cctacaagtt catcaaagtg ttggacagac aactatacca 1200

gcatggatct cttgtatcgg ttcttttctc ccgctctctc gcaataacaa tgaacactgg 1260

gtcaatcata gcctacacag gtgaacagag tagcgtttat acagggttta tacggtgatt 1320

cctacggcaa aaatttttca tttctaaaaa aaaaaagaaa aatttttctt tccaacgcta 1380

gaaggaaaag aaaaatctaa ttaaattgat ttggtgattt tctgagagtt ccctttttca 1440

tatatcgaat tttgaatata aaaggagatc gaaaaaattt ttctattcaa tctgttttct 1500

ggttttattt gatagttttt ttgtgtatta ttattatgga ttagtactgg tttatatggg 1560

tttttctgta taacttcttt ttattttagt ttgtttaatc ttattttgag ttacattata 1620

gttccctaac tgcaagagaa gtaacattaa aaatgaaaaa gcctgaactc accgcgacgt 1680

ctgtcgagaa gtttctgatc gaaaagttcg acagcgtctc cgacctgatg cagctctcgg 1740

agggcgaaga atctcgtgct ttcagcttcg atgtaggagg gcgtggatat gtcctgcggg 1800

taaatagctg cgccgatggt ttctacaaag atcgttatgt ttatcggcac tttgcatcgg 1860

ccgcgctccc gattccggaa gtgcttgaca ttggggaatt cagcgagagc ctgacctatt 1920

gcatctcccg ccgtgcacag ggtgtcacgt tgcaagacct gcctgaaacc gaactgcccg 1980

ctgttctgca gccggtcgcg gaggccatgg atgcgatcgc tgcggccgat cttagccaga 2040

cgagcgggtt cggcccattc ggaccgcaag gaatcggtca atacactaca tggcgtgatt 2100

tcatatgcgc gattgctgat ccccatgtgt atcactggca aactgtgatg gacgacaccg 2160

tcagtgcgtc cgtcgcgcag gctctcgatg agctgatgct ttgggccgag gactgccccg 2220

aagtccggca cctcgtgcac gcggatttcg gctccaacaa tgtcctgacg gacaatggcc 2280

gcataacagc ggtcattgac tggagcgagg cgatgttcgg ggattcccaa tacgaggtcg 2340

ccaacatctt cttctggagg ccgtggttgg cttgtatgga gcagcagacg cgctacttcg 2400

agcggaggca tccggagctt gcaggatcgc cgcggctccg ggcgtatatg ctccgcattg 2460

gtcttgacca actctatcag agcttggttg acggcaattt cgatgatgca gcttgggcgc 2520

agggtcgatg cgacgcaatc gtccgatccg gagccgggac tgtcgggcgt acacaaatcg 2580

cccgcagaag cgcggccgtc tggaccgatg gctgtgtaga agtactcgcc gatagtggaa 2640

accgacgccc cagcactcgt ccgagggcaa aggaataggt ttaacttgat actactagat 2700

tttttctctt catttataaa atttttggtt ataattgaag ctttagaagt atgaaaaaat 2760

ccttttttt cattctttgc aaccaaaata agaagcttct tttattcatt gaaatgatga 2820

atataaacct aacaaaagaa aaagactcga atatcaaaca ttaaaaaaaa ataaaagagg 2880

ttatctgttt tcccatttag ttggagtttg cattttctaa tagatagaac tctcaattaa 2940

tgtggattta gtttctctgt tcgttttttt ttgttttgtt ctcactgtat ttacatttct 3000

atttagtatt tagttattca tataatctta acttctcgag gagctctaag ggcgaattct 3060

gcagatatcc atcacactgg cggccgctcg agcatgcatc tagagggccc aattcgccct 3120

atagtgagtc gtattacaat tcactggccg tcgttttaca acaagcatct tgccctgtgc 3180

ttggccccca gtgcagcgaa cgttataaaa acgaatactg agtatatatc tatgtaaaac 3240

aaccatatca tttcttgttc tgaactttgt ttacctaact agttttaaat ttccctttt 3300

cgtgcatgcg ggtgttctta tttattagca tactacattt gaaatatcaa atttccttag 3360

tagaaaagtg agagaaggtg cactgacaca aaaaataaaa tgctacgtat aactgtcaaa 3420

actttgcagc agcgggcatc cttccatcat agcttcaaac atattagcgt tcctgatctt 3480

catacccgtg ctcaaaatga tcaaacaaac tgttattgcc aagaaataaa cgcaaggctg 3540

ccttcaaaaa ctgatccatt agatcctcat atcaagcttc ctcatagaac gcccaattac 3600

aataagcatg ttttgctgtt atcaccgggt gataggtttg ctcaaccatg gaaggtagca 3660

tggaatcata atttggatac taatacaaat cggccatata atgccattag taaattgcgc 3720

tcccatttag gtggttctcc aggaatacta ataaatgcgg tgcatttgca aaatgaattt 3780

attccaaggc caaaacaaca cgatgaatgg ctttatttt ttgttattcc tgacatgaag 3840

ctttatgtaa ttaaggaaac ggacatcgag gaatttgcat ctttttaga tgaaggagct 3900

attcaagcac caaagctatc cttccaggat tatttaagcg gtaaggccaa ggcttcccaa 3960

caggttcatg aagtgcatca tagaaagctt acaaggtttc agggtgaaac ttttctaaga 4020

gattggaact tagtctgtgg gcattataag agagatgcta agtgtggaga aatgggaccc 4080

gacataattg cagcatttca agatgaaaag ctttttcctg agaataatct agccttaatt 4140

tctcatattg ggggtcatat tt 4162

<210> 91
<211> 7879
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i33

<220>
<221> misc_feature
<222> (270)..(270)
<223> n is a, c, g, or t

<400> 91
atgaattggc agtttttttc caattatgga acgcctgttc ctgatccacg gcctgcactt 60

gcgaccacaa ttccacacct gaggcgcctg cctcttttcc agcatgtggc aactgtcccc 120

acgacagggc atcccagaat cctctggtaa atcttaaatg aaactgacgc gtggcagtag 180

attccaacaa tggtgggatg gcccgtggga aagtcgtgta gtgctcatac gcatcatatg 240

acatggatga tacggccggg tcaaacggtn cgattgcagt tggaatgcaa atgagagtag 300

cagatcattg ttgggcagcg gcttcaacac cagtgcttcg tcgtacggat accataaact 360

gtcatttata ccaatctgcg acaccgtgtc ttctgcgaac acacccagca gtagagtgcc 420

cagcatgaaa taggccagtg tgaggatcat cgtcgtcttg cctatgcttt gtttgctttg 480

aacacttgtt tccgctctcc ttttacttat tggctactaa aactacgtgt aaaagatcgc 540

ccagcgcaaa aaggtccggc ggtttcaaat aatctcgaac tattcctata atatgcaaaa 600

tagtaggtag gaacaagtca actctaggca gataacgaag atgtccggta aatggagact 660

agtgctgact gggataggca atccagagcc tcagtacgct ggcacccgtc acaatgtagg 720

gctatatatg ctggagctgc tacgaaagcg gcttggtctg caggggagaa cttattcccc 780

tgtgcctaat acgggcggca aagtgcatta tatagaagac gaacattgta cgatactaag 840

atcggatggc cagtacatga atctaagtgg agaacaggtg tgcaaggtct gggcccggta 900

cgccaagtac caagcccgac acgttgttat tcatgacgag ttaagtgtgg cgtgtggaaa 960

agtgcagctc agagccccca gcaccagtat tagaggtcat aatgggctgc gaagcctgct 1020

aaaatgcagt ggaggccgtg tacccttttgc caaattggct attggaatcg gcagagaacc 1080

tgggtcccgt tctagagacc ctgcgagcgt gtcccggtgg gttctgggag ctctaactcc 1140

gcaggaacta caaaccttgc ttacacagag tgaacctgct gcctggcgtg ctctgactca 1200

gtacatttca taggacagca ttcgcccagt attttttttа ttctacaaac cttctataat 1260

ttcaaagtat ttacataatt ctgtatcagt ttaatcacca taatatcgtt ttctttgttt 1320

agtgcaatta atttttccta ttgttacttc gggccttttt ctgttttatg agctattttt 1380

tccgtcatcc ttccggatcc agattttcag cttcatctcc agattgtgtc tacgtaatgc 1440

acgccatcat tttaagagag gacagagaag caagcctcct gaaagatgaa gctactgtct 1500

tctatcgaac aagcatgcga tatttgccga cttaaaaagc tcaagtgctc caaagaaaaa 1560

ccgaagtgcg ccaagtgtct gaagaacaac tgggagtgtc gctactctcc caaaaccaaa 1620

aggtctccgc tgactagggc acatctgaca gaagtggaat caaggctaga aagactggaa 1680

cagctatttc tactgatttt tcctcgagaa gaccttgaca tgattttgaa aatggattct 1740

ttacaggata taaaagcatt gttaacagga ttatttgtac aagataatgt gaataaagat 1800

gccgtcacag atagattggc ttcagtggag actgatatgc ctctaacatt gagacagcat 1860

agaataagtg cgacatcatc atcggaagag agtagtaaca aaggtcaaag acagttgact 1920

gtatcgattg actcggcagc tcatcatgat aactccacaa ttccgttgga ttttatgccc 1980

agggatgctc ttcatggatt tgattggtct gaagaggatg acatgtcgga tggcttgccc 2040

ttcctgaaaa cggaccccaa caataatggg ttctttggcg acggttctct cttatgtatt 2100

cttcgatcta ttggctttaa accggaaaat tacacgaact ctaacgttaa caggctcccg 2160

accatgatta cggatagata cacgttggct tctagatcca caacatcccg tttacttcaa 2220

agttatctca ataattttca cccctactgc cctatcgtgc actcaccgac gctaatgatg 2280

ttgtataata accagattga aatcgcgtcg aaggatcaat ggcaaatcct ttttaactgc 2340

atattagcca ttggagcctg gtgtatagag ggggaatcta ctgatataga tgtttttтac 2400

tatcaaaatg ctaaatctca tttgacgagc aaggtcttcg agtcaggttc cataattttg 2460

gtgacagccc tacatcttct gtcgcgatat acacagtgga ggcagaaaac aaatactagc 2520

tataattttc acagcttttc cataagaatg gccatatcat tgggcttgaa tagggacctc 2580

ccctcgtcct tcagtgatag cagcattctg gaacaaagac gccgaatttg gtggtctgtc 2640

tactcttggg agatccaatt gtccctgctt tatggtcgat ccatccagct ttctcagaat 2700

acaatctcct tcccttcttc tgtcgacgat gtgcagcgta ccacaacagg tcccaccata 2760

tatcatggca tcattgaaac agcaaggctc ttacaagttt tcacaaaaat ctatgaacta 2820

gacaaaacag taactgcaga aaaaagtcct atatgtgcaa aaaaatgctt gatgatttgt 2880

aatgagattg aggaggtttc gagacaggca ccaaagtttt tacaaatgga tatttccacc 2940

accgctctaa ccaatttgtt gaaggaacac ccttggctat cctttacaag attcgaactg 3000

aagtggaaac agttgtctct tatcatttat gtattaagag atttttttcac taattttacc 3060

cagaaaaagt cacaactaga acaggatcaa aatgatcatc aaagttatga agttaaacga 3120

tgctccatca tgttaagcga tgcagcacaa agaactgtta tgtctgtaag tagctatatg 3180

gacaatcata atgtcacccc atattttgcc tggaattgtt cttattactt gttcaatgca 3240

gtcctagtac ccataaagac tctactctca aactcaaaat cgaatgctga gaataacgag 3300

accgcacaat tattacaaca aattaacact gttctgatgc tattaaaaaa actggccact 3360

tttaaaatcc agacttgtga aaaatacatt caagtactgg aagaggtatg tgcgccgttt 3420

ctgttatcac agtgtgcaat cccattaccg catatcagtt ataacaatag taatggtagc 3480

gccattaaaa atattgtcgg ttctgcaact atcgcccaat accctactct tccggaggaa 3540

aatgtcaaca atatcagtgt taaatatgtt tctcctggct cagtagggcc ttcacctgtg 3600

ccattgaaat caggagcaag tttcagtgat ctagtcaagc tgttatctaa ccgtccaccc 3660

tctcgtaact ctccagtgac aataccaaga agcacacctt cgcatcgctc agtcacgcct 3720

tttctagggc aacagcaaca gctgcaatca ttagtgccac tgaccccgtc tgctttgttt 3780

ggtggcgcca attttaatca aagtgggaat attgctgata gctcattgtc cttcactttc 3840

actaacagta gcaacggtcc gaacctcata acaactcaaa caaattctca agcgctttca 3900

caaccaattg cctcctctaa cgttcatgat aacttcatga ataatgaaat cacggctagt 3960

aaaattgatg atggtaataa ttcaaaacca ctgtcacctg gttggacgga ccaaactgcg 4020

tataacgcgt ttggaatcac tacagggatg tttaatacca ctacaatgga tgatgtatat 4080

aactatctat tcgatgatga agatacccca ccaaacccaa aaaaagagta aaatgaatcg 4140

tagatactga aaaaccccgc aagttcactt caactgtgca tcgtgcacca tctcaatttc 4200

tttcatttat acatcgtttt gccttctttt atgtaactat actcctctaa gtttcaatct 4260

tggccatgta acctctgatc tatagaattt tttaaatgac tagaattaat gcccatcttt 4320

tttttggacc taaattcttc atgaaaatat attacgaggg cttattcaga agcttcgctc 4380

agtcgacact agtaatacac atcatcgtcc tacaagttca tcaaagtgtt ggacagacaa 4440

ctataccagc atggatctct tgtatcggtt cttttctccc gctctctcgc aataacaatg 4500

aacactgggt caatcatagc ctacacaggt gaacagagta gcgtttatac agggtttata 4560

cggtgattcc tacggcaaaa atttttcatt tctaaaaaaa aaaagaaaaa tttttctttc 4620

caacgctaga aggaaaagaa aaatctaatt aaattgattt ggtgattttc tgagagttcc 4680

cttttttcata tatcgaattt tgaatataaa aggagatcga aaaaattttt ctattcaatc 4740

tgttttctgg ttttatttga tagttttttt gtgtattatt attatggatt agtactggtt 4800

tatatgggtt tttctgtata acttcttttt attttagttt gtttaatctt attttgagtt 4860

acattatagt tccctaactg caagagaagt aacattaaaa atgaccactc ttgacgacac 4920

ggcttaccgg taccgcacca gtgtcccggg ggacgccgag gccatcgagg cactggatgg 4980

gtccttcacc accgacaccg tcttccgcgt caccgccacc ggggacggct tcaccctgcg 5040

ggaggtgccg gtggacccgc ccctgaccaa ggtgttcccc gacgacgaat cggacgacga 5100

atcggacgcc ggggaggacg gcgacccgga ctcccggacg ttcgtcgcgt acggggacga 5160

cggcgacctg gcgggcttcg tggtcgtctc gtactccggc tggaaccgcc ggctgaccgt 5220

cgaggacatc gaggtcgccc cggagcaccg ggggcacggg gtcgggcgcg cgttgatggg 5280

gctcgcgacg gagttcgccc gcgagcgggg cgccgggcac ctctggctgg aggtcaccaa 5340

cgtcaacgca ccggcgatcc acgcgtaccg gcggatgggg ttcaccctct gcggcctgga 5400

caccgccctg tacgacggca ccgcctcgga cggcgagcag gcgctctaca tgagcatgcc 5460

ctgcccctga gtttaacttg atactactag atttttttctc ttcatttata aaatttttgg 5520

ttataattga agctttagaa gtatgaaaaa atccttttttt ttcattcttt gcaaccaaaa 5580

taagaagctt cttttattca ttgaaatgat gaatataaac ctaacaaaag aaaaagactc 5640

gaatatcaaa cattaaaaaa aaataaaaga ggttatctgt tttcccattt agttggagtt 5700

tgcattttct aatagataga actctcaatt aatgtggatt tagtttctct gttcgttttt 5760

ttttgttttg ttctcactgt atttacattt ctatttagta tttagttatt catataatct 5820

taacttctcg aggagctcga tcttgaaact gagtaagatg ctcagaatac ccgtcaagat 5880

aagagtataa tgtagagtaa tataccaagt attcagcata ttctcctctt cttttgtata 5940

aatcacggaa gggatgattt ataagaaaaa tgaatactat tacacttcat ttaccaccct 6000

ctgatctaga ttttccaacg atatgtacgt agtggtataa ggtgaggggg tccacagata 6060

taacatcgtt taatttagta ctaacagaga cttttgtcac aactacatat aagtgtacaa 6120

atatagtaca gatatgacac acttgtagcg ccaacgcgca tcctacggat tgctgacaga 6180

aaaaaaggtc acgtgaccag aaaagtcacg tgtaattttg taactcaccg cattctagcg 6240

gtccctgtcg tgcacactgc actcaacacc ataaacctta gcaacctcca aaggaaatca 6300

ccgtataaca aagccacagt tttacaactt agtctcttat gaagtgtctc tctctgtcgt 6360

aacagttgtg atatcggaag aagagaaaag acgaagagca gaagcggaaa acgtatacac 6420

gtcacatatc acacacacac aatgggaaag ctattacaat tggcattgca tccggtcgag 6480

atgaaggcag ctttgaagct gaagttttgc agaacaccgc tattctccat ctatgatcag 6540

tccacgtctc catatctctt gcactgtttc gaactgttga acttgacctc cagatcgttt 6600

gctgctgtga tcagagagct gcatccagaa ttgagaaact gtgttactct cttttatttg 6660

attttaaggg ctttggatac catcgaagac gatatgtcca tcgaacacga tttgaaaatt 6720

gacttgttgc gtcacttcca cgagaaattg ttgttaacta aatggagttt cgacggaaat 6780

gcccccgatg tgaaggacag agccgttttg acagatttcg aatcgattct tattgaattc 6840

cacaaattga aaccagaata tcaagaagtc atcaaggaga tcaccgagaa aatgggtaat 6900

ggtatggccg actacatctt ggatgaaaat tacaacttga atgggttgca aaccgtccac 6960

gactacgacg tgtactgtca ctacgtagct ggtttggtcg gtgatggttt gacccgtttg 7020

attgtcattg ccaagtttgc caacgaatct ttgtattcta atgagcaatt gtatgaaagc 7080

atgggtcttt tcctacaaaa aaccaacatc atcagagact acaatgaaga tttggtcgat 7140

ggtagatcct tctggcccaa ggaaatctgg tcacaatacg ctcctcagtt gaaggacttc 7200

atgaaacctg aaaacgaaca actggggttg gactgtataa accacctcgt cttaaacgca 7260

ttgagtcatg ttatcgatgt gttgacttat ttggccagta tccacgagca atccactttc 7320

caattttgtg ccattcccca agttatggcc attgcaacct tggctttggt attcaacaac 7380

cgtgaagtgc tacatggcaa tgtaaagatt cgtaagggta ctacctgcta tttaattttg 7440

aaatcaagga ctttgcgtgg ctgtgtcgag atttttgact attacttacg tgatatcaaa 7500

tctaaattgg ctgtgcaaga tccaaatttc ttaaaattga acattcaaat ctccaagatc 7560

gaacaattca tggaagaaat gtaccaggat aaattacctc ctaacgtgaa gccaaatgaa 7620

actccaattt tcttgaaagt taaagaaaga tccagatacg atgatgaatt ggtcccaacc 7680

caacaagaag aagagtacaa gttcaatatg gttttatcta tcatcttgtc cgttcttctt 7740

gggttttatt atatatacac tttacacaga gcgtgaagtc tgcgccaaat aacataaaca 7800

aacaactccg aacaataact aagtacttac ataataggta gaggcctatc cttaaagata 7860

accttatatt tcattacat 7879

<210> 92
<211> 5714
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i37

<400> 92
gcctgtctac aggataaaga cgggtcggat acctgcacaa gcaatttggc acctgcatac 60

cccatttccc cagtagataa cttcaacaca cacatcaatg tccctcacca gtttatttcc 120

aaaagagacg ctttttacta cctgactaga ttttcatttt gtttcttttg gattgcgctt 180

gcctttgtag gtgtgtcgtt tatcctttac gttttgactt ggtgctcgaa gatgctttca 240

gagatggtgc ttatcctcat gtcttttggg tttgtcttca atacggcagc cgttgtcttg 300

caaacggccg cctctgccat ggcaaagaat gctttccatg acgatcatcg tagtgcccaa 360

ttgggtgcct ctatgatggg tttaaacgta tggcttgggc aagtgtcttt ttatgtatcg 420

tggaatttat cctgctggtc ttctggtctg ttagggcaag gttggcctct acttactcca 480

tcgacaattc aagatacaga acctcctcca gatggaatcc cttccataga gagaaggagc 540

aagcaactga cccaatattg actgccactg gacctgaaga catgcaacaa agtgcaagca 600

tagtggggcc ttcttccaat gctaatccgg tcactgccac tgctgctacg gaaaaccaac 660

ctaaaggtat taacttcttc actataagaa aatcacacga gcgcccggac gatgtctctg 720

tttaaatggc gcaagttttc cgctttgtaa tatatattta tacccctttc ttctctcccc 780

tgcaatataa tagtttaatt ctaatattaa taatatccta tattttcttc atttaccggc 840

gcactctcgc ccgaacgacc tcaaaatgtc tgctacattc ataataacca aaagctcata 900

actttttttt ttgaacctga atatatatac atcacatatc actgctggtc ctgagaagtt 960

aagattatat gaataactaa atactaaata gaaatgtaaa tacagtgaga acaaaacaaa 1020

aaaaaacgaa cagagaaact aaatccacat taattgagag ttctatctat tagaaaatgc 1080

aaactccaac taaatgggaa aacagataac ctcttttatt ttttttaat gtttgatatt 1140

cgagtctttt tcttttgtta ggtttatatt catcatttca atgaataaaa gaagcttctt 1200

attttggttg caaagaatga aaaaaaagga ttttttcata cttctaaagc ttcaattata 1260

accaaaaatt ttataaatga agagaaaaaa tctagtagta tcaagttaaa cttagaaaaa 1320

ctcatcgagc atcaaatgaa actgcaattt attcatatca ggattatcaa taccatattt 1380

ttgaaaaagc cgtttctgta atgaaggaga aaactcaccg aggcagttcc ataggatggc 1440

aagatcctgg tatcggtctg cgattccgac tcgtccaaca tcaatacaac ctattaattt 1500

cccctcgtca aaaataaggt tatcaagtga gaaatcacca tgagtgacga ctgaatccgg 1560

tgagaatggc aaaagcttat gcatttcttt ccagacttgt tcaacaggcc agccattacg 1620

ctcgtcatca aaatcactcg catcaaccaa accgttattc attcgtgatt gcgcctgagc 1680

gagacgaaat acgcgatcgc tgttaaaagg acaattacaa acaggaatcg aatgcaaccg 1740

gcgcaggaac actgccagcg catcaacaat attttcacct gaatcaggat attcttctaa 1800

tacctggaat gctgttttgc cggggatcgc agtggtgagt aaccatgcat catcaggagt 1860

acggataaaa tgcttgatgg tcggaagagg cataaattcc gtcagccagt ttagtctgac 1920

catctcatct gtaacatcat tggcaacgct acctttgcca tgtttcagaa acaactctgg 1980

cgcatcgggc ttcccataca atcgatagat tgtcgcacct gattgcccga cattatcgcg 2040

agcccattta tacccatata aatcagcatc catgttggaa tttaatcgcg gcctcgaaac 2100

gtgagtcttt tccttaccca tttttaatgt tacttctctt gcagttaggg aactataatg 2160

taactcaaaa taagattaaa caaactaaaa taaaaagaag ttatacagaa aaacccatat 2220

aaaccagtac taatccataa taataataca caaaaaaact atcaaataaa accagaaaac 2280

agattgaata gaaaaatttt ttcgatctcc ttttatattc aaaattcgat atatgaaaaa 2340

gggaactctc agaaaatcac caaatcaatt taattagatt tttcttttcc ttctagcgtt 2400

ggaaagaaaa atttttcttt ttttttttag aaatgaaaaa ttttgccgt aggaatcacc 2460

gtataaaccc tgtataaacg ctactctgtt cacctgtgta ggctatgatt gacccagtgt 2520

tcattgttat tgcgagagag cgggagaaaa gaaccgatac aagagatcca tgctggtata 2580

gttgtctgtc caacactttg atgaacttgt aggacgatga tgtgtattac tagtgtcgac 2640

accatataca tatccatatc taatcttact tatatgttgt ggaaatgtaa agagccccat 2700

tatcttagcc taaaaaaacc ttctctttgg aactttcagt aatacgctta actgctcatt 2760

gctatattga agtacggatt agaagccgcc gagcgggcga cagccctccg acggaagact 2820

ctcctccgtg cgtcctggtc ttcaccggtc gcgttcctga aacgcagatg tgcctcgcgc 2880

cgcactgctc cgaacaataa agattctaca atactagctt ttatggttat gaagaggaaa 2940

aattggcagt aacctggccc cacaaacctt caaatcaacg aatcaaatta acaaccatag 3000

gataataatg cgattagttt tttagcctta tttctggggt aattaatcag cgaagcgatg 3060

atttttgatc tattaacaga tatataaatg caaaagctgc ataaccactt taactaatac 3120

tttcaacatt ttcggtttgt attacttctt attcaaatgt cataaaagta tcaacaaaaa 3180

attgttaata tacctctata ctttaacgtc aaggagaaaa aactataatg tcattaccgt 3240

tcttaacttc tgcaccggga aaggttatta tttttggtga acactctgct gtgtacaaca 3300

agcctgccgt cgctgctagt gtgtctgcgt tgagaaccta cctgctaata agcgagtcat 3360

ctgcaccaga tactattgaa ttggacttcc cggacattag ctttaatcat aagtggtcca 3420

tcaatgattt caatgccatc accgaggatc aagtaaactc ccaaaaattg gccaaggctc 3480

aacaagccac cgatggcttg tctcaggaac tcgttagtct tttggatccg ttgttagctc 3540

aactatccga atccttccac taccatgcag cgttttgttt cctgtatatg tttgtttgcc 3600

tatgccccca tgccaagaat attaagtttt ctttaaagtc tactttaccc atcggtgctg 3660

ggttgggctc aagcgcctct atttctgtat cactggcctt agctatggcc tacttggggg 3720

ggttaatagg atctaatgac ttggaaaagc tgtcagaaaa cgataagcat atagtgaatc 3780

aatgggcctt cataggtgaa aagtgtattc acggtacccc ttcaggaata gataacgctg 3840

tggccactta tggtaatgcc ctgctatttg aaaaagactc acataatgga acaataaaca 3900

caaacaattt taagttctta gatgatttcc cagccattcc aatgatccta acctatacta 3960

gaattccaag gtctacaaaa gatcttgttg ctcgcgttcg tgtgttggtc accgagaaat 4020

ttcctgaagt tatgaagcca attctagatg ccatgggtga atgtgcccta caaggcttag 4080

agatcatgac taagttaagt aaatgtaaag gcaccgatga cgaggctgta gaaactaata 4140

atgaactgta tgaacaacta ttggaattga taagaataaa tcatggactg cttgtctcaa 4200

tcggtgtttc tcatcctgga ttagaactta ttaaaaatct gagcgatgat ttgagaattg 4260

gctccacaaa acttaccggt gctggtggcg gcggttgctc tttgactttg ttacgaagag 4320

acattactca agagcaaatt gacagtttca aaaagaaatt gcaagatgat tttagttacg 4380

agacatttga aacagacttg ggtgggactg gctgctgttt gttaagcgca aaaaatttga 4440

ataaagatct taaaatcaaa tccctagtat tccaattatt tgaaaataaa actaccacaa 4500

agcaacaaat tgacgatcta ttattgccag gaaacacgaa tttaccatgg acttcataag 4560

ctaatttgcg ataggcatta tttattagtt gtttttaatc ttaactgtgt atgaagtttt 4620

atgtaataaa gatagaaaga gaaacaaaaa aaaatttttc gtagtatcaa ttcagctttc 4680

gaagacagaa tgaaatttaa gcagaccatc atcttgccct gtgcttggcc cccagtgcag 4740

cgaacgttat aaaaacgaat actgagtata tatctatgta aaacaaccat atcatttctt 4800

gttctgaact ttgtttacct aactagtttt aaatttccct ttttcgtgca tgcgggtgtt 4860

cttatttatt agcatactac atttgaaata tcaaatttcc ttagtagaaa agtgagagaa 4920

ggtgcactga cacaaaaaat aaaatgctac gtataactgt caaaactttg cagcagcggg 4980

catccttcca tcatagcttc aaacatatta gcgttcctga tcttcatacc cgtgctcaaa 5040

atgatcaaac aaactgttat tgccaagaaa taaacgcaag gctgccttca aaaactgatc 5100

cattagatcc tcatatcaag cttcctcata gaacgcccaa ttacaataag catgttttgc 5160

tgttatcacc gggtgatagg tttgctcaac catggaaggt agcatggaat cataatttgg 5220

atactaatac aaatcggcca tataatgcca ttagtaaatt gcgctcccat ttaggtggtt 5280

ctccaggcaa atttgaatac taataaatgc ggtgcatttg caaaatgaat ttattccaag 5340

gccaaaacaa cacgatgaat ggctttattt ttttgttatt cctgacatga agctttatgt 5400

aattaaggaa acggacatcg aggaatttgc atcttttta gatgaaggag ctattcaagc 5460

accaaagcta tccttccagg attatttaag cggtaaggcc aaggcttccc aacaggttca 5520

tgaagtgcat catagaaagc ttacaaggtt tcagggtgaa acttttctaa gagattggaa 5580

cttagtctgt gggcattata agagagatgc taagtgtgga gaaatgggac ccgacataat 5640

tgcagcattt caagatgaaa agctttttcc tgagaataat ctagccttaa tttctcatat 5700

tgggggtcat attt 5714

<210> 93
<211> 7688
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i301

<400> 93
gacggcacgg ccacgcgttt aaaccgccga gctattcgcg gaacattcta gctcgtttgc 60

atcttcttgc atttggtagg ttttcaatag ttcggtaata ttaacggata cctactatta 120

tcccctagta ggctcttttc acggagaaat tcgggagtgt ttttttccg tgcgcatttt 180

cttagctata ttcttccagc ttcgcctgct gcccggtcat cgttcctgtc acgtagtttt 240

tccggattcg tccggctcat ataataccgc aataaacacg gaatatctcg ttccgcggat 300

tcggttaaac tctcggtcgc ggattatcac agagaaagct tcgtggagaa tttttccaga 360

ttttccgctt tccccgatgt tggtatttcc ggaggtcatt atactgaccg ccattataat 420

gactgtacaa cgaccttctg gagaaagaaa caactcaata acgatgtggg acattggggg 480

cccactcaaa aaatctgggg actatatccc cagagaattt ctccagaaga gaagaaaagt 540

caaagttttt tttcgcttgg gggttgcata taaagctcac acgcggccag ggggagccat 600

gaaaaagcct gaactcaccg cgacgtctgt cgagaagttt ctgatcgaaa agttcgacag 660
cgtctccgac ctgatgcagc tctcggaggg cgaagaatct cgtgctttca gcttcgatgt 720
aggagggcgt ggatatgtcc tgcgggtaaa tagctgcgcc gatggtttct acaaagatcg 780
ttatgtttat cggcactttg catcggccgc gctcccgatt ccggaagtgc ttgacattgg 840
ggaattcagc gagagcctga cctattgcat ctcccgccgt gcacagggtg tcacgttgca 900
agacctgcct gaaaccgaac tgcccgctgt tctgcagccg gtcgcggagg ccatggatgc 960
gatcgctgcg gccgatctta gccagacgag cgggttcggc ccattcggac cgcaaggaat 1020
cggtcaatac actacatggc gtgatttcat atgcgcgatt gctgatcccc atgtgtatca 1080
ctggcaaact gtgatggacg acaccgtcag tgcgtccgtc gcgcaggctc tcgatgagct 1140
gatgctttgg gccgaggact gccccgaagt ccggcacctc gtgcacgcgg atttcggctc 1200
caacaatgtc ctgacggaca atggccgcat aacagcggtc attgactgga gcgaggcgat 1260
gttcggggat tcccaatacg aggtcgccaa catcttcttc tggaggccgt ggttggcttg 1320
tatggagcag cagacgcgct acttcgagcg gaggcatccg gagcttgcag gatcgccgcg 1380
gctccgggcg tatatgctcc gcattggtct tgaccaactc tatcagagct tggttgacgg 1440
caatttcgat gatgcagctt gggcgcaggg tcgatgcgac gcaatcgtcc gatccggagc 1500
cgggactgtc gggcgtacac aaatcgcccg cagaagcgcg gccgtctgga ccgatggctg 1560
tgtagaagta ctcgccgata gtggaaaccg acgccccagc actcgtccga gggcaaagga 1620
atagcgctcg tccaacgccg gcggacctcg ctcgtccaac gccggcggac ctcttttaat 1680
tctgctgtaa cccgtacatg cccaaaatag ggggcgggtt acacagaata tataacatcg 1740
taggtgtctg ggtgaacagt ttattcctgg catccactaa atataatgga gcccgctttt 1800
taagctggca tccagaaaaa aaaagaatcc cagcaccaaa atattgtttt cttcaccaac 1860
catcagttca taggtccatt ctcttagcgc aactacagag aacaggggca caaacaggca 1920
aaaaacgggc acaacctcaa tggagtgatg caacctgcct ggagtaaatg atgacacaag 1980
gcaattgacc cacgcatgta tctatctcat tttcttacac cttctattac cttctgctct 2040
ctctgatttg gaaaaagctg aaaaaaaagg ttgaaaccag ttccctgaaa ttattccccct 2100
acttgactaa taagtatata aagacggtag gtattgattg taattctgta aatctatttc 2160
ttaaacttct taaattctac ttttatagtt agtctttttt ttagttttaa aacaccaaga 2220
acttagtttc gatccccgcg tgcttggccg gccgtatccc cgcgtgcttg gccggccgta 2280
tgtctcagaa cgtttacatt gtatcgactg ccagaacccc aattggttca ttccagggtt 2340
ctctatcctc caagacagca gtggaattgg gtgctgttgc tttaaaaggc gccttggcta 2400
aggttccaga attggatgca tccaaggatt ttgacgaaat tatttttggt aacgttcttt 2460
ctgccaattt gggccaagct ccggccagac aagttgcttt ggctgccggt ttgagtaatc 2520
atatcgttgc aagcacagtt aacaaggtct gtgcatccgc tatgaaggca atcattttgg 2580
gtgctcaatc catcaaatgt ggtaatgctg atgttgtcgt agctggtggt tgtgaatcta 2640

tgactaacgc accatactac atgccagcag cccgtgcggg tgccaaattt ggccaaactg 2700

ttcttgttga tggtgtcgaa agagatgggt tgaacgatgc gtacgatggt ctagccatgg 2760

gtgtacacgc agaaaagtgt gcccgtgatt gggatattac tagagaacaa caagacaatt 2820

ttgccatcga atcctaccaa aaatctcaaa aatctcaaaa ggaaggtaaa ttcgacaatg 2880

aaattgtacc tgttaccatt aagggattta gaggtaagcc tgatactcaa gtcacgaagg 2940

acgaggaacc tgctagatta cacgttgaaa aattgagatc tgcaaggact gttttccaaa 3000

aagaaaacgg tactgttact gccgctaacg cttctccaat caacgatggt gctgcagccg 3060

tcatcttggt ttccgaaaaa gttttgaagg aaaagaattt gaagcctttg gctattatca 3120

aaggttgggg tgaggccgct catcaaccag ctgattttac atgggctcca tctcttgcag 3180

ttccaaaggc tttgaaacat gctggcatcg aagacatcaa ttctgttgat tactttgaat 3240

tcaatgaagc cttttcggtt gtcggtttgg tgaacactaa gattttgaag ctagacccat 3300

ctaaggttaa tgtatatggt ggtgctgttg ctctaggtca cccattgggt tgttctggtg 3360

ctagagtggt tgttacactg ctatccatct tacagcaaga aggaggtaag atcggtgttg 3420

ccgccatttg taatggtggt ggtggtgctt cctctattgt cattgaaaag atatgattac 3480

gttctgcgat tttctcatga tctttttcat aaaatacata aatatataaa tggctttatg 3540

tataacaggc ataatttaaa gttttatttg cgattcatcg tttttcaggt actcaaacgc 3600

tgaggtgtgc cttttgactt acttttccgc cttggcaagc tggccgggtg atacttgcac 3660

aagttccact aattactgac atttgtggta ttaactcgtt tgactgctct acaattgtag 3720

gatgttaatc aatgtcttgg ctgcctaacc tgcaggccgc gagcgccgat atgctatgta 3780

atagacaata aaaccatgtt tatataaaaa aaattcaaaa tagaaaacga ttctgtacaa 3840

ggagtatttt ttttttgttc tagtgtgttt atattatcct tggctaagag gcactgcgta 3900

tacttcaagg tacccctgtg ttttgaaaaa aaacaacagt aaaataggaa ctccgcgagg 3960

ttcaggaacc tgaaacaaaa tcaataaaaa cattatatgc gtttcgaaca aaattaaaga 4020

aaaagaataa atatagatta aaaaaaaaaa gaagaaatta aaagaatttc tactaaatcc 4080

caattgttat atatttgtta aatgccaaaa aagtttataa aaaatttaga atgtataaat 4140

aataataaac taagtaacgc gatcgccgac gccgccgata tctccctcgc cagcggccgc 4200

cttatggcta agaatgttgg aattttggcc atggacatct acttcccacc aacttgtgtt 4260

cagcaggagg ctttagaagc acatgacgga gcctcaaagg gtaagtacac aatcggatta 4320

ggacaggatt gcttagcatt ctgcactgaa ttggaggacg tcatctcaat gtctttcaac 4380

gccgtcacct cattgttaga gaagtacaaa atcgacccaa accagatcgg aaggttggaa 4440

gtcggttctg aaaccgtcat cgacaagtct aaatcaatca agactttcgt tatgcagttg 4500

ttcgaaaagt gcggtaatac tgacgtcgag ggtgtagact ctactaacgc ttgttatggt 4560

ggtaccgcag ctttattgaa ctgcgtaaac tgggttgagt caaactcatg ggatggtagg 4620

tacggattag tcatttgcac cgattctgcc gtctacgccg agggtccagc aaggccaacc 4680

ggtggagctg cagctattgc tatgttaatc ggaccagatg cccctatagt cttcgagtct 4740

aagttgaggg gttcacacat ccctaacgtc tacgacttct acaagccaaa cttggcctca 4800

gagtatccag ttgtcgacgg aaagttatct cagacatgct acttgatggc cttagattca 4860

tgttacaagc acttatgcaa caagttcgaa aagttggagg gaaaggagtt ctcaattaac 4920

gacgccgact acttcgtttt tcactctcca tacaacaaat tggtccagaa gtcattcgcc 4980

aggttattgt acaacgattt tttgagaaac gcatcatcta tcgatgaggc cgccaaggag 5040

aaattcaccc catattcttc tttgtcattg gacgagtctt accagtctag ggacttggag 5100

aaggtatcac agcaattggc taaaaccttc tatgacgcca aagttcagcc aaccaccttg 5160

gtccctaaac aggtcggaaa tatgtatact gcatctttgt atgccgcctt tgcctctttg 5220

atccacaaca agcacaacga tttagtcgga aaaagggttg tcatgttttc ttacggtgcc 5280

ggatctactg ccactatgtt ctcattgagg ttatgcgaaa accagtcacc attttcattg 5340

tctaacatcg cctcagtcat ggacgtaggt gtctcacctg agaagttcgt agaaaccatg 5400

aagttgatgg agcacagata cggtgccaaa gaattcgtca cttcaaaaga gggaatcttg 5460

gatttgttgg ccccaggaac ctactatttg aaggaggtcg actctttgta cagaaggttc 5520

tatggaaaga agggagacga cggatctgtc gcaaacggtc agtaaatcgg cggcgtcggc 5580

gatcgcgtta aggcggccgc tggcgaggga gatatttcaa cctgggccta acagtaaaga 5640

tatcctcctc aaaactggtg cacttaatcg ctgaatttgt tctggcttct cttctttttc 5700

tttattcccc ccatgggcca aaaaaaatag tactatcagg aatttggcgc cgggtcacga 5760

tatacgtgta cagtgaccta ggcgacgcca caaggaaaaa ggaaaaaaac agaaaaaaca 5820

acaaaaacta aaacaaacac gaaaacttta atagatctaa gtgaagtagt ggtgaggcaa 5880

ttggagtgac atagcagcta ctacaactac aaaaaaggcg cgccacggtc gtgcggatat 5940

gaaagaggtc gttatagctt ctgccgtcag gaccgccatc ggatcttacg gtaagtcatt 6000

aaaggacgtc cctgccgttg atttaggagc caccgcaatt aaagaggccg ttaaaaaggc 6060

aggtataaag ccagaggacg tcaacgaggt catcttggga aatgtcttac aagccggatt 6120

aggtcaaaac ccagcaagac aagcatcatt caaagccggt ttacctgtcg agatacctgc 6180

aatgaccatc aacaaggttt gcggttcagg attaaggacc gtttctttag cagcacagat 6240

cattaaggct ggagatgcag acgttatcat tgctggtggt atggaaaaca tgtcaagagc 6300

cccatacttg gctaataacg ccaggtgggg atataggatg ggaaacgcca agtttgtcga 6360

cgaaatgatt actgacggat tgtgggacgc cttcaatgac tatcacatgg gtataaccgc 6420

agaaaacatt gccgagaggt ggaatatctc aagagaagaa caggatgagt ttgcattggc 6480

ctcacagaaa aaagcagagg aggcaataaa gtcaggtcag tttaaggatg aaatcgtccc 6540

agtcgtcatc aagggaagaa agggtgagac agttgtcgac accgacgaac accctagatt 6600

tggttcaacc atcgagggat tagcaaagtt gaagccagcc ttcaagaaag acggaaccgt 6660

aaccgccggt aatgcatctg gattgaacga ttgcgcagca gttttggtca taatgtcagc 6720

cgagaaagct aaggagttgg gtgtcaagcc attggcaaaa attgtttcat acggatcagc 6780

cggtgtcgac cctgccatca tgggttacgg acctttttac gccaccaagg ctgcaatcga 6840

aaaggccggt tggaccgtag atgaattgga tttgatcgag tcaaacgagg cctttgccgc 6900

ccaatcattg gctgtcgcca aggacttgaa gttcgacatg aacaaggtca acgtcaacgg 6960

tggtgccatc gcattgggtc accctatcgg agcctctggt gccaggatct tggttacctt 7020

ggtccacgcc atgcagaaga gggacgcaaa gaagggtttg gccaccttgt gcatcggtgg 7080

aggtcaggga acagctatct tgttagagaa atgcagcccc tcagcccccc tagcgtcgaa 7140

taaaagacat tggtacatga tatcaaacag aattttaaca tttcttgatc cagtttgtaa 7200

acaaaacaaa caatttttct accatttaac ttcataccat cggcgagagc cgaacaggaa 7260

aaaaaagaag tctccggtta tcgtaagcag tatcaaataa taagaatgta tgtgtgtgca 7320

atttgttata cccacgaaga agtgcgcagt agagttagaa aaccaactga gtaatcttta 7380

ctcccgacaa tcgtccaata atcctcttgt tgctaggaac gtgatgatgg atttcgtttg 7440

aaatccggac ggaaaactca aaagaagtcc aaccaccaac cattttcgag cctcaagaat 7500

ctctaagcag gtttctttac taaggggatg gcctttctgt cctggacatt ttttccttcc 7560

ttttttcatt tccttgaaag gaacagattt tttttgactt ttgccacaca gctgcactat 7620

ctcaacccct tttacatttt aagttttcgg gttgaatggc cggtgtttaa accccagcgc 7680

ctggcggg 7688

<210> 94
<211> 5025
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i476

<400> 94
caggatccga cggcacggcc acgcgtttaa accgcctggg ataggatagt agcaactctt 60

ggaggagagc attgtcagtt gtccagtctc tgaagttaag tagtaagttt gcggagtcaa 120

agggggatgg cttttgccat ttgtgagagt tgtgcggcag catcttattc aaatagagct 180

gtattctgaa gacctcttgt agaacatcat ccatactaaa aagtaaatcg tcctgtccca 240

ttacgagctg tattagtgct gtgaccctct gtatatttac gttgccatga agaaggtaat 300

gggcgatatt ttgatacaat tcctgagttg catgttggat tgagtttacg aagggtcgcc 360

agacggccag aaacctccag gcggagttaa caactagtaa tacggcatcc atgtttgcat 420

cagcgccgag cctataccag tcactgagta gacgttttct tgctcttttt atgtcctgac 480

ttcttttgac gagggggcat tctctagaga cacaggcagt tgcttccagc aactgccgta 540

cggccgttct catgctgtcg aggatttttt ttgggacgat attgtcatta tagggcagtg 600

tgtgacttat gaattgttgt agaaggacgt ctgtgatgtt ggagatatgt attttgttaa 660

ctcttcttga gacgatttgg ccctggatag cgaagcgtgc ggttacaaat aggtcgtctt 720

gttcaagaag gtaggcgagg acattatcta tcagtacaaa catcttagta gtgtctgagg 780

agagggttga ttgtttatgt atttttgcga aatatatata tatatattct acacagatat 840

atacatattt gtttttcggg ctcattcttt cttctttgcc agaggctcac cgctcaagag 900

gtccgctaat tctggagcga ttgttattgt tttttctttt cttcttctat tcgaaaccca 960

gtttttgatt tgaatgcgag ataaactggt attcttcatt agattctcta ggcccttggt 1020

atctagatat gggttctcga tgttctttgc aaaccaactt tctagtattc ggacattttc 1080

ttttgtaaac cggtgtcctc tgtaaggttt agtacttttg tttatcatat cttgagttac 1140

cacattaaat accaacccat ccgccgattt atttttctgt gtaagttgat aattacttct 1200

atcgttttct atgctgcgca tttctttgag taatacagta atggtagtag tgagttgaga 1260

tgttgtttgc aacaacttct tctcctcatc actaatctta cggtttttgt tggccctaga 1320

taagaatcct aatatatccc ttaattcaac ttcttcttct gttgttacac tctctggtaa 1380

cttaggtaaa ttacagcaaa tagaaaagag ctttttattt atgtctagta tgctggattt 1440

aaactcatct gtgatttgtg gatttaaaag gtctttaatg ggtattttat tcatttttc 1500

ttgcttatct tccttttttt cttgcccact tctaagctga tttcaatctc tcctttatat 1560

atatttttaa gttccaacat tttatgtttc aaaacattaa tgatgtctgg gttttgtttg 1620

ggatgcaatt tattgcttcc caatgtagaa aagtacatca tatgaaacaa cttaaactct 1680

taactacttc ttttaacctt cacttttat gaaatgtatc aaccatatat aataacttaa 1740

tagacgacat tcacaatatg tttacttcga agcctgcttt caaaattaag aacaaagcat 1800

ccaaatcata cagaaacaca gcggtttcaa aaaagctgaa agaaaaacgt ctagctgagc 1860

atgtgaggcc aagctgcttc aatattattc gaccactcaa gaaagatatc cagattcctg 1920

ttccttcctc tcgattttta aataaaatcc aaattcacag gatagcgtct ggaagtcaaa 1980

atactcagtt tcgacagttc aataagacat ctataaaatc ttcaaagaaa tatttaaact 2040

catttatggc ttttagagca tattactcac agtttggctc cggtgtaaaa caaaatgtct 2100

tgtcttctct gctcgctgaa gaatggcacg cggacaaaat gcagcacgga atatgggact 2160

acttcgcgca acagtataat tttataaacc ctggttttgg ttttgtagag tggttgacga 2220

ataattatgc tgaagtacgt ggtgacggat attgggaaga tgtgtttgta catttggcct 2280

tatagagtgt ggtcgtggcg gaggttgttt atctttcgag tactgaatgt tgtcagtata 2340

gctatcctat ttgaaactcc ccatcgtctt gctcttgttc ccaatgtttg tttatacact 2400

catatggcta tacccttatc tacttgcctc ttttgtttat gtctatgtat ttgtataaaa 2460

tatgatatta ctcagactca agcaaacaat caatgctcac acgcggccag ggggagcctc 2520

gacactagta atacacatca tcgtcctaca agttcatcaa agtgttggac agacaactat 2580

accagcatgg atctcttgta tcggttcttt tctcccgctc tctcgcaata acaatgaaca 2640

ctgggtcaat catagcctac acaggtgaac agagtagcgt ttatacaggg tttatacggt 2700

gattcctacg gcaaaaattt ttcatttcta aaaaaaaaaa gaaaaatttt tctttccaac 2760

gctagaagga aaagaaaaat ctaattaaat tgatttggtg attttctgag agttcccttt 2820

ttcatatatc gaattttgaa tataaaagga gatcgaaaaa atttttctat tcaatctgtt 2880

ttctggtttt atttgatagt ttttttgtgt attattatta tggattagta ctggtttata 2940

tgggtttttc tgtataactt ctttttattt tagtttgttt aatcttattt tgagttacat 3000

tatagttccc taactgcaag agaagtaaca ttaaaaatga aaaagcctga actcaccgcg 3060

acgtctgtcg agaagtttct gatcgaaaag ttcgacagcg tctccgacct gatgcagctc 3120

tcggagggcg aagaatctcg tgctttcagc ttcgatgtag gagggcgtgg atatgtcctg 3180

cgggtaaata gctgcgccga tggtttctac aaagatcgtt atgtttatcg gcactttgca 3240

tcggccgcgc tcccgattcc ggaagtgctt gacattgggg aattcagcga gagcctgacc 3300

tattgcatct cccgccgtgc acagggtgtc acgttgcaag acctgcctga aaccgaactg 3360

cccgctgttc tgcagccggt cgcggaggcc atggatgcga tcgctgcggc cgatcttagc 3420

cagacgagcg ggttcggccc attcggaccg caaggaatcg gtcaatacac tacatggcgt 3480

gatttcatat gcgcgattgc tgatccccat gtgtatcact ggcaaactgt gatggacgac 3540

accgtcagtg cgtccgtcgc gcaggctctc gatgagctga tgctttgggc cgaggactgc 3600

cccgaagtcc ggcacctcgt gcacgcggat ttcggctcca acaatgtcct gacggacaat 3660

ggccgcataa cagcggtcat tgactggagc gaggcgatgt tcggggattc ccaatacgag 3720

gtcgccaaca tcttcttctg gaggccgtgg ttggcttgta tggagcagca gacgcgctac 3780

ttcgagcgga ggcatccgga gcttgcagga tcgccgcggc tccgggcgta tatgctccgc 3840

attggtcttg accaactcta tcagagcttg gttgacggca atttcgatga tgcagcttgg 3900

gcgcagggtc gatgcgacgc aatcgtccga tccggagccg ggactgtcgg gcgtacacaa 3960

atcgcccgca gaagcgcggc cgtctggacc gatggctgtg tagaagtact cgccgatagt 4020

ggaaaccgac gccccagcac tcgtccgagg gcaaaggaat aggtttaact tgatactact 4080

agatttttc tcttcattta taaaattttt ggttataatt gaagctttag aagtatgaaa 4140

aaatcctttt ttttcattct ttgcaaccaa aataagaagc ttcttttatt cattgaaatg 4200

atgaatataa acctaacaaa agaaaaagac tcgaatatca aacattaaaa aaaaataaaa 4260

gaggttatct gttttcccat ttagttggag tttgcatttt ctaatagata gaactctcaa 4320

ttaatgtgga tttagtttct ctgttcgttt ttttttgttt tgttctcact gtatttacat 4380

ttctatttag tatttagtta ttcatataat cttaacttct cgaggagctc cgctcgtcca 4440

acgccggcgg acctcggagg ttgtttatct ttcgagtact gaatgttgtc agtatagcta 4500

tcctatttga aactccccat cgtcttgctc ttgttcccaa tgtttgttta tacactcata 4560

tggctatacc cttatctact tgcctctttt gtttatgtct atgtatttgt ataaaatatg 4620

atattactca gactcaagca aacaatcaat tcttagcatc attctttgtt cttatcttaa 4680

ccataaacga tcttgatgtg acttttgtaa tttgaacgaa ttggctatac gggacggatg 4740

acaaatgcac cattactcta ggttgttgtt ggatcttaac aaaccgtaaa ggtaaactgc 4800

ccatgcggtt cacatgactt ttgactttcc tttgtttgct agttaccttc ggcttcacaa 4860

tttgtttttc cacttttcta acaggtttat caccttttcaa acttatcttt atcttattcg 4920

ccttcttggg tgcctccaca gtagaggtta cttccttttt aatatgtact tttaggatac 4980

tttcacgctt tataacacgg tgtttaaacc ccagcgcctg gcggg 5025

<210> 95
<211> 3665
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i477

<400> 95
agctcgagga cggcacggcc acgcgtttaa accgccaagc ttttcaattc atctttttt 60

tttttgttct ttttttgat tccggtttct ttgaaatttt tttgattcgg taatctccga 120

gcagaaggaa gaacgaagga aggagcacag acttagattg gtatatatac gcatatgtgg 180

tgttgaagaa acatgaaatt gcccagtatt cttaacccaa ctgcacagaa caaaaacctg 240

caggaaacga agataaatca tgtcgaaagc tacatataag gaacgtgctg ctactcatcc 300

tagtcctgtt gctgccaagc tatttaatat catgcacgaa aagcaaacaa acttgtgtgc 360

ttcattggat gttcgtacca ccaaggaatt actggagtta gttgaagcat taggtcccaa 420

aatttgttta ctaaaaacac atgtggatat cttgactgat ttttccatgg agggcacagt 480

taagccgcta aaggcattat ccgccaagta caatttttta ctcttcgaag acagaaaatt 540

tgctgacatt ggtaatacag tcaaattgca gtactctgcg ggtgtataca gaatagcaga 600

atgggcagac attacgaatg cacacggtgt ggtgggccca ggtattgtta gcggtttgaa 660

gcaggcggca gaagaagtaa caaaggaacc tagaggcctt ttgatgttag cagaattgtc 720

atgcaagggc tccctatcta ctggagaata tactaagggt actgttgaca ttgcgaagag 780

tgacaaagat tttgttatcg gctttattgc tcaaagagac atgggtggaa gagatgaagg 840

ttacgattgg ttgattatga cacccggtgt gggtttagat gacaagggag acgcattggg 900

tcaacagtat agaaccgtgg atgatgtggt ctctacagga tctgacatta ttattgttgg 960

aagcgctcgt ccaacgccgg cggacctatg gcgcaagttt tccgctttgt aatatatatt 1020

tatacccctt tcttctctcc cctgcaatat aatagtttaa ttctaatatt aataatatcc 1080

tatattttct tcatttaccg gcgcactctc gcccgaacga cctcaaaatg tctgctacat 1140

tcataataac caaaagctca taacttttt ttttgaacct gaatatatat acatcacata 1200

tcactgctgg tccttgccga ccagcgtata caatctcgat agttggtttc ccgttctttc 1260

cactcccgtc atggactaca acaagagatc ttcggtctca accgtgccta atgcagctcc 1320

cataagagtc ggattcgtcg gtctcaacgc agccaaagga tgggcaatca agacacatta 1380

ccccgccata ctgcaactat cgtcacaatt tcaaatcact gccttataca gtccaaaaat 1440

tgagacttct attgccacca tccagcgtct aaaattgagt aatgccactg cttttcccac 1500

tttagagtca tttgcatcat cttccactat agatatgata gtgatagcta tccaagtggc 1560

cagtcattat gacgttgtta tgcctctctt ggaattctcc aaaaataatc cgaacctcaa 1620

gtatcttttc gtagaatggg cccttgcatg ttcactagat caagccgaat ccatttataa 1680

ggctgctgct gaacgtgggg ttcaaaccat catctcttta caaggtcgta aatcaccata 1740

tattttgaga gcaaaagaat taatatctca aggctatatc ggcgacatta attctatcga 1800

gattgctgga aatggcggtt ggtacggcta cgaaaggcct gttaaatcac caaaatacat 1860

ctatgaaatc gggaacggtg tagatctggt aaccacaaca tttggtcaca caatcgatat 1920

tttacaatac atgacaagtt cgtacttttc caggataaat gcaatggttt tcaataatat 1980

tccagagcaa gagctgatag atgagcgtgg taaccgattg ggccagcgag tcccaaagac 2040

agtaccggat catcttttat tccaaggcac attgttaaat ggcaatgttc cagtgtcatg 2100

cagtttcaaa ggtggcaaac ctaccaaaaa atttaccaaa aatttggtca ttgatattca 2160

cggtaccaag ggagatttga aacttgaagg cgatgccgga ttcgcagaaa tttcaaatct 2220

ggtcctttac tacagtggaa ctagagcaaa cgacttcccg ctagctaatg gacaacaagc 2280

tcctttagac ccggggtatg atgcaggtaa agaaatcatg gaagtatatc atttacgaaa 2340

ttataatgcc attgtcggta atattcatcg actgtatcaa tctatctctg acttccactt 2400

caatacaaag aaaattcctg aattaccctc acaatttgta atgcaaggtt tcgatttcga 2460

aggctttccc accttgatgg atgctctgat attacacagg ttaatcgaga gcgtttataa 2520

aagtaacatg atgggctcca cattaaacgt tagcaatatc tcgcattata gtttataaaa 2580

gcatcttgcc ctgtgcttgg cccccagtgc agcgaacgtt ataaaaacga atactgagta 2640

tatatctatg taaaacaacc atatcatttc ttgttctgaa ctttgtttac ctaactagtt 2700

ttaaatttcc ctttttcgtg catgcgggtg ttcttattta ttagcatact acatttgaaa 2760

tatcaaattt ccttagtaga aaagtgagag aaggtgcact gacacaaaaa ataaaatccc 2820

cgcgtgcttg gccggccgtc ttcattggat gttcgtacca ccaaggaatt actggagtta 2880

gttgaagcat taggtcccaa aatttgttta ctaaaaacac atgtggatat cttgactgat 2940

ttttccatgg agggcacagt taagccgcta aaggcattat ccgccaagta caatttttta 3000

ctcttcgaag acagaaaatt tgctgacatt ggtaatacag tcaaattgca gtactctgcg 3060

ggtgtataca gaatagcaga atgggcagac attacgaatg cacacggtgt ggtgggccca 3120

ggtattgtta gcggtttgaa gcaggcggca gaagaagtaa caaaggaacc tagaggcctt 3180

ttgatgttag cagaattgtc atgcaagggc tccctatcta ctggagaata tactaagggt 3240

actgttgaca ttgcgaagag tgacaaagat tttgttatcg gctttattgc tcaaagagac 3300

atgggtggaa gagatgaagg ttacgattgg ttgattatga cacccggtgt gggtttagat 3360

gacaagggag acgcattggg tcaacagtat agaaccgtgg atgatgtggt ctctacagga 3420

tctgacatta ttattgttgg aagaggacta tttgcaaagg gaagggatgc taaggtagag 3480

ggtgaacgtt acagaaaagc aggctgggaa gcatatttga gaagatgcgg ccagcaaaac 3540

taaaaaactg tattataagt aaatgcatgt atactaaact cacaaattag agcttcaatt 3600

taattatatc agttattacc cgggaatctc ggtgtttaaa ccccagcgcc tggcgggtct 3660

agatc 3665

<210> 96
<211> 10623
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i94

<400> 96
atgagtgata gggaattcgt cacggtagat cccgtcacta tcataatcaa agaatgcatt 60

aatttatcga cagcgatgcg gaaatactct aaatttacct ctcaatctgg agtggccgct 120

ttgctggggg gaggaagtga aatatttagc aatcaagatg actacttggc tcacacattc 180

aacaatttga ataccaacaa gcacaatgat ccatttttat ctggattcat tcagttaaga 240

cttatgttga ataaactgaa aaatctagat aatatagatt cactaaccat attgcagcca 300

tttttattaa ttgtgagtac aagttccatt tctggttaca tcacttccct ggccctggac 360

tctttgcaga aattctttac cttgaatatc atcaatgaat catcgcaaaa ctatattggt 420

gcacacaggg cgacggtaaa tgctctaaca cattgtaggt ttgaaggatc tcaacaactt 480

tctgatgatt cagttctttt gaaagtcgtg tttttactgc gttcaatcgt cgactcacct 540

tacggagatt tattatcaaa ctctatcata tatgacgtat tgcaaacgat tctttcattg 600

gcttgtaata acagaaggag cgaagtcctt aggaatgctg cacaatcaac aatgatagcc 660

gttaccgtaa agattttctc aaaactaaag actattgagc ctgttaatgt gaatcaaata 720

tacatcaatg atgaaagtta cacaaatgat gtattgaagg ccgatacaat tggcacaaat 780

gtagaatcca aagaagaagg aagtcaagaa gatcccatcg gcatgaaagt gaataatgag 840

gaagctatta gcgaggacga tggcattgaa gaagagcata ttcattcaga gaagagcaca 900

aatggcgccg aacaactaga tattgtgcaa aaaacaacaa gatcaaattc caggatccaa 960

gcgtatgctg atgataacta tggattgccc gtggttaggc aatatttaaa cttattacta 1020

tcattgattg cgccagaaaa tgaattaaaa cattcatact ccactagaat atttggccta 1080

gagttaattc aaacggcatt agaaatttca ggtgatcgat tgcagctata cccacggctt 1140

tttacactga tatcagatcc tattttcaaa agcattttgt ttatcataca gaacactaca 1200

aaattatcac tacttcaagc tacattgcag ctatttacta ctctagttgt tatattgggc 1260

aacaacttac aattacagat cgagctcact ctaacaagaa tattttctat tcttttagat 1320

gatggtaccg caaataactc gagttctgaa aataagaaca agccatcaat aataaaggaa 1380

cttctaattg agcaaatatc catcttatgg actaggtcgc catcttttt tacttctact 1440

tttatcaatt tcgattgtaa tctcgatagg gcagacgttt ccataaactt tttgaaggct 1500

ttgactaaat tggccttacc agaatccgcc ttaactacca cagaaagtgt accacccatt 1560

tgccttgagg gattggtctc cctagtcgat gatatgttcg atcacatgaa ggacattgac 1620

agagaagaat ttggcaggca aaagaatgaa atggaaatct taaaaaagag ggaccgtaaa 1680

acagagttta ttgaatgtac caatgcattc aatgaaaagc ccaaaaaggg tattccgatg 1740

ttaatagaaa aaggtttcat tgcttccgac tccgataaag atattgcgga gtttcttttc 1800

aataataaca accgtatgaa taaaaaaaca atcggtttgc tactttgcca tccggacaaa 1860

gtaagcttgt tgaatgaata tattcgtttg tttgattttt cagggttaag ggtcgatgaa 1920

gctattagaa ttttgttgac gaaatttagg ttgcctggtg aatcgcaaca aattgaaaga 1980

atcatcgaag ccttctcgtc tgcgtattgt gaaaatcaag attacgatcc atccaaaatc 2040

agtgacaacg cggaggatga catttctact gttcaaccag acgctgattc tgttttcatt 2100

ttaagttatt caattattat gttgaacact gacctacata accctcaagt gaaggaacac 2160

atgtcatttg aagattactc tggtaactta aagggatgct gtaatcacaa agacttccca 2220

ttctggtatt tggatagaat ttactgttca atcagagata aagaaattgt tatgcctgaa 2280

gagcaccacg gcaacgaaaa gtggtttgaa gatgcttgga ataacttgat atcttcaact 2340

actgttataa ctgaaataaa aaaagacaca caatctgtca tggataaatt aacacccttg 2400

gagcttttga actttgatag agcaattttt aaacaagttg gcccaagtat tgtcagtact 2460

ttattcaaca tttacgtagt tgcatctgat gaccatatat ctaccagaat gataacaagt 2520

ttggacaaat gttcctatat ttccgcattt tttgacttca aagatctctt taatgatata 2580

ctaaactcca ttgctaaggg cactactttg attaattcaa gccatgacga tgaactttca 2640

actttagctt ttgaatatgg cccaatgcca ctggtgcaaa ttaaattcga agacactaac 2700

actgagatcc cggttagtac agatgctgtt agatttggta gatcatttaa gggtcaacta 2760

aatacagttg ttttttccg gattattcgc aggaacaaag atcctaaaat tttctccaag 2820

gaattatggt taaacattgt taatattata ctaacattgt acgaagactt gattttgtct 2880

cctgatattt tccctgattt acaaaaaaga ctgaaattaa gcaacttgcc taagccatct 2940

cctgaaattt ctattaacaa gagcaaagaa agcaaaggtc tcttatcaac atttgcttct 3000

tatttaaaag gtgatgaaga acccacagaa gaggaaatca aatcctcaaa aaaagcgatg 3060

gagtgcataa agtcgagtaa tattgccgcc tctgtctttg gaaatgaatc aaatataaca 3120

gcggatttaa taaaaacttt actagactcc gccaaaactg agaaaaacgc agataattcc 3180

aggtattttg aagcagaact tttatttatc atcgaattga ctattgcatt atttctattt 3240

tgcaaagagg agaaagaatt aggaaagttc atacttcaaa aagttttcca actttctcac 3300

acgaaaggcc tcacgaaaag gactgttcgt agaatgctaa catacaaaat tttgttaatt 3360

tcgttatgtg cggatcagac ggagtacttg tccaaattaa taaacgatga gctgttaaaa 3420

aaggggata tttttaccca aaaatttttt gcaactaatc aaggtaagga atttttgaag 3480

agactatttt cattgaccga atcagagttt tatagaggat ttttactagg aaatgagaat 3540

ttttggaaat ttttaagaaa agttacagca atgaaagagc agagcgagag cattttgaa 3600

tatttaaatg aatcgatcaa gacagacagc aatattttga caaatgagaa cttcatgtgg 3660

gtcctaggac tattagatga aatttcatca atgggtgccg ttggaaatca ctgggaaata 3720

gaatacaaga aattgacaga aagtggtcat aaaattgata aggagaatcc atacaagaaa 3780

tcgatcgaat tatcattgaa atccattcaa ctaacatcac acttgctgga agataataac 3840

gatctgcgta aaaacgagat attcgctatt attcaagctt tggcacatca atgcatcaat 3900

ccgtgtaagc agataagtga atttgcagtg gtaacgctag agcagacgct catcaataaa 3960

atcgaaattc caactaatga gatggaatcg gtagaagaat taattgaggg cggattacta 4020

ccgttgctaa attcgagtga aacacaggaa gaccagaaaa tcctcatttc atccatatta 4080

acaataattt caaatgttta tttgcattat ttgaaactag ggaagacaag caacgaaacg 4140

tttttgaaaa ttttgagtat tttcaataaa tttgtagagg actcagatat tgaaaaaaag 4200

ctacagcaat taatacttga taagaagagt attgagaagg gcaacggttc atcatctcat 4260

ggatctgcac atgaacaaac accagagtca aacgacgttg aaattgaggc tactgcgcca 4320

attgatgaca atacagacga tgataacaaa ccgaagttat ctgatgtaga aaaggattaa 4380

agatgctaag agatagtgat gatatttcat aaataatgta attctatata tgttaattac 4440

ctttttgcg aggcatattt atggtgaagg ataagttttg accatcaaag aaggttaatg 4500

tggctgtggt ttcagggtcc atacccggga gttatgacaa ttacaacaac agaattcttt 4560

ctatatatgc acgaacttgt aatatggaag aaattatgac gtacaaacta taaagtaaat 4620

attttacgta acacatggtg ctgttgtgct tctttttcaa gagaatacca atgacgtatg 4680

actaagttta ggatttaatg caggtgacgg acccatcttt caaacgattt atatcagtgg 4740

cgtccaaatt gttaggtttt gttggttcag caggtttcct gttgtgggtc atatgacttt 4800

gaaccaaatg gccggctgct agggcagcac ataaggataa ttcacctgcc aagacggcac 4860

aggcaactat tcttgctaat tgacgtgcgt tggtaccagg agcggtagca tgtgggcctc 4920

ttacacctaa taagtccaac atggcacctt gtggttctag aacagtacca ccaccgatgg 4980

tacctacttc gatggatggc atggatacgg aaattctcaa atcaccgtcc acttctttca 5040

tcaatgttat acagttggaa ctttcgacat tttgtgcagg atcttgtcct aatgccaaga 5100

aaacagctgt cactaaatta gctgcatgtg cgttaaatcc accaacagac ccagccattg 5160

cagatccaac caaattctta gcaatgttca actcaaccaa tgcggaaaca tcacttttta 5220

acacttttct gacaacatca ccaggaatag tagcttctgc gacgacactc ttaccacgac 5280

cttcgatcca gttgatggca gctggttttt tgtcggtaca gtagttacca gaaacggaga 5340

caacctccat atcttcccag ccatactctt ctaccatttg ctttaatgag tattcgacac 5400

ccttagaaat catattcata cccattgcgt caccagtagt tgttctaaat ctcatgaaga 5460

gtaaatctcc tgctagacaa gtttgaatat gttgcagacg tgcaaatctt gatgtagagt 5520

taaaagcttt tttaattgcg ttttgtccct cttctgagtc taaccatatc ttacaggcac 5580

cagatctttt caaagttggg aaacggacta ctgggcctct tgtcatacca tccttagtta 5640

aaacagttgt tgcaccaccg ccagcattga ttgccttaca gccacgcatg gcagaagcta 5700

ccaaacaacc ctctgtagtt gccattggta tatgataaga tgtaccatcg ataaccaagg 5760

ggcctataac accaacgggc aaaggcatgt aacctataac attttcacaa caagcgccaa 5820

atacgcggtc gtagtcataa tttttatatg gtaaacgatc agatgctaat acaggagctt 5880

ctgccaaaat tgaaagagcc ttcctacgta ccgcaaccgc tctcgtagta tcacctaatt 5940

ttttctccaa agcgtacaaa ggtaacttac cgtgaataac caaggcagcg acctctttgt 6000

tcttcaattg ttttgtattt ccactactta ataatgcttc taattcttct aaaggacgta 6060

ttttcttatc caagctttca atatcgcggg aatcatcttc ctcactagat gatgaaggtc 6120

ctgatgagct cgattgcgca gatgataaac ttttgacttt cgatccagaa atgactgttt 6180

tattggttaa aactggtgta gaagcctttt gtacaggagc agtaaaagac ttcttggtga 6240

cttcagtctt caccaattgg tctgcagcca ttatagtttt ttctccttga cgttaaagta 6300

tagaggtata ttaacaattt tttgttgata cttttatgac atttgaataa gaagtaatac 6360

aaaccgaaaa tgttgaaagt attagttaaa gtggttatgc agcttttgca tttatatatc 6420

tgttaataga tcaaaaatca tcgcttcgct gattaattac cccagaaata aggctaaaaa 6480

actaatcgca ttattatcct atggttgtta atttgattcg ttgatttgaa ggtttgtggg 6540

gccaggttac tgccaatttt tcctcttcat aaccataaaa gctagtattg tagaatcttt 6600

attgttcgga gcagtgcggc gcgaggcaca tctgcgtttc aggaacgcga ccggtgaaga 6660

ccaggacgca cggaggagag tcttccgtcg gagggctgtc gcccgctcgg cggcttctaa 6720

tccgtacttc aatatagcaa tgagcagtta agcgtattac tgaaagttcc aaagagaagg 6780

ttttttagg ctaagataat ggggctcttt acatttccac aacatataag taagattaga 6840

tatggatatg tatatggtgg tattgccatg taatatgatt attaaacttc tttgcgtcca 6900

tccaaaaaaa aagtaagaat ttttgaaaat tcaatataaa tgaaactctc aactaaactt 6960

tgttggtgtg gtattaaagg aagacttagg ccgcaaaagc aacaacaatt acacaataca 7020

aacttgcaaa tgactgaact aaaaaaacaa aagaccgctg aacaaaaaac cagacctcaa 7080

aatgtcggta ttaaaggtat ccaaatttac atcccaactc aatgtgtcaa ccaatctgag 7140

ctagagaaat ttgatggcgt ttctcaaggt aaatacacaa ttggtctggg ccaaaccaac 7200

atgtcttttg tcaatgacag agaagatatc tactcgatgt ccctaactgt tttgtctaag 7260

ttgatcaaga gttacaacat cgacaccaac aaaattggta gattagaagt cggtactgaa 7320

actctgattg acaagtccaa gtctgtcaag tctgtcttga tgcaattgtt tggtgaaaac 7380

actgacgtcg aaggtattga cacgcttaat gcctgttacg gtggtaccaa cgcgttgttc 7440

aactctttga actggattga atctaacgca tgggatggta gagacgccat tgtagtttgc 7500

ggtgatattg ccatctacga taagggtgcc gcaagaccaa ccggtggtgc cggtactgtt 7560

gctatgtgga tcggtcctga tgctccaatt gtatttgact ctgtaagagc ttcttacatg 7620

gaacacgcct acgattttta caagccagat ttcaccagcg aatatcctta cgtcgatggt 7680

cattttcat taacttgtta cgtcaaggct cttgatcaag tttacaagag ttattccaag 7740
aaggctattt ctaaagggtt ggttagcgat cccgctggtt cggatgcttt gaacgttttg 7800
aaatatttcg actacaacgt tttccatgtt ccaacctgta aattggtcac aaaatcatac 7860
ggtagattac tatataacga tttcagagcc aatcctcaat tgttcccaga agttgacgcc 7920
gaattagcta ctcgcgatta tgacgaatct ttaaccgata agaacattga aaaaactttt 7980
gttaatgttg ctaagccatt ccacaaagag agagttgccc aatctttgat tgttccaaca 8040
aacacaggta acatgtacac cgcatctgtt tatgccgcct ttgcatctct attaaactat 8100
gttggatctg acgacttaca aggcaagcgt gttggtttat tttcttacgg ttccggttta 8160
gctgcatctc tatattcttg caaaattgtt ggtgacgtcc aacatattat caaggaatta 8220
gatattacta acaaattagc caagagaatc accgaaactc caaaggatta cgaagctgcc 8280
atcgaattga gagaaaatgc ccatttgaag aagaacttca aacctcaagg ttccattgag 8340
catttgcaaa gtggtgttta ctacttgacc aacatcgatg acaaatttag aagatcttac 8400
gatgttaaaa aataatcttc ccccatcgat tgcatcttgc tgaaccccct tcataaatgc 8460
tttatttttt tggcagcctg ctttttttag ctctcattta atagagtagt tttttaatct 8520
atatactagg aaaactcttt atttaataac aatgatatat atatattcca gtggtgcatg 8580
aacgcatgag aaagcccccg gaagatcatc ttccgggggc ttttttttttg gcgcgcgata 8640
cagaccggtt cagacaggat aaagaggaac gcagaatgtt agacaacacc cgcttacgca 8700
tagctattca gaaatcaggc cgtttaagcg atgattcacg agaattgctg gcccgctgcg 8760
gcataaaaat taatttacac actcagcgcc tgattgcgat ggcggaaaac atgccgattg 8820
atatcctgcg cgtgcgtgat gatgacattc cgggtctggt aatggatggc gtggtcgatc 8880
tcggtattat cggcgaaaac gtgctggaag aagagctact caaccgccgc gcacagggcg 8940
aagatccacg ctatttaacc ctgcgccgtc ttgacttcgg cggctgccgt ttatcgctgg 9000
caacaccggt tgacgaagcc tgggacggcc cggccgcgct ggacggtaaa cgtatcgcta 9060
cctcatatcc gcacctcctc aaacgctacc tcgaccagaa aggcgtctct tttaaatcgt 9120
gtctgttaaa tggttctgtc gaagtcgcgc cgcgcgcggg gctggccgac gctatctgcg 9180
atttggtctc taccggcgcg acgcttgaag ctaacggcct gcgtgaagtc gaagttatct 9240
accgctctaa agcctgtctg attcagcgcg acggtgagat ggcacagagc aagcaagagc 9300
tgatcgataa attgctgacc cgtattcagg gcgtgattca ggcgcgcgaa tcgaaataca 9360
tcatgatgca cgcgccaagt gaacgcctgg aagaggttat cgccctgctg ccaggcgccg 9420
aaaggccgac aattctgccg ctggcaggcg agcaacagcg cgtggcgatg cacatggtca 9480
gcagcgaaac gttgttctgg gaaaccatgg agaaactgaa agcgcttggc gccagctcga 9540
ttctggtact gccgatcgag aagatgatgg agtgatctga cgcctgatgg cgctgcgctt 9600
atcaggccta cgtaatgcgt tgaaaaactg tattataagt aaatgcatgt atactaaact 9660
cacaaattag agcttcaatt taattatatc agttattacc cgggaatctc ggtcgtaatg 9720

atttctataa tgacgaaaaa aaaaaaattg gaaagaaaaa gcttcatggc ctttataaaa 9780

aggaactatc caatacctcg ccagaaccaa gtaacagtat tttacggggc acaaatcaag 9840

aacaataaga caggactgta aagatggacg cattgaactc caaagaacaa caagagttcc 9900

aaaaagtagt ggaacaaaag caaatgaagg atttcatgcg tttgtactct aatctggtag 9960

aaagatgttt cacagactgt gtcaatgact tcacaacatc aaagctaacc aataaggaac 10020

aaacatgcat catgaagtgc tcagaaaagt tcttgaagca tagcgaacgt gtagggcagc 10080

gtttccaaga acaaaacgct gccttgggac aaggcttggg ccgataaggt gtactggcgt 10140

atatatatct aattatgtat ctctggtgta gcccattttt agcatgtaaa tataaagaga 10200

aaccatatct aatctaacca aatccaaaca aaattcaata gttactatcg ctttttttctt 10260

tctgtatcgc aaataagtga aaattaaaaa agaaagatta aattggaagt tggatatggg 10320

ctggaacagc agcagtaatc ggtatcgggt tcgccactaa tgacgtccta cgattgcact 10380

caacagacct tgacgctcac gccgtagcgg gcgacaagtc aaacggaaca accgttgccg 10440

ttcccatcgg agtccgacct aggccgaact ccgtgaattt ctgataacaa cggtcggtaa 10500

agactggttc cccagtatat ttcttctctc aggagcaggg gccaatgcca aaagcgacat 10560

taacccggag gacaaggctc cactgtgttc caccgaattt cccacctgat aatatctgat 10620

aac 10623

<210> 97
<211> 8479
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i467

<400> 97
gacggcacgg ccacgcgttt aaaccgccct ccaagctgac ataaatcgca ctttgtatct 60

actttttttt attcgaaaac aaggcacaac aatgaatcta tcgccctgtg agattttcaa 120

tctcaagttt gtgtaataga tagcgttata ttatagaact ataaaggtcc ttgaatatac 180

atagtgtttc attcctatta ctgtatatgt gactttacat tgttacttcc gcggctattt 240

gacgttttct gcttcaggtg cggcttggag ggcaaagtgt cagaaaatcg gccaggccgt 300

atgacacaaa agagtagaaa acgagatctc aaatatctcg aggcctgtcc tctatacaac 360

cgcccagctc tctgacaaag ctccagaacg gttgtctttt gtttcgaaaa gccaaggtcc 420

cttataattg ccctccattt tgtgtcacct atttaagcaa aaaattgaaa gtttactaac 480

ctttcattaa agagaaataa caatattata aaaagcgctt aaagctcaca cgcggccagg 540

gggagccgtt catcatctca tggatctgca catgaacaaa caccagagtc aaacgacgtt 600

gaaattgagg ctactgcgcc aattgatgac aatacagacg atgataacaa accgaagtta 660

tctgatgtag aaaaggatta aagatgctaa gagatagtga tgatatttca taaataatgt 720

aattctatat atgttaatta ccttttttgc gaggcatatt tatggtgaag gataagtttt 780

gaccatcaaa gaaggttaat gtggctgtgg tttcagggtc cataaagctt ttcaattcat 840

cttttttttt tttgttcttt tttttgattc cggtttcttt gaaatttttt tgattcggta 900

atctccgagc agaaggaaga acgaaggaag gagcacagac ttagattggt atatatacgc 960

atatgtggtg ttgaagaaac atgaaattgc ccagtattct taacccaact gcacagaaca 1020

aaaacctgca ggaaacgaag ataaatcatg tcgaaagcta catataagga acgtgctgct 1080

actcatccta gtcctgttgc tgccaagcta tttaatatca tgcacgaaaa gcaaacaaac 1140

ttgtgtgctt cattggatgt tcgtaccacc aaggaattac tggagttagt tgaagcatta 1200

ggtcccaaaa tttgtttact aaaaacacat gtggatatct tgactgattt ttccatggag 1260

ggcacagtta agccgctaaa ggcattatcc gccaagtaca atttttact cttcgaagac 1320

agaaaatttg ctgacattgg taatacagtc aaattgcagt actctgcggg tgtatacaga 1380

atagcagaat gggcagacat tacgaatgca cacggtgtgg tgggcccagg tattgttagc 1440

ggtttgaagc aggcggcaga agaagtaaca aaggaaccta gaggcctttt gatgttagca 1500

gaattgtcat gcaagggctc cctatctact ggagaatata ctaagggtac tgttgacatt 1560

gcgaagagtg acaaagattt tgttatcggc tttattgctc aaagagacat gggtggaaga 1620

gatgaaggtt acgattggtt gattatgaca cccggtgtgg gtttagatga caagggagac 1680

gcattgggtc aacagtatag aaccgtggat gatgtggtct ctacaggatc tgacattatt 1740

attgttggaa gaggactatt tgcaaaggga agggatgcta aggtagaggg tgaacgttac 1800

agaaaagcag gctgggaagc atatttgaga agatgcggcc agcaaaacta aaaaactgta 1860

ttataagtaa atgcatgtat actaaactca caaattagag cttcaattta attatatcag 1920

ttattacccg ggaatctcgg tcgtaatgat ttctataatg acgaaaaaaa aaaaattgga 1980

aagaaaaagc ttcatggcct ttataaaaag gaactatcca atacctcgcc agaaccaagt 2040

aacagtattt tacggggcac aaatcaagaa caataagaca ggactgtaaa gatggacgca 2100

tcgctcgtcc aacgccggcg gacctgtttt caatagttcg gtaatattaa cggataccta 2160

ctattatccc ctagtaggct cttttcacgg agaaattcgg gagtgttttt tttccgtgcg 2220

cattttctta gctatattct tccagcttcg cctgctgccc ggtcatcgtt cctgtcacgt 2280

agtttttccg gattcgtccg gctcatataa taccgcaata aacacggaat atctcgttcc 2340

gcggattcgg ttaaactctc ggtcgcggat tatcacagag aaagcttcgt ggagaatttt 2400

tccagatttt ccgctttccc cgatgttggt atttccggag gtcattatac tgaccgccat 2460

tataatgact gtacaacgac cttctggaga aagaaacaac tcaataacga tgtgggacat 2520

tgggggccca ctcaaaaaat ctggggacta tatccccaga gaatttctcc agaagagaag 2580

aaaagtcaaa gtttttttc gcttgggggt tgcatataaa tacaggcgct gttttatctt 2640

cagcatgaat attccataat tttacttaat agcttttcat aaataataga atcacaaaca 2700

aaatttacat ctgagttaaa caatcatgac aatcaaggaa cataaagtag tttatgaagc 2760

tcacaacgta aaggctctta aggctcctca acatttttac aacagccaac ccggcaaggg 2820

ttacgttact gatatgcaac attatcaaga aatgtatcaa caatctatca atgagccaga 2880

aaaattcttt gataagatgg ctaaggaata cttgcattgg gatgctccat acaccaaagt 2940

tcaatctggt tcattgaaca atggtgatgt tgcatggttt ttgaacggta aattgaatgc 3000

atcatacaat tgtgttgaca gacatgcctt tgctaatccc gacaagccag ctttgatcta 3060

tgaagctgat gacgaatccg acaacaaaat catcacattt ggtgaattac tcagaaaagt 3120

ttcccaaatc gctggtgtct taaaaagctg gggcgttaag aaaggtgaca cagtggctat 3180

ctatttgcca atgattccag aagcggtcat tgctatgttg gctgtggctc gtattggtgc 3240

tattcactct gttgtctttg ctgggttctc cgctggttcg ttgaaagatc gtgtcgttga 3300

cgctaattct aaagtggtca tcacttgtga tgaaggtaaa agaggtggta agaccatcaa 3360

cactaaaaaa attgttgacg aaggtttgaa cggagtcgat ttggtttccc gtatcttggt 3420

tttccaaaga actggtactg aaggtattcc aatgaaggcc ggtagagatt actggtggca 3480

tgaggaggcc gctaagcaga gaacttacct acctcctgtt tcatgtgacg ctgaagatcc 3540

tctattttta ttatacactt ccggttccac tggttctcca aagggtgtcg ttcacactac 3600

aggtggttat ttattaggtg ccgctttaac aactagatac gtttttgata ttcacccaga 3660

agatgttctc ttcactgccg gtgacgtcgg ctggatcacg ggtcacacct atgctctata 3720

tggtccatta accttgggta ccgcctcaat aattttcgaa tccactcctg cctacccaga 3780

ttatggtaga tattggagaa ttatccaacg tcacaaggct acccatttct atgtggctcc 3840

aactgcttta agattaatca aacgtgtagg tgaagccgaa attgccaaat atgacacttc 3900

ctcattacgt gtcttgggtt ccgtcggtga accaatctct ccagacttat gggaatggta 3960

tcatgaaaaa gtgggtaaca aaaactgtgt catttgtgac actatgtggc aaacagagtc 4020

tggttctcat ttaattgctc ctttggcagg tgctgtccca acaaaacctg gttctgctac 4080

cgtgccattc tttggtatta acgcttgtat cattgaccct gttacaggtg tggaattaga 4140

aggtaatgat gtcgaaggtg tccttgccgt taaatcacca tggccatcaa tggctagatc 4200

tgtttggaac caccacgacc gttacatgga tacttacttg aaaccttatc ctggtcacta 4260

tttcacaggt gatggtgctg gtagagatca tgatggttac tactggatca ggggtagagt 4320

tgacgacgtt gtaaatgttt ccggtcatag attatccaca tcagaaattg aagcatctat 4380

ctcaaatcac gaaaacgtct cggaagctgc tgttgtcggt attccagatg aattgaccgg 4440

tcaaaccgtc gttgcatatg tttccctaaa agatggttat ctacaaaaca acgctactga 4500

aggtgatgca gaacacatca caccagataa tttacgtaga gaattgatct tacaagttag 4560

gggtgagatt ggtcctttcg cctcaccaaa aaccattatt ctagttagag atctaccaag 4620

aacaaggtca ggaaagatta tgagaagagt tctaagaaag gttgcttcta acgaagccga 4680

acagctaggt gacctaacta ctttggccaa cccagaagtt gtacctgcca tcatttctgc 4740

tgtagagaac caatttttct ctcaaaaaaa gaaataaatt gaattgaatt gaaatcgata 4800

gatcaatttt tttcttttct ctttccccat cctttacgct aaaataatag tttattttat 4860

ttttgaata ttttttattt atatacgtat atatagacta ttatttatct tttaatgatt 4920
attaagattt ttattaaaaa aaaattcgct cctcttttaa tgcctttatg cagtttttt 4980
ttcccattcg atatttctat gttcgggttc agcgtatttt aagtttaata actcgaaaat 5040
tctgcgttcg ttaaagcttt cgagaaggat attatttcga aataaaccgt gttgtgtaag 5100
cttgaagcct ttttgcgctg ccaatattct tatccatcta ttgtactctt tagatccagt 5160
atagtgtatt cttcctgctc caagctcatc ccatccccgc gtgcttggcc ggccgttttg 5220
ccagcttact atccttcttg aaaatatgca ctctatatct tttagttctt aattgcaaca 5280
catagatttg ctgtataacg aattttatgc tatttttaa atttggagtt cagtgataaa 5340
agtgtcacag cgaatttcct cacatgtagg gaccgaattg tttacaagtt ctctgtacca 5400
ccatggagac atcaaaaatt gaaaatctat ggaaagatat ggacggtagc aacaagaata 5460
tagcacgagc cgcggagttc atttcgttac ttttgatatc actcacaact attgcgaagc 5520
gcttcagtga aaaaatcata aggaaaagtt gtaaatatta ttggtagtat tcgtttggta 5580
aagtagaggg ggtaattttt ccccttttatt ttgttcatac attcttaaat tgctttgcct 5640
ctccttttgg aaagctatac ttcggagcac tgttgagcga aggctcatta gatatatttt 5700
ctgtcatttt ccttaaccca aaaataaggg aaagggtcca aaaagcgctc ggacaactgt 5760
tgaccgtgat ccgaaggact ggctatacag tgttcacaaa atagccaagc tgaaaataat 5820
gtgtagctat gttcagttag tttggctagc aaagatataa aagcaggtcg gaaatattta 5880
tgggcattat tatgcagagc atcaacatga taaaaaaaaa cagttgaata ttccctcaaa 5940
aatgtcttac accgtcggaa cctacttggc cgagaggttg gtccagatcg gattgaagca 6000
ccacttcgcc gtcgccggtg actacaactt ggtcttgttg gacaacttgt tgttgaacaa 6060
gaacatggag caggtctatt gctgcaacga gttgaactgc ggtttctcag cagaaggtta 6120
tgcaagagcc aagggagcag ccgctgccgt cgtcacctac tcagtcggtg cattatcagc 6180
attcgatgca attggaggtg cttacgctga gaacttgcca gtcatcttga tctctggagc 6240
acctaacaac aacgaccatg ctgctggtca cgtattgcac cacgccttgg gtaaaacaga 6300
ctaccactac cagttggaaa tggcaaaaaa tattaccgca gccgcagagg ccatctacac 6360
cccagaggaa gcacctgcca aaattgacca cgtcataaag accgctttga gagagaagaa 6420
gcctgtttac ttggagatcg cctgcaacat cgcttctatg ccatgcgccg cacctggtcc 6480
agcctctgct ttgttcaacg acgaggcctc tgacgaagct tcattgaacg ccgcagtcga 6540
agagacatta aagttcatcg ccaacaggga caaagttgcc gtcttagtcg gttcaaagtt 6600
gagggccgct ggtgccgaag aggcagctgt caagttcgct gacgccttgg gaggagccgt 6660
cgccaccatg gccgcagcaa aatctttctt tcctgaggag aacccacatt acatcggaac 6720
ctcatggggt gaagtatcat atcctggagt agaaaaaacc atgaaagagg ccgatgccgt 6780
aatagcattg gctcctgtct tcaacgacta ctcaaccaca ggatggactg atataccaga 6840
tccaaagaaa ttagtcttgg ctgagcctag gtctgtcgtc gtaaacggta tcaggttccc 6900

ttctgttcat ttgaaggact acttaacaag attggcccaa aaggtatcta aaaagactgg 6960

tgccttggac ttcttcaagt cattaaacgc aggagaattg aaaaaagcag caccagccga 7020

tccatcagcc ccattagtta acgctgaaat cgctagacaa gtagaggctt tgttgactcc 7080

aaacactacc gtcatagctg agacaggtga ctcttggttc aacgcacaga gaatgaaatt 7140

gccaaatggt gccagggtcg agtatgaaat gcagtgggga catataggtt ggtcagtccc 7200

agccgccttt ggatacgcag taggtgcccc tgagaggagg aacatattga tggttggtga 7260

tggttcattc caattaacag cccaggaggt agcccaaatg gtcaggttga agttgcctgt 7320

catcatcttc ttgatcaaca attacggata caccatcgag gtcatgatcc acgacggacc 7380

ttacaacaac atcaaaaact gggactacgc cggtttgatg gaggttttca acggtaacgg 7440

tggttatgac tcaggagccg gtaagggatt aaaggctaag accggtggtg aattggctga 7500

agcaattaag gtcgcattgg ccaacaccga tggacctaca ttgattgaat gcttcatcgg 7560

aagggaggac tgcaccgagg aattggttaa atggggtaaa agggtagccg ctgctaattc 7620

aagaaaacca gttaataaat tattataata agtgaattta ctttaaatct tgcatttaaa 7680

taaattttct ttttatagct ttatgactta gtttcaattt atatactatt ttaatgacat 7740

tttcgattca ttgattgaaa gctttgtgtt ttttcttgat gcgctattgc attgttcttg 7800

tctttttcgc cacatgtaat atctgtagta gatacctgat acattgtgga tgctgagtga 7860

aattttagtt aataatggag gcgctcttaa taattttggg gatattggct taacctgcag 7920

gccgcgagcg ccgatataaa ctaatgattt taaatcgtta aaaaaatatg cgaattctgt 7980

ggatcgaaca caggacctcc agataacttg accgaagttt tttcttcagt ctggcgctct 8040

cccaactgag ctaaatccgc ttactatttg ttatcagttc ccttcatatc tacatagaat 8100

aggttaagta ttttattagt tgccagaaga actactgata gttgggaata tttggtgaat 8160

aatgaagatt gggtgaataa tttgataatt ttgagattca attgttaatc aatgttacaa 8220

tattatgtat acagagtata ctagaagttc tcttcggaga tcttgaagtt cacaaaaggg 8280

aatcgatatt tctacataat attatcatta cttcttcccc atcttatatt tgtcattcat 8340

tattgattat gatcaatgca ataatgattg gtagttgcca aacatttaat acgatcctct 8400

gtaatatttc tatgaataat tatcacagca acgttcaatt atcttcaatt ccggtgttta 8460

aaccccagcg cctggcggg 8479

<210> 98
<211> 10959
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i601

<400> 98
gacggcacgg ccacgcgttt aaaccgccct ccaagctgac ataaatcgca ctttgtatct 60

actttttttt attcgaaaac aaggcacaac aatgaatcta tcgccctgtg agattttcaa 120

tctcaagttt gtgtaataga tagcgttata ttatagaact ataaaggtcc ttgaatatac 180
atagtgtttc attcctatta ctgtatatgt gactttacat tgttacttcc gcggctattt 240
gacgttttct gcttcaggtg cggcttggag ggcaaagtgt cagaaaatcg gccaggccgt 300
atgacacaaa agagtagaaa acgagatctc aaatatctcg aggcctgtcc tctatacaac 360
cgcccagctc tctgacaaag ctccagaacg gttgtctttt gtttcgaaaa gccaaggtcc 420
cttataattg ccctccattt tgtgtcacct atttaagcaa aaaattgaaa gtttactaac 480
ctttcattaa agagaaataa caatattata aaaagcgctt aaagctcaca cgcggccagg 540
gggagccgtt catcatctca tggatctgca catgaacaaa caccagagtc aaacgacgtt 600
gaaattgagg ctactgcgcc aattgatgac aatacagacg atgataacaa accgaagtta 660
tctgatgtag aaaaggatta aagatgctaa gagatagtga tgatatttca taaataatgt 720
aattctatat atgttaatta ccttttttgc gaggcatatt tatggtgaag gataagtttt 780
gaccatcaaa gaaggttaat gtggctgtgg tttcagggtc cataaagctt ttcaattcat 840
ctttttttt tttgttcttt tttttgattc cggtttcttt gaaatttttt tgattcggta 900
atctccgagc agaaggaaga acgaaggaag gagcacagac ttagattggt atatatacgc 960
atatgtggtg ttgaagaaac atgaaattgc ccagtattct taacccaact gcacagaaca 1020
aaaacctgca ggaaacgaag ataaatcatg tcgaaagcta catataagga acgtgctgct 1080
actcatccta gtcctgttgc tgccaagcta tttaatatca tgcacgaaaa gcaaacaaac 1140
ttgtgtgctt cattggatgt tcgtaccacc aaggaattac tggagttagt tgaagcatta 1200
ggtcccaaaa tttgtttact aaaaacacat gtggatatct tgactgattt ttccatggag 1260
ggcacagtta agccgctaaa ggcattatcc gccaagtaca atttttact cttcgaagac 1320
agaaaatttg ctgacattgg taatacagtc aaattgcagt actctgcggg tgtatacaga 1380
atagcagaat gggcagacat tacgaatgca cacggtgtgg tgggcccagg tattgttagc 1440
ggtttgaagc aggcggcaga agaagtaaca aaggaaccta gaggcctttt gatgttagca 1500
gaattgtcat gcaagggctc cctatctact ggagaatata ctaagggtac tgttgacatt 1560
gcgaagagtg acaaagattt tgttatcggc tttattgctc aaagagacat gggtggaaga 1620
gatgaaggtt acgattggtt gattatgaca cccggtgtgg gtttagatga caagggagac 1680
gcattgggtc aacagtatag aaccgtggat gatgtggtct ctacaggatc tgacattatt 1740
attgttggaa gcgctcgtcc aacgccggcg gacctatggc gcaagttttc cgctttgtaa 1800
tatatattta tacccctttc ttctctcccc tgcaatataa tagtttaatt ctaatattaa 1860
taatatccta tattttcttc atttaccggc gcactctcgc ccgaacgacc tcaaaatgtc 1920
tgctacattc ataataacca aaagctcata actttttttt ttgaacctga atatatatac 1980
atcacatgtc actgctggtc cttgccgacc agcgtataca atctcgatag ttggtttccc 2040
gttctttcca ctcccgtcat ggactacaac aagagatctt cggtctcaac cgtgcctaat 2100
gcagctccca taagagtcgg attcgtcggt ctcaacgcag ccaaaggatg ggcaatcaag 2160

acacattacc ccgccatact gcaactatcg tcacaatttc aaatcactgc cttatacagt 2220

ccaaaaattg agacttctat tgccaccatc cagcgtctaa aattgagtaa tgccactgct 2280

tttcccactt tagagtcatt tgcatcatct tccactatag atatgatagt gatagctatc 2340

caagtggcca gtcattatga cgttgttatg cctctcttgg aattctccaa aaataatccg 2400

aacctcaagt atcttttcgt agaatgggcc cttgcatgtt cactagatca agccgaatcc 2460

atttataagg ctgctgctga acgtggggtt caaaccatca tctctttaca aggtcgtaaa 2520

tcaccatata ttttgagagc aaaagaatta atatctcaag gctatatcgg cgacattaat 2580

tctatcgaga ttgctggaaa tggcggttgg tacggctacg aaaggcctgt taaatcacca 2640

aaatacatct atgaaatcgg gaacggtgta gatctggtaa ccacaacatt tggtcacaca 2700

atcgatattt tacaatacat gacaagttcg tacttttcca ggataaatgc aatggttttc 2760

aataatattc cagagcaaga gctgatagat gagcgtggta accgattggg ccagcgagtc 2820

ccaaagacag taccggatca tcttttattc caaggcacat tgttaaatgg caatgttcca 2880

gtgtcatgca gtttcaaagg tggcaaacct accaaaaaat ttaccaaaaa tttggtcatt 2940

gatattcacg gtaccaaggg agatttgaaa cttgaaggcg atgccggatt cgcagaaatt 3000

tcaaatctgg tcctttacta cagtggaact agagcaaacg acttcccgct agctaatgga 3060

caacaagctc ctttagaccc ggggtatgat gcaggtaaag aaatcatgaa agtatatcat 3120

ttacgaaatt ataatgccat tgtcggtaat attcatcgac tgtatcaatc tatctctgac 3180

ttccacttca atacaaagaa aattcctgaa ttaccctcac aatttgtaat gcaaggtttc 3240

gatttcgaag gctttcccac cttgatggat gctctgatat tacacaggtt aatcgagagc 3300

gtttataaaa gtaacatgat gggctccaca ttaaacgtta gcaatatctc gcattatagt 3360

ttataaaagc atcttgccct gtgcttggcc cccagtgcag cgaacgttat aaaaacgaat 3420

actgagtata tatctatgta aaacaaccat atcatttctt gttctgaact ttgtttacct 3480

aactagtttt aaatttccct ttttcgtgca tgcgggtgtt cttatttatt agcatactac 3540

atttgaaata tcaaatttcc ttagtagaaa agtgagagaa ggtgcactga cacaaaaaat 3600

aaaatccccg cgtgcttggc cggccgtctt cattggatgt tcgtaccacc aaggaattac 3660

tggagttagt tgaagcatta ggtcccaaaa tttgtttact aaaaacacat gtggatatct 3720

tgactgattt ttccatggag ggcacagtta agccgctaaa ggcattatcc gccaagtaca 3780

atttttact cttcgaagac agaaaatttg ctgacattgg taatacagtc aaattgcagt 3840

actctgcggg tgtatacaga atagcagaat gggcagacat tacgaatgca cacggtgtgg 3900

tgggcccagg tattgttagc ggtttgaagc aggcggcaga agaagtaaca aaggaaccta 3960

gaggcctttt gatgttagca gaattgtcat gcaagggctc cctatctact ggagaatata 4020

ctaagggtac tgttgacatt gcgaagagtg acaaagattt tgttatcggc tttattgctc 4080

aaagagacat gggtggaaga gatgaaggtt acgattggtt gattatgaca cccggtgtgg 4140

gtttagatga caagggagac gcattgggtc aacagtatag aaccgtggat gatgtggtct 4200

ctacaggatc tgacattatt attgttggaa gaggactatt tgcaaaggga agggatgcta 4260

aggtagaggg tgaacgttac agaaaagcag gctgggaagc atatttgaga agatgcggcc 4320

agcaaaacta aaaaactgta ttataagtaa atgcatgtat actaaactca caaattagag 4380

cttcaattta attatatcag ttattacccg ggaatctcgg tcgtaatgat ttctataatg 4440

acgaaaaaaa aaaaattgga aagaaaaagc ttcatggcct ttataaaaag gaactatcca 4500

atacctcgcc agaaccaagt aacagtattt tacggggcac aaatcaagaa caataagaca 4560

ggactgtaaa gatggacgca tcgctcgtcc aacgccggcg gacctgtttt caatagttcg 4620

gtaatattaa cggataccta ctattatccc ctagtaggct cttttcacgg agaaattcgg 4680

gagtgttttt tttccgtgcg cattttctta gctatattct tccagcttcg cctgctgccc 4740

ggtcatcgtt cctgtcacgt agtttttccg gattcgtccg gctcatataa taccgcaata 4800

aacacggaat atctcgttcc gcggattcgg ttaaactctc ggtcgcggat tatcacagag 4860

aaagcttcgt ggagaatttt tccagatttt ccgctttccc cgatgttggt atttccggag 4920

gtcattatac tgaccgccat tataatgact gtacaacgac cttctggaga aagaaacaac 4980

tcaataacga tgtgggacat tgggggccca ctcaaaaaat ctggggacta tatccccaga 5040

gaatttctcc agaagagaag aaaagtcaaa gtttttttttc gcttgggggt tgcatataaa 5100

tacaggcgct gttttatctt cagcatgaat attccataat tttacttaat agcttttcat 5160

aaataataga atcacaaaca aaatttacat ctgagttaaa caatcatgac aatcaaggaa 5220

cataaagtag tttatgaagc tcacaacgta aaggctctta aggctcctca acatttttac 5280

aacagccaac ccggcaaggg ttacgttact gatatgcaac attatcaaga aatgtatcaa 5340

caatctatca atgagccaga aaaattcttt gataagatgg ctaaggaata cttgcattgg 5400

gatgctccat acaccaaagt tcaatctggt tcattgaaca atggtgatgt tgcatggttt 5460

ttgaacggta aattgaatgc atcatacaat tgtgttgaca gacatgcctt tgctaatccc 5520

gacaagccag ctttgatcta tgaagctgat gacgaatccg acaacaaaat catcacattt 5580

ggtgaattac tcagaaaagt ttcccaaatc gctggtgtct taaaaagctg gggcgttaag 5640

aaaggtgaca cagtggctat ctatttgcca atgattccag aagcggtcat tgctatgttg 5700

gctgtggctc gtattggtgc tattcactct gttgtctttg ctgggttctc cgctggttcg 5760

ttgaaagatc gtgtcgttga cgctaattct aaagtggtca tcacttgtga tgaaggtaaa 5820

agaggtggta agaccatcaa cactaaaaaa attgttgacg aaggtttgaa cggagtcgat 5880

ttggtttccc gtatcttggt tttccaaaga actggtactg aaggtattcc aatgaaggcc 5940

ggtagagatt actggtggca tgaggaggcc gctaagcaga gaacttacct acctcctgtt 6000

tcatgtgacg ctgaagatcc tctattttta ttatacactt ccggttccac tggttctcca 6060

aagggtgtcg ttcacactac aggtggttat ttattaggtg ccgctttaac aactagatac 6120

gtttttgata ttcacccaga agatgttctc ttcactgccg gtgacgtcgg ctggatcacg 6180

ggtcacacct atgctctata tggtccatta accttgggta ccgcctcaat aattttcgaa 6240

tccactcctg cctacccaga ttatggtaga tattggagaa ttatccaacg tcacaaggct 6300

acccatttct atgtggctcc aactgcttta agattaatca aacgtgtagg tgaagccgaa 6360

attgccaaat atgacacttc ctcattacgt gtcttgggtt ccgtcggtga accaatctct 6420

ccagacttat gggaatggta tcatgaaaaa gtgggtaaca aaaactgtgt catttgtgac 6480

actatgtggc aaacagagtc tggttctcat ttaattgctc ctttggcagg tgctgtccca 6540

acaaaacctg gttctgctac cgtgccattc tttggtatta acgcttgtat cattgaccct 6600

gttacaggtg tggaattaga aggtaatgat gtcgaaggtg tccttgccgt taaatcacca 6660

tggccatcaa tggctagatc tgtttggaac caccacgacc gttacatgga tacttacttg 6720

aaaccttatc ctggtcacta tttcacaggt gatggtgctg gtagagatca tgatggttac 6780

tactggatca ggggtagagt tgacgacgtt gtaaatgttt ccggtcatag attatccaca 6840

tcagaaattg aagcatctat ctcaaatcac gaaaacgtct cggaagctgc tgttgtcggt 6900

attccagatg aattgaccgg tcaaaccgtc gttgcatatg tttccctaaa agatggttat 6960

ctacaaaaca acgctactga aggtgatgca gaacacatca caccagataa tttacgtaga 7020

gaattgatct tacaagttag gggtgagatt ggtcctttcg cctcaccaaa aaccattatt 7080

ctagttagag atctaccaag aacaaggtca ggaaagatta tgagaagagt tctaagaaag 7140

gttgcttcta acgaagccga acagctaggt gacctaacta ctttggccaa cccagaagtt 7200

gtacctgcca tcatttctgc tgtagagaac caatttttct ctcaaaaaaa gaaataaatt 7260

gaattgaatt gaaatcgata gatcaatttt tttcttttct ctttccccat cctttacgct 7320

aaaataatag tttattttat tttttgaata ttttttattt atatacgtat atatagacta 7380

ttatttatct tttaatgatt attaagattt ttattaaaaa aaaattcgct cctcttttaa 7440

tgcctttatg cagtttttt ttcccattcg atatttctat gttcgggttc agcgtatttt 7500

aagtttaata actcgaaaat tctgcgttcg ttaaagcttt cgagaaggat attatttcga 7560

aataaaccgt gttgtgtaag cttgaagcct ttttgcgctg ccaatattct tatccatcta 7620

ttgtactctt tagatccagt atagtgtatt cttcctgctc caagctcatc ccatccccgc 7680

gtgcttggcc ggccgttttg ccagcttact atccttcttg aaaatatgca ctctatatct 7740

tttagttctt aattgcaaca catagatttg ctgtataacg aattttatgc tatttttaa 7800

atttggagtt cagtgataaa agtgtcacag cgaatttcct cacatgtagg gaccgaattg 7860

tttacaagtt ctctgtacca ccatggagac atcaaaaatt gaaaatctat ggaaagatat 7920

ggacggtagc aacaagaata tagcacgagc cgcggagttc atttcgttac ttttgatatc 7980

actcacaact attgcgaagc gcttcagtga aaaaatcata aggaaaagtt gtaaatatta 8040

ttggtagtat tcgtttggta aagtagaggg ggtaattttt ccccttttatt ttgttcatac 8100

attcttaaat tgctttgcct ctccttttgg aaagctatac ttcggagcac tgttgagcga 8160

aggctcatta gatatatttt ctgtcatttt ccttaaccca aaaataaggg aaagggtcca 8220

aaaagcgctc ggacaactgt tgaccgtgat ccgaaggact ggctatacag tgttcacaaa 8280

atagccaagc tgaaaataat gtgtagctat gttcagttag tttggctagc aaagatataa 8340

aagcaggtcg gaaatattta tgggcattat tatgcagagc atcaacatga taaaaaaaaa 8400

cagttgaata ttccctcaaa aatgtcttac accgtcggaa cctacttggc cgagaggttg 8460

gtccagatcg gattgaagca ccacttcgcc gtcgccggtg actacaactt ggtcttgttg 8520

gacaacttgt tgttgaacaa gaacatggag caggtctatt gctgcaacga gttgaactgc 8580

ggtttctcag cagaaggtta tgcaagagcc aagggagcag ccgctgccgt cgtcacctac 8640

tcagtcggtg cattatcagc attcgatgca attggaggtg cttacgctga gaacttgcca 8700

gtcatcttga tctctggagc acctaacaac aacgaccatg ctgctggtca cgtattgcac 8760

cacgccttgg gtaaaacaga ctaccactac cagttggaaa tggcaaaaaa tattaccgca 8820

gccgcagagg ccatctacac cccagaggaa gcacctgcca aaattgacca cgtcataaag 8880

accgctttga gagagaagaa gcctgtttac ttggagatcg cctgcaacat cgcttctatg 8940

ccatgcgccg cacctggtcc agcctctgct ttgttcaacg acgaggcctc tgacgaagct 9000

tcattgaacg ccgcagtcga agagacatta aagttcatcg ccaacaggga caaagttgcc 9060

gtcttagtcg gttcaaagtt gagggccgct ggtgccgaag aggcagctgt caagttcgct 9120

gacgccttgg gaggagccgt cgccaccatg gccgcagcaa aatctttctt tcctgaggag 9180

aacccacatt acatcggaac ctcatggggt gaagtatcat atcctggagt agaaaaaacc 9240

atgaaagagg ccgatgccgt aatagcattg gctcctgtct tcaacgacta ctcaaccaca 9300

ggatggactg atataccaga tccaaagaaa ttagtcttgg ctgagcctag gtctgtcgtc 9360

gtaaacggta tcaggttccc ttctgttcat ttgaaggact acttaacaag attggcccaa 9420

aaggtatcta aaaagactgg tgccttggac ttcttcaagt cattaaacgc aggagaattg 9480

aaaaaagcag caccagccga tccatcagcc ccattagtta acgctgaaat cgctagacaa 9540

gtagaggctt tgttgactcc aaacactacc gtcatagctg agacaggtga ctcttggttc 9600

aacgcacaga gaatgaaatt gccaaatggt gccagggtcg agtatgaaat gcagtgggga 9660

catataggtt ggtcagtccc agccgccttt ggatacgcag taggtgcccc tgagaggagg 9720

aacatattga tggttggtga tggttcattc caattaacag cccaggaggt agcccaaatg 9780

gtcaggttga agttgcctgt catcatcttc ttgatcaaca attacggata caccatcgag 9840

gtcatgatcc acgacggacc ttacaacaac atcaaaaact gggactacgc cggtttgatg 9900

gaggttttca acggtaacgg tggttatgac tcaggagccg gtaagggatt aaaggctaag 9960

accggtggtg aattggctga agcaattaag gtcgcattgg ccaacaccga tggacctaca 10020

ttgattgaat gcttcatcgg aagggaggac tgcaccgagg aattggttaa atggggtaaa 10080

agggtagccg ctgctaattc aagaaaacca gttaataaat tattataata agtgaattta 10140

ctttaaatct tgcatttaaa taaattttct ttttatagct ttatgactta gtttcaattt 10200

atatactatt ttaatgacat tttcgattca ttgattgaaa gctttgtgtt ttttcttgat 10260

gcgctattgc attgttcttg tctttttcgc cacatgtaat atctgtagta gatacctgat 10320

acattgtgga tgctgagtga aattttagtt aataatggag gcgctcttaa taattttggg 10380

gatattggct taacctgcag gccgcgagcg ccgatataaa ctaatgattt taaatcgtta 10440

aaaaaatatg cgaattctgt ggatcgaaca caggacctcc agataacttg accgaagttt 10500

tttcttcagt ctggcgctct cccaactgag ctaaatccgc ttactatttg ttatcagttc 10560

ccttcatatc tacatagaat aggttaagta ttttattagt tgccagaaga actactgata 10620

gttgggaata tttggtgaat aatgaagatt gggtgaataa tttgataatt ttgagattca 10680

attgttaatc aatgttacaa tattatgtat acagagtata ctagaagttc tcttcggaga 10740

tcttgaagtt cacaaaaggg aatcgatatt tctacataat attatcatta cttcttcccc 10800

atcttatatt tgtcattcat tattgattat gatcaatgca ataatgattg gtagttgcca 10860

aacatttaat acgatcctct gtaatatttc tatgaataat tatcacagca acgttcaatt 10920

atcttcaatt ccggtgttta aaccccagcg cctggcggg 10959

<210> 99
<211> 7329
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i2125

<400> 99
taattttaca agtagtgtct tcatgacgga ttcatagtct atccaagcgt ttgcccaaaa 60

ttttgcagta aatttaatgt tttctgtata ggataatggt gcgccattca agtcccgcga 120

aaaatgactg atgtctacag gacaggggcg caatatatgt tctctgacat tgcacctttt 180

gaatatatca tgtgtttgtt ctgctatctg cttgtagaag ggtacgctaa cagagccggc 240

ggcattgtaa aaagttctcc tttcgcggaa ggatgagtca aaaagcatgt gacaatgaaa 300

taatcaaatt gtgacatctg ctgacgcggg atcgttcctt cgtattgtct agattgtaat 360

ctatataaca tactacgaat ataaaagagg gactacaaga tatttctagc gcaaactact 420

gctttactgt ctcacaatgt ctctgattgg aagataccta agaaaattat ttaactacat 480

atctacaaaa tcaaagcatc taggataatt atactctatt tctcaacaag taattggttg 540

tttggccgag cggtctaagg cgcctgattc aagaaatatc ttgaccgcag ttaactgtgg 600

gaatactcag gtatcgtaag atgcaagagt tcgaatctct tagcaaccat tatttttttc 660

ctcaacataa cgagaacaca caggggcgct atcgcacaga atcaaattcg atgactggaa 720

atttttgtt aatttcagag gtcgcctgac gcatatacct ttttcaactg aaaaattggg 780

agaaaaagga aaggtgagag cgccggaacc ggcttttcat atagaataga gaagcgttca 840

tgactaaatg cttgcatcac aatacttgaa gttgacaata ttatttaagg acctattgtt 900

ttttccaata ggtggttagc aatcgtctta ctttctaact tttcttacct tttacatttc 960

agcaatatat atatatatat ttcaaggata taccattcta atgtctgccc ctaagaagat 1020

cgtcgttttg ccaggtgacc acgttggtca agaaatcaca gccgaagcca ttaaggttct 1080

taaagctatt tctgatgttc gttccaatgt caagttcgat ttcgaaaatc atttaattgg 1140

tggtgctgct atcgatgcta caggtgttcc acttccagat gaggcgctgg aagcctccaa 1200

gaaggctgat gccgttttgt taggtgctgt gggtggtcct aaatggggta ccggtagtgt 1260

tagacctgaa caaggtttac taaaaatccg taaagaactt caattgtacg ccaacttaag 1320

accatgtaac tttgcatccg actctctttt agacttatct ccaatcaagc cacaatttgc 1380

taaaggtact gacttcgttg ttgtcagaga attagtggga ggtatttact ttggtaagag 1440

aaaggaagac gatggtgatg gtgtcgcttg ggatagtgaa caatacaccg ttccagaagt 1500

gcaaagaatc acaagaatgg ccgctttcat ggccctacaa catgagccac cattgcctat 1560

ttggtccttg gataaagcta atgttttggc ctcttcaaga ttatggagaa aaactgtgga 1620

ggaaaccatc aagaacgaat tccctacatt gaaggttcaa catcaattga ttgattctgc 1680

cgccatgatc ctagttaaga acccaaccca cctaaatggt attataatca ccagcaacat 1740

gtttggtgat atcatctccg atgaagcctc cgttatccca ggttccttgg gtttgttgcc 1800

atctgcgtcc ttggcctctt tgccagacaa gaacaccgca tttggtttgt acgaaccatg 1860

ccacggttct gctccagatt tgccaaagaa taaggtcaac cctatcgcca ctatcttgtc 1920

tgctgcaatg atgttgaaat tgtcattgaa cttgcctgaa gaaggtaagg ccattgaaga 1980

tgcagttaaa aaggttttgg atgcaggtat cagaactggt gatttaggtg gttccaacag 2040

taccaccgaa gtcggtgatg ctgtcgccga agaagttaag aaaatccttg cttaaaaaga 2100

ttctcttttt ttatgatatt tgtacataaa ctttataaat gaaattcata atagaaacga 2160

cacgaaatta caaaatggaa tatgttcata gggtagacga aactatatac gcaatctaca 2220

tacatttatc aagaaggaga aaaaggagga tgtaaaggaa tacaggtaag caaattgata 2280

ctaatggctc aacgtgataa ggaaaaagaa ttgcacttta acattaatat tgacaaggag 2340

gagggcttcg agcgtcccaa aaccttctca agcaaggttt tcagtataat gttacatgcg 2400

tacacgcgtc tgtacagaaa aaaaagaaaa atttgaaata taaataacgt tcttaatact 2460

aacataacta taaaaaaata aatagggacc tagacttcag gttgtctaac tccttccttt 2520

tcggttagag cggatcttag ctagctcaaa cgaccatcgg gtggacgaag aatgacttca 2580

tgtaagactt catatctcct tctgcatgtg taaatccgtc gtttacacta tagagaacct 2640

cacacattct agccaaattg atggcaggca taagcaaagg aaacggaacg gcagttggac 2700

gcaacgactc tcggttgata actttccatg catcctcaac cttacggcta atgtactcgc 2760

aggcctcttc ttcactggcc ccagattctt tcgaatagca ttcgatagaa cttgcaacat 2820

gccctcgttc ttgttcttct ttatgagaca cgatatcatc catcagacgg ataataacac 2880

acgacgcttt tacgataggc gggtacgaag acacccactt aaacgtatct tcattgacga 2940

tgtccccacg accaacgtaa ctccgagcgg tcataagccc gtaagtcccc gtaaccatgc 3000

taacgctcat gtactcctct aaagtaggca tgtagccttc ctttaaccat ctagcttcaa 3060

ctagataatt tcttaccagt tctttggcca tttccttaac gtagtggatt tgataagttt 3120

taccttcttt ctcaagactc tcctccattt caacgtgaag gttgacaagc tcttgataga 3180
tcaatttcat gtattctggt agcatgtcga gacatgatat tgaccacctc tcgacagctt 3240
gcgtgaaaat ctccaactcc tcgtatgttc cgtagttatc aaatgtatca tccaggacta 3300
ccagccacat acacgacttc ataagaaaca tacgagtacg tgcatgctga ggttcataat 3360
aaatactcaa aatccaaaaa tatccctcga cgactctgtc acgaacaaac ggtagtttgt 3420
tctgcaaatc gaggtccttc caccacttac aaatatgcga caattccttt ttgtgcatag 3480
attggagcac agaaaaatcc agcttcgcta gcttcaataa aacttcatca tgactagtct 3540
cctgttgata gattggcata tagtgaagag cttctattcg agccagtctg cgtctgagtg 3600
gctgctttaa tgcctgatga atctgtgtac gtagagatga atcacagctt ggatctttag 3660
caattatatc gagatgaacc ttactgaact ccaaggcgtt atctaagata gtttcatcct 3720
caaccctcat aaacgccgcc tcatagagag ctaaaatacc ttgagcatca ttacagaggc 3780
tttctttaaa ctttcccttt tcgtccataa aatctttaaa cactccactc gaaacgttga 3840
atccctgttg tctaagtaat cgaaaccata gcgagattga ctgaagattt tctttatcga 3900
cccactgctc tccgtaagta acgtgaatat gttgcaaagc ttcctcaatt tcctcctcaa 3960
aatggtaagc aattccaaga cgctgcacgg catcgatcag ctcgatgagt ttaacatgtt 4020
gcataggctc atttgatcct ttgattgtaa taagttcttt cttaacctct tccttcagtt 4080
cctctacgag ttgcttcttc ataaccaaat cctcgggttc atcgtatgtt aaaaactggt 4140
caccccaaat agacgcgttg aaatttgtgg tatgtctgat tacgtccggt ttagtagaat 4200
ccttgtcatc gactaccaat ggggaggtac tagaagatga ggaaacagaa gaaataggta 4260
aagtagacat ttatattgaa ttttcaaaaa ttcttacttt ttttttggat ggacgcaaag 4320
aagtttaata atcatattac atggcaatac caccatatac atatccatat ctaatcttac 4380
ttatatgttg tggaaatgta aagagcccca ttatcttagc ctaaaaaaac cttctctttg 4440
gaactttcag taatacgctt aactgctcat tgctatattg aagtacggat tagaagccgc 4500
cgagcgggcg acagccctcc gacggaagac tctcctccgt gcgtcctggt cttcaccggt 4560
cgcgttcctg aaacgcagat gtgcctcgcg ccgcactgct ccgaacaata aagattctac 4620
aatactagct tttatggtta tgaagaggaa aaattggcag taacctggcc ccacaaacct 4680
tcaaatcaac gaatcaaatt aacaaccata ggataataat gcgattagtt ttttagcctt 4740
atttctgggg taattaatca gcgaagcgat gatttttgat ctattaacag atatataaat 4800
gcaaaagctg cataaccact ttaactaata ctttcaacat tttcggtttg tattacttct 4860
tattcaaatg tcataaaagt atcaacaaaa aattgttaat atacctctat actttaacgt 4920
caaggagaaa aaactataat gtcaaccttg cctatttctt ctgtctcatc ttcttcatct 4980
acctctccat tggtcgtaga cgataaggac tctactaaac cagacgtcat caggcacacc 5040
acgaatttca acgcttctat atggggagac cagtttttaa cttacgacga acctgaggat 5100
ttggtcatga aaaaacagtt ggtcgaagaa ttgaaggagg aggtcaagaa ggagttgatt 5160

acaatcaagg gatcaaacga acctatgcag cacgttaagt tgatcgaatt aatagatgct 5220

gtccaaagat tgggtatagc ctaccacttc gaggaggaaa tcgaggaggc tttacaacat 5280

atacacgtca catacggtga acagtgggtc gataaagaga atttgcagtc tatctcattg 5340

tggttcaggt tgttaaggca acaaggtttt aatgtttcat ctggagtttt caaggacttt 5400

atggacgaga aaggtaaatt caaggagtct ttgtgcaacg atgctcaggg tattttagca 5460

ttgtatgagg ccgcatttat gagggttgaa gacgagacta tcttagataa cgcattggag 5520

ttctccaagg tccacttaga cattattgct aaagacccat catgtgactc ttctttgaga 5580

actcaaatac accaggcatt aaagcaacct ttgaggagaa ggttggctag aatcgaagca 5640

ttacactata tgccaatata tcagcaggaa acctcacacg acgaagtttt gttaaagtta 5700

gcaaaattgg acttctctgt cttgcagtca atgcataaga aggagttgtc tcatatctgc 5760

aagtggtgga aggatttaga tttacaaaat aagttgccat tcgtcagaga tagggttgta 5820

gagggatact tctggatctt gtctatatac tatgagcctc agcacgccag aaccagaatg 5880

ttcttaatga agtcctgcat gtggttagta gtattagacg acaccttcga caattatgga 5940

acatacgagg aattggagat ctttactcaa gccgttgaga gatggtctat ttcttgcttg 6000

gacatgttgc cagagtatat gaagttgatc taccaggagt tagttaactt gcacgtcgaa 6060

atggaggaat ctttggagaa agagggaaag acataccaga ttcactatgt caaggaaatg 6120

gccaaagagt tggtaaggaa ctatttggtt gaggccagat ggttgaaaga gggttatatg 6180

cctaccttgg aggagtacat gtcagtctca atggttactg gtacctatgg tttgatgact 6240

gccagatcat acgtcggaag aggtgatatc gtaaatgagg ataccttcaa gtgggtttct 6300

tcataccctc ctatcgttaa ggcctcttgc gtcataatta ggttgatgga tgacattgtt 6360

tctcataagg aggaacagga gaggggtcac gtagcctcat caatagagtg ctattcaaaa 6420

gagtctggtg catcagagga agaggcatgt gaatacatct ctagaaaagt agaggatgcc 6480

tggaaggtca ttaacaggga gtcattgaga cctactgctg tacctttcc tttgttgatg 6540

cctgctatca acttggcaag gatgtgcgaa gttttgtatt cagtaaacga tggtttcact 6600

cacgccgaag gtgatatgaa atcatatatg aaatcttttt tcgtacatcc tatggtagta 6660

taagcgaatt tcttatgatt tatgattttt attattaaat aagttataaa aaaaataagt 6720

gtatacaaat tttaaagtga ctcttaggtt ttaaaacgaa aattcttatt cttgagtaac 6780

tctttcctgt aggtcaggtt gctttctcag gtatagcatg aggtcgctct cttttgtaac 6840

gaatttgatg aatatatttt tacttttttat ataagctatt ttgtagatat tgacttttta 6900

cgatttattt gtaacaatga gaattactcc atttctgaac ttcagtaaat agcgagtgat 6960

tctgtacttt gcgagaaccg gtggacattt ggtattttgc cttacaagaa caacctatac 7020

aaacgtttca atatctaatt ctttgtaatc cattgtttta cgagacatat aatgtgatat 7080

atagatgaac tttacgtata aaatgatata tttaaaacta gcaactgcgt gcgtaagaca 7140

aactgaaata ggccatttac ggaaaagaaa tttaataatg tcgactggaa actgaaacca 7200

ggaggagtag aaattggtta aattgattag ctaaaattta ctcgttgtgg acagagtttg 7260

agccaagcgg aatgttttca aggctttctt tgtttcgaag ggcagctctg gctcctgccc 7320

ctatgagaa 7329

<210> 100
<211> 4016
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i2608

<400> 100
tggaacacgg agtaaaatat tgtgtgtatg ggcacaaacc cttggaaata gcttagcatt 60

tgccgttggc ctgatgatct gaccattccc tttagtagag aaagaaagtc gcttcaagct 120

aacccagttt tctttttttt ttatcactta tcagtcctat tcggagatac aggcaacaag 180

tgatagaggg cccattatga atacgcacct ctatgtattt ccgagatacg attactccag 240

ttcctcttac aagaaatgca taaaaatagt tacaattaat tagaacaaga acttatttag 300

aacacgttca cactgagtaa gaactcttgt cccttattag ccttgatagt gctgaaaaaa 360

agaaaaaaaa caaaaaaaag aaataaaata acggcaaaca gcaaaggcca cagatctgta 420

ttcatgctac ttctgcaata tcaatcactt actggcaagt gcgtataaat taaacctatg 480

acggcacggc cacgcgttta aaccgccttc tttatcatca tatttactta tatctttaac 540

agattccaaa ccctaaagtg tccgaatttt caatagggcg aacttgaaga ataaccaagg 600

tcaataatat atcttttagt ataaccctga aatttgccct ataaaaatct agggtttctg 660

tgtggtttcc gggtgagtca tacggctttt ttgaatttct ttttttgcag ttgtctctat 720

caatgaaaat ttcgaggaag acgataaggt taagataagt agataagaga atgatacgag 780

ataaagcaca aattagcaga aagaagagtg gttgcgaaca gagtaaaccg aatcagggaa 840

tccctttttg caaaaacatc aattatcctt ttctttttt tacgtatata tctggaacag 900

aaatatataa gttactatta tacttatagt tggatccagt ttttaatctg tcgtcaatcg 960

aaagtttatt tcagagttct tcagacttct taactcctgt aaaaacaaaa aaaaaaaaag 1020

gcatagcagc tcacacgcgg ccaggggggag ccaccatata catatccata tctaatctta 1080

cttatatgtt gtggaaatgt aaagagcccc attatcttag cctaaaaaaa ccttctcttt 1140

ggaactttca gtaatacgct taactgctca ttgctatatt gaagtacgga ttagaagccg 1200

ccgagcgggc gacagccctc cgacggaaga ctctcctccg tgcgtcctgg tcttcaccgg 1260

tcgcgttcct gaaacgcaga tgtgcctcgc gccgcactgc tccgaacaat aaagattcta 1320

caatactagc ttttatggtt atgaagagga aaaattggca gtaacctggc cccacaaacc 1380

ttcaaatcaa cgaatcaaat taacaaccat aggataataa tgcgattagt tttttagcct 1440

tatttctggg gtaattaatc agcgaagcga tgatttttga tctattaaca gatatataaa 1500

tgcaaaagct gcataaccac tttaactaat actttcaaca ttttcggttt gtattacttc 1560

ttattcaaat gtcataaaag tatcaacaaa aaattgttaa tatacctcta tactttaacg 1620

tcaaggagaa aaaactataa tggaaaactt tccaaccgag tacttcttga acaccaccgt 1680

caggttgttg gagtacatta ggtacaggga ctcaaactat accagggagg agaggattga 1740

gaacttacac tacgcctaca acaaagccgc ccaccacttc gcccagccaa gacagcagca 1800

gttgttgaag gtcgacccta agagattgca agcttcattg cagaccattg tcggtatggt 1860

tgtatattca tgggccaagg tatctaaaga gtgtatggca gacttgtcaa tccactatac 1920

ctacaccttg gtattggacg attcaaaaga cgacccatac cctactatgg taaactactt 1980

cgatgactta caagcaggta gagaacaggc tcatccttgg tgggctttag taaacgagca 2040

ctttccaaac gtattgaggc attttggtcc tttttgctca ttgaacttga tcaggtctac 2100

cttagacttc ttcgagggtt gctggataga acaatacaat tttggaggat tcccaggttc 2160

tcacgactac ccacagttct tgagaagaat gaacggttta ggacactgcg tcggtgcctc 2220

tttgtggcca aaggagcagt tcaatgaaag atcattgttt ttggagatca cttcagccat 2280

agctcaaatg gaaaattgga tggtctgggt taatgatttg atgtcatttt acaaggagtt 2340

cgacgacgag agggatcaga tctctttggt aaagaactac gttgtttctg acgagatatc 2400

attacacgag gccttagaaa aattgaccca ggataccttg cactcttcaa agcaaatggt 2460

tgcagttttc tcagacaagg accctcaagt aatggacacc atagagtgct tcatgcatgg 2520

ttatgtcaca tggcatttat gcgacaggag gtacaggttg tctgaaatct acgagaaagt 2580

caaggaggaa aagactgagg atgcccaaaa attttgcaag ttctacgagc aagctgccaa 2640

tgtaggagcc gtttcacctt ctgagtgggc ctatccacca gtcgcccagt tagctaacgt 2700

aagatcaaag gacgtcaaag aggtccagaa accattttta tcatctatag aattagttga 2760

ataagctagc taagatccgc tctaaccgaa aaggaaggag ttagacaacc tgaagtctag 2820

gtccctattt atttttttat agttatgtta gtattaagaa cgttatttat atttcaaatt 2880

tttctttttt ttctgtacag acgcgtgtac gcatgtaaca ttatactgaa aaccttgctt 2940

gagaaggttt tgggacgctc gaagaacctg caggccgcga gcgccgatat atgacgtttt 3000

attacctttg atcacatttc cacgccattt cgcattctca ccctcataag tcatacaccg 3060

aaaagaaagt ttaagggatc aatgagctta ctataatctc agtatattta tttttatcga 3120

tgattcacca caacaatctt gctcccgaaa agaaagcaga cggagtagaa gcatttgaaa 3180

ctccttcaga ccttcaagta tatatatata tatatatata tgtatatgtg tacattttca 3240

cgctaatact aatgtataat tagaagataa tttttactca tttttcgtta tcttcacgtc 3300

acccgaacct agaaccaaat gtcattttca cgatatgtaa atagtgaaat aggcaaaaac 3360

gccaaaaagt agtaagcgca acatacaccg gtgtttaaac cccagcgcct ggcgggtaaa 3420

ccattaaaga atatctcgac cagaatctaa cagatataca tgttccgata atgtctgagt 3480

taggtgagta ttctaaatta gaaaacaaag agcttagaac ggagtttgaa ttgacaaatt 3540

ttccttttcc aggcacaact gataacgact ccgatgacgg aagccaaggg cagaactctt 3600

tgaatatcat tactcctgac atggatgata ctctggttaa tgatgtactt cgagaaaacg 3660

ataaaaagtc tagtatgaga atggctttta tgaatctagc aaactctatt cttggtgccg 3720

gaataattac tcagccgttc gcgatcaaaa atgctggtat attaggcggg ctattatcat 3780

acgtagccct cggatttata gttgattgga cgttaagact tattgtcatt aacttgactc 3840

ttgctggcaa gagaacatac cagggtacgg tcgaacatgt aatgggtaaa aaagggaaat 3900

tgctgattct atttacaaac gggttatttg catttggtgg atgtattggt tattgcataa 3960

ttattgggga tacgataccc cacgtactca gagctatatt cagccagaac gatggt 4016

<210> 101
<211> 11880
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i2127

<400> 101
gacggcacgg ccacgcgttt aaaccgcctc atagtctatc caagcgtttg cccaaaattt 60

tgcagtaaat ttaatgtttt ctgtatagga taatggtgcg ccattcaagt cccgcgaaaa 120

atgactgatg tctacaggac aggggcgcaa tatatgttct ctgacattgc acctttgaa 180

tatatcatgt gtttgttctg ctatctgctt gtagaagggt acgctaacag agccggcggc 240

attgtaaaaa gttctccttt cgcggaagga tgagtcaaaa agcatgtgac aatgaaataa 300

tcaaattgtg acatctgctg acgcgggatc gttccttcgt attgtctaga ttgtaatcta 360

tataacatac tacgaatata aaagagggac tacaagatat ttctagcgca aactactgct 420

ttactgtctc acaatgtctc tgattggaag atacctaaga aaattattta actacatatc 480

tacaaaatca aagcatccgc tcgtccaacg ccggcggacc tgagcgacct catgctatac 540

ctgagaaagc aacctgacct acaggaaaga gttactcaag aataagaatt ttcgttttaa 600

aacctaagag tcactttaaa atttgtatac acttattttt tttataactt atttaataat 660

aaaaatcata aatcataaga aattcgctta gactaccata gggtgaacaa agaatgactt 720

catgtatgat ttcatgtcac cctcggcgtg ggtgaaaccg tcattaactg aatataagac 780

ttcgcacatt cttgctaagt ttatggcagg cattaataat gggaaaggga ctgcggttgg 840

cctcaatgac tctctgttga taactttcca tgcatcttcg acttttctag agatgtactc 900

acaggcttct tcttcagatg ctcctgattc ttttgaataa cactcgatag atgatgctac 960

atgtcccctc tcttgttcct ctttgtgaga tacaatatca tccatcaacc ttataataac 1020

gcatgaggcc tttacgatag gtggataaga tgatacccac ttgaatgtgt cttcgtttac 1080

aatgtctcct ctaccgacat aagatctagc agtcattaat ccgtaggttc cagtgaccat 1140

agaaacagac atatattcct ccaaggtagg catgtaaccc tccttcaacc atctagcttc 1200

taccaagtag tttcttacca actcttttgc catctccttg acatagtgga tctgataagt 1260

tttaccctct ttctccaaag attcttccat ctcgacgtgt aagttgacta actcctggta 1320

gatcaacttc atatactctg gtaacatgtc caagcatgaa attgaccatc tctctacagc 1380

ttgagtgaag atctctaatt cctcgtaggt accgtaattg tcaaaagtgt cgtctaaaac 1440

gaccaaccac atgcaagact tcattaagaa cattcttgtt ctagcgtgct gaggctcgta 1500

gtagatagac aatatccaga aatatccctc aacgactctg tctctaacaa aaggcaactt 1560

attctgcaaa tccaaatcct tccaccattt gcagatatga gacaattcct ttttatgcat 1620

tgactgcaat acagagaagt ccaatttggc caacttcaac aaaacttcat catgtgatgt 1680

ttcctgctga tagataggca tatagtgcaa ggcttctatc cttgctaacc ttctcctcaa 1740

aggttgcttc aatgcttgat gtatttgtgt tcttaaagaa gagtcgcatg aaggatcctt 1800

tgcgatgatg tctaagtgga ctttagagaa ttccaatgcg ttgtctaata tagtctcgtc 1860

ctctaccctc ataaaggcag cttcatataa tgccaaaatt ccttgagcat cgttgcataa 1920

tgactcctta aactttccct tttcgtccat gaaatcttta aagacacctg aagagacgtt 1980

gaatccctgt tgccttaaca acctaaacca taaagagatt gattgcaagt tctccttgtc 2040

aacccattgt tctccataag taacatgaat atgctgcaat gcctcttcaa tctcctcttc 2100

gaaatgatat gcaattccta acctttgaac agcgtcaatt aactctatca acttgacgtg 2160

ttgcataggc tcgtttgaac cttttatggt gatcaactcc ttcttaacct cctcctttaa 2220

ctcctcgacc aactgttttt tcatgactaa atcctctggt tcgtcatagg tcaagaactg 2280

gtctccccat atagaggcgt tgaagttcgt tgtatgcctt atgacgtctg gctttgtaga 2340

atctttgtcg tctacaacca atggtgaggt agaagatgag gatgagactg aagatatagg 2400

caatgttgac attgtaaagt tagttggttg cgcgacttcg ggtggggtaa gtatagaggt 2460

atattaacaa ttttttgttg atacttttat gacatttgaa taagaagtaa tacaaaccga 2520

aaatgttgaa agtattagtt aaagtggtta tgcagctttt gcatttatat atctgttaat 2580

agatcaaaaa tcatcgcttc gctgattaat taccccagaa ataaggctaa aaaactaatc 2640

gcattattat cctatggttg ttaatttgat tcgttgattt gaaggtttgt ggggccaggt 2700

tactgccaat ttttcctctt cataaccata aaagctagta ttgtagaatc tttattgttc 2760

ggagcagtgc ggcgcgaggc acatctgcgt ttcaggaacg cgaccggtga agaccaggac 2820

gcacggagga gagtcttccg tcggagggct gtcgcccgct cggcggcttc taatccgtac 2880

ttcaatatag caatgagcag ttaagcgtat tactgaaagt tccaaagaga aggtttttt 2940

aggctaagat aatggggctc tttacatttc cacaacatat aagtaagatt agatatggat 3000

atgtatatgg tggtattgcc atgtaatatg attattaaac ttctttgcgt ccatccaaaa 3060

aaaaagtaac gcacgcacac tcccgacaga caactagctt gataatgtca actttgccta 3120

tttcttctgt gtcatcttcc tcttctacat caccattagt cgtggacgac aaagattcaa 3180

ccaagcccga cgttatcaga catacaacga atttcaatgc ttctatttgg ggagatcaat 3240

tcttgaccta tgatgagcct gaagatttag ttatgaagaa acaattagtg gaggaattaa 3300

aagaggaagt taagaaggaa ttgataacta tcaaaggttc aaatgagccc atgcagcatg 3360

tgaaattgat tgaattaatt gatgctgttc aacgtttagg tatagcttac cattttgaag 3420
aagagatcga ggaagctttg caacatatgc atgttaccta tggtgaacag tgggtggata 3480
aggaaaattt acagagtatt tcattgtggt tcaggttgtt gcgtcaacag ggctttaacg 3540
tctcctctgg cgttttcaaa gactttatgg acgaaaaagg taaattcaaa gagtctttat 3600
gcaatgatgc acaaggaata ttagccttat atgaagctgc atttatgagg gttgaagatg 3660
aaaccatctt agacaatgct ttggaattct caaaagttca tttagatatc atagcaaaag 3720
acccatcttg cgattcttca ttgcgtacac aaatccatca agccttaaaa caacctttaa 3780
gaaggagatt agcaaggatt gaagcattac attacatgcc aatctaccaa caggaaacat 3840
ctcatgatga agtattgttg aaattagcca agttggattt cagtgttttg cagtctatgc 3900
ataaaaagga attgtcacat atctgtaagt ggtggaaaga tttagattta caaaataagt 3960
taccttttgt acgtgatcgt gttgtcgaag gctacttctg gatattgtcc atatactatg 4020
agccacaaca cgctagaaca agaatgtttt tgatgaaatc atgcatgtgg ttagtagttt 4080
tggacgatac ttttgataat tatggaacat acgaagaatt ggagattttt actcaagccg 4140
tcgagagatg gtctatctca tgcttagata tgttgcccga atatatgaaa ttaatctacc 4200
aagaattagt caatttgcat gtggaaatgg aagaatcttt ggaaaaggag ggaaagacct 4260
atcagattca ttacgttaag gagatggcta aagaattagt tcgtaattac ttagtagaag 4320
caagatggtt gaaggaaggt tatatgccta ctttagaaga atacatgtct gtttctatgg 4380
ttactggtac ttatggtttg atgactgcaa ggtcctatgt tggcagagga gacattgtta 4440
atgaagacac attcaaatgg gtttctagtt acccacctat tgttaaagct tcctgtgtaa 4500
taattagatt aatggacgat attgtatctc acaaggaaga acaagaaaga ggacatgtgg 4560
cttcatctat agaatgttac tctaaagaat caggtgcttc tgaagaggaa gcatgtgaat 4620
atattagtag gaaagttgag gatgcctgga aagtaatcaa tagagaatct ttgcgtccaa 4680
cagccgttcc cttccctttg ttaatgccag caataaactt agctagaatg tgtgaggtct 4740
tgtactctgt taatgatggt tttactcatg ctgagggtga catgaaatct tatatgaagt 4800
ccttcttcgt tcatcctatg gtcgtttgag ctagctaaga tccgctctaa ccgaaaagga 4860
aggagttaga caacctgaag tctaggtccc tatttatttt tttatagtta tgttagtatt 4920
aagaacgtta tttatatttc aaatttttct ttttttctg tacagacgcg tgtacgcatg 4980
taacattata ctgaaaacct tgcttgagaa ggttttggga cgctcgaaga acctgcaggc 5040
cgcgagcgcc gatggtctaa ggcgcctgat tcaagaaata tcttgaccgc agttaactgt 5100
gggaatactc aggtatcgta agatgcaaga gttcgaatct cttagcaacc attatttttt 5160
tcctcaacat aacgagaaca cacaggggcg ctatcgcaca gaatcaaatt cgatgactgg 5220
aaatttttg ttaatttcag aggtcgcctg acgcatatac ctttttcaac tgaaaaattg 5280
ggagaaaaag gaaaggtgag agcgccggaa ccggcttttc atatagaata gagaagcgtt 5340
catgactaaa tgcttgcatc acaatacttg aagttgacaa tattatttaa ggacctattg 5400

tttttttccaa taggtggtta gcaatcgtct tactttctaa cttttcttac cttttacatt 5460
tcagcaatat atatatatat atttcaagga tataccattc taatgtctgc ccctaagaag 5520
atcgtcgttt tgccaggtga ccacgttggt caagaaatca cagccgaagc cattaaggtt 5580
cttaaagcta tttctgatgt tcgttccaat gtcaagttcg atttcgaaaa tcatttaatt 5640
ggtggtgctg ctatcgatgc tacaggtgtt ccacttccag atgaggcgct ggaagcctcc 5700
aagaaggctg atgccgtttt gttaggtgct gtgggtggtc ctaaatgggg tactggtagt 5760
gttagacctg aacaaggttt actaaaaatc cgtaaagaac ttcaattgta cgccaactta 5820
agaccatgta actttgcatc cgactctctt ttagacttat ctccaatcaa gccacaattt 5880
gctaaaggta ctgacttcgt tgttgtcaga gaattagtgg gaggtattta ctttggtaag 5940
agaaaggaag acgatggtga tggtgtcgct tgggatagtg aacaatacac cgttccagaa 6000
gtgcaaagaa tcacaagaat ggccgctttc atggccctac aacatgagcc accattgcct 6060
atttggtcct tggataaagc taatgttttg gcctcttcaa gattatggag aaaaactgtg 6120
gaggaaacca tcaagaacga attccctaca ttgaaggttc aacatcaatt gattgattct 6180
gccgccatga tcctagttaa gaacccaacc cacctaaatg gtattataat caccagcaac 6240
atgtttggtg atatcatctc cgatgaagcc tccgttatcc caggttcctt gggtttgttg 6300
ccatctgcgt ccttggcctc tttgccagac aagaacaccg catttggttt gtacgaacca 6360
tgccacggtt ctgctccaga tttgccaaag aataaggtca accctatcgc cactatcttg 6420
tctgctgcaa tgatgttgaa attgtcattg aacttgcctg aagaaggtaa ggccattgaa 6480
gatgcagtta aaaaggtttt ggatgcaggt atcagaactg gtgatttagg tggttccaac 6540
agtaccaccg aagtcggtga tgctgtcgcc gaagaagtta agaaaatcct tgcttaaaaa 6600
gattctcttt ttttatgata tttgtacata aactttataa atgaaattca taatagaaac 6660
gacacgaaat tacaaaatgg aatatgttca tagggtagac gaaactatat acgcaatcta 6720
catacattta tcaagaagga gaaaaaggag gatgtaaagg aatacaggta agcaaattga 6780
tactaatggc tcaacgtgat cggcgctcgc ggcctgcagg ttcttcgagc gtcccaaaac 6840
cttctcaagc aaggttttca gtataatgtt acatgcgtac acgcgtctgt acagaaaaaa 6900
aagaaaaatt tgaaatataa ataacgttct taatactaac ataactataa aaaaataaat 6960
agggacctag acttcaggtt gtctaactcc ttccttttcg gttagagcgg atcttagcta 7020
gctcaaacga ccatcgggtg gacgaagaat gacttcatgt aagacttcat atctccttct 7080
gcatgtgtaa atccgtcgtt tacactatag agaacctcac acattctagc caaattgatg 7140
gcaggcataa gcaaaggaaa cggaacggca gttggacgca acgactctcg gttgataact 7200
ttccatgcat cctcaacctt acggctaatg tactcgcagg cctcttcttc actggcccca 7260
gattctttcg aatagcattc gatagaactt gcaacatgcc ctcgttcttg ttcttcttta 7320
tgagacacga tatcatccat cagacggata ataacacacg acgcttttac gataggcggg 7380
tacgaagaca cccacttaaa cgtatcttca ttgacgatgt ccccacgacc aacgtaactc 7440

cgagcggtca taagcccgta agtccccgta accatgctaa cgctcatgta ctcctctaaa 7500

gtaggcatgt agccttcctt taaccatcta gcttcaacta gataatttct taccagttct 7560

ttggccattt ccttaacgta gtggatttga taagttttac cttctttctc aagactctcc 7620

tccatttcaa cgtgaaggtt gacaagctct tgatagatca atttcatgta ttctggtagc 7680

atgtcgagac atgatattga ccacctctcg acagcttgcg tgaaaatctc caactcctcg 7740

tatgttccgt agttatcaaa tgtatcatcc aggactacca gccacataca cgacttcata 7800

agaaacatac gagtacgtgc atgctgaggt tcataataaa tactcaaaat ccaaaaatat 7860

ccctcgacga ctctgtcacg aacaaacggt agtttgttct gcaaatcgag gtccttccac 7920

cacttacaaa tatgcgacaa ttccttttg tgcatagatt ggagcacaga aaaatccagc 7980

ttcgctagct tcaataaaac ttcatcatga ctagtctcct gttgatagat tggcatatag 8040

tgaagagctt ctattcgagc cagtctgcgt ctgagtggct gctttaatgc ctgatgaatc 8100

tgtgtacgta gagatgaatc acagcttgga tctttagcaa ttatatcgag atgaacctta 8160

ctgaactcca aggcgttatc taagatagtt tcatcctcaa ccctcataaa cgccgcctca 8220

tagagagcta aaataccttg agcatcatta cagaggcttt ctttaaactt tccctttcg 8280

tccataaaat ctttaaacac tccactcgaa acgttgaatc cctgttgtct aagtaatcga 8340

aaccatagcg agattgactg aagattttct ttatcgaccc actgctctcc gtaagtaacg 8400

tgaatatgtt gcaaagcttc ctcaatttcc tcctcaaaat ggtaagcaat tccaagacgc 8460

tgcacggcat cgatcagctc gatgagttta acatgttgca taggctcatt tgatcctttg 8520

attgtaataa gttctttctt aacctcttcc ttcagttcct ctacgagttg cttcttcata 8580

accaaatcct cgggttcatc gtatgttaaa aactggtcac cccaaataga cgcgttgaaa 8640

tttgtggtat gtctgattac gtccggttta gtagaatcct tgtcatcgac taccaatggg 8700

gaggtactag aagatgagga aacagaagaa ataggtaaag tagacattat caagctagtt 8760

gtctgtcggg agtgtgcgtg cgttactttt tttttggatg gacgcaaaga agtttaataa 8820

tcatattaca tggcaatacc accatataca tatccatatc taatcttact tatatgttgt 8880

ggaaatgtaa agagccccat tatcttagcc taaaaaaacc ttctctttgg aactttcagt 8940

aatacgctta actgctcatt gctatattga agtacggatt agaagccgcc gagcgggcga 9000

cagccctccg acggaagact ctcctccgtg cgtcctggtc ttcaccggtc gcgttcctga 9060

aacgcagatg tgcctcgcgc cgcactgctc cgaacaataa agattctaca atactagctt 9120

ttatggttat gaagaggaaa aattggcagt aacctggccc cacaaacctt caaatcaacg 9180

aatcaaatta acaaccatag gataataatg cgattagttt tttagcctta tttctggggt 9240

aattaatcag cgaagcgatg atttttgatc tattaacaga tatataaatg caaaagctgc 9300

ataaccactt taactaatac tttcaacatt ttcggtttgt attacttctt attcaaatgt 9360

cataaaagta tcaacaaaaa attgttaata tacctctata cttaccccac ccgaagtcgc 9420

gcaaccaact aactttacaa tgtcaacctt gcctatttct tctgtctcat cttcttcatc 9480

tacctctcca ttggtcgtag acgataagga ctctactaaa ccagacgtca tcaggcacac 9540
cacgaatttc aacgcttcta tatggggaga ccagttttta acttacgacg aacctgagga 9600
tttggtcatg aaaaaacagt tggtcgaaga attgaaggag gaggtcaaga aggagttgat 9660
tacaatcaag ggatcaaacg aacctatgca gcacgttaag ttgatcgaat taatagatgc 9720
tgtccaaaga ttgggtatag cctaccactt cgaggaggaa atcgaggagg ctttacaaca 9780
tatacacgtc acatacggtg aacagtgggt cgataaagag aatttgcagt ctatctcatt 9840
gtggttcagg ttgttaaggc aacaaggttt taatgtttca tctggagttt tcaaggactt 9900
tatggacgag aaaggtaaat tcaaggagtc tttgtgcaac gatgctcagg gtattttagc 9960
attgtatgag gccgcattta tgagggttga agacgagact atcttagata acgcattgga 10020
gttctccaag gtccacttag acattattgc taaagaccca tcatgtgact cttctttgag 10080
aactcaaata caccaggcat taaagcaacc tttgaggaga aggttggcta gaatcgaagc 10140
attacactat atgccaatat atcagcagga aacctcacac gacgaagttt tgttaaagtt 10200
agcaaaattg gacttctctg tcttgcagtc aatgcataag aaggagttgt ctcatatctg 10260
caagtggtgg aaggatttag atttacaaaa taagttgcca ttcgtcagag atagggttgt 10320
agagggatac ttctggatct tgtctatata ctatgagcct cagcacgcca gaaccagaat 10380
gttcttaatg aagtcctgca tgtggttagt agtattagac gacaccttcg acaattatgg 10440
aacatacgag gaattggaga tctttactca agccgttgag agatggtcta tttcttgctt 10500
ggacatgttg ccagagtata tgaagttgat ctaccaggag ttagttaact tgcacgtcga 10560
aatggaggaa tctttggaga aagagggaaa gacataccag attcactatg tcaaggaaat 10620
ggccaaagag ttggtaagga actatttggt tgaggccaga tggttgaaag agggttatat 10680
gcctaccttg gaggagtaca tgtcagtctc aatggttact ggtacctatg gtttgatgac 10740
tgccagatca tacgtcggaa gaggtgatat cgtaaatgag gataccttca agtgggtttc 10800
ttcataccct cctatcgtta aggcctcttg cgtcataatt aggttgatgg atgacattgt 10860
ttctcataag gaggaacagg agaggggtca cgtagcctca tcaatagagt gctattcaaa 10920
agagtctggt gcatcagagg aagaggcatg tgaatacatc tctagaaaag tagaggatgc 10980
ctggaaggtc attaacaggg agtcattgag acctactgct gtacctttc ctttgttgat 11040
gcctgctatc aacttggcaa ggatgtgcga agttttgtat tcagtaaacg atggtttcac 11100
tcacgccgaa ggtgatatga aatcatatat gaaatctttt ttcgtacatc ctatggtagt 11160
ataagcgaat ttcttatgat ttatgatttt tattattaaa taagttataa aaaaaataag 11220
tgtatacaaa ttttaaagtg actcttaggt tttaaaacga aaattcttat tcttgagtaa 11280
ctctttcctg taggtcaggt tgctttctca ggtatagcat gaggtcgctc aggtccgccg 11340
gcgttggacg agcgtctttt gtaacgaatt tgatgaatat atttttactt tttatataag 11400
ctattttgta gatattgact ttttacgatt tatttgtaac aatgagaatt actccatttc 11460
tgaacttcag taaatagcga gtgattctgt actttgcgag aaccggtgga catttggtat 11520

tttgccttac aagaacaacc tatacaaacg tttcaatatc taattctttg taatccattg 11580

ttttacgaga catataatgt gatatataga tgaactttac gtataaaatg atatatttaa 11640

aactagcaac tgcgtgcgta agacaaactg aaataggcca tttacggaaa agaaatttaa 11700

taatgtcgac tggaaactga aaccaggagg agtagaaatt ggttaaattg attagctaaa 11760

atttactcgt tgtggacaga gtttgagcca agcggaatgt tttcaaggct ttctttgttt 11820

cgaagggcag ctctggctcc tgcccctatg agggcggttt aaacgcgtgg ccgtgccgtc 11880

<210> 102
<211> 6896
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i569

<400> 102
gacggcacgg ccacgcgttt aaaccgccct ccaagctgac ataaatcgca ctttgtatct 60

actttttttt attcgaaaac aaggcacaac aatgaatcta tcgccctgtg agattttcaa 120

tctcaagttt gtgtaataga tagcgttata ttatagaact ataaaggtcc ttgaatatac 180

atagtgtttc attcctatta ctgtatatgt gactttacat tgttacttcc gcggctattt 240

gacgttttct gcttcaggtg cggcttggag ggcaaagtgt cagaaaatcg gccaggccgt 300

atgacacaaa agagtagaaa acgagatctc aaatatctcg aggcctgtcc tctatacaac 360

cgcccagctc tctgacaaag ctccagaacg gttgtctttt gtttcgaaaa gccaaggtcc 420

cttataattg ccctccattt tgtgtcacct atttaagcaa aaaattgaaa gtttactaac 480

ctttcattaa agagaaataa caatattata aaaagcgccg ctcgtccaac gccggcggac 540

ctgttttcaa tagttcggta atattaacgg atacctacta ttatccccta gtaggctctt 600

ttcacggaga aattcgggag tgtttttttt ccgtgcgcat tttcttagct atattcttcc 660

agcttcgcct gctgcccggt catcgttcct gtcacgtagt ttttccggat tcgtccggct 720

catataatac cgcaataaac acggaatatc tcgttccgcg gattcggtta aactctcggt 780

cgcggattat cacagagaaa gcttcgtgga gaatttttcc agattttccg ctttccccga 840

tgttggtatt tccggaggtc attatactga ccgccattat aatgactgta caacgacctt 900

ctggagaaag aaacaactca ataacgatgt gggacattgg gggcccactc aaaaaatctg 960

gggactatat ccccagagaa tttctccaga agagaagaaa agtcaaagtt ttttttcgct 1020

tgggggttgc atataaatac aggcgctgtt ttatcttcag catgaatatt ccataatttt 1080

acttaatagc ttttcataaa taatagaatc acaaacaaaa tttacatctg agttaaacaa 1140

tcatgacaat caaggaacat aaagtagttt atgaagctca caacgtaaag gctcttaagg 1200

ctcctcaaca tttttacaac agccaacccg gcaagggtta cgttactgat atgcaacatt 1260

atcaagaaat gtatcaacaa tctatcaatg agccagaaaa attctttgat aagatggcta 1320

aggaatactt gcattgggat gctccataca ccaaagttca atctggttca ttgaacaatg 1380

gtgatgttgc atggtttttg aacggtaaat tgaatgcatc atacaattgt gttgacagac 1440

atgcctttgc taatcccgac aagccagctt tgatctatga agctgatgac gaatccgaca 1500

acaaaatcat cacatttggt gaattactca gaaaagtttc ccaaatcgct ggtgtcttaa 1560

aaagctgggg cgttaagaaa ggtgacacag tggctatcta tttgccaatg attccagaag 1620

cggtcattgc tatgttggct gtggctcgta ttggtgctat tcactctgtt gtctttgctg 1680

ggttctccgc tggttcgttg aaagatcgtg tcgttgacgc taattctaaa gtggtcatca 1740

cttgtgatga aggtaaaaga ggtggtaaga ccatcaacac taaaaaaatt gttgacgaag 1800

gtttgaacgg agtcgatttg gtttcccgta tcttggtttt ccaaagaact ggtactgaag 1860

gtattccaat gaaggccggt agagattact ggtggcatga ggaggccgct aagcagagaa 1920

cttacctacc tcctgtttca tgtgacgctg aagatcctct atttttatta tacacttccg 1980

gttccactgg ttctccaaag ggtgtcgttc acactacagg tggttattta ttaggtgccg 2040

ctttaacaac tagatacgtt tttgatattc acccagaaga tgttctcttc actgccggtg 2100

acgtcggctg gatcacgggt cacacctatg ctctatatgg tccattaacc ttgggtaccg 2160

cctcaataat tttcgaatcc actcctgcct acccagatta tggtagatat tggagaatta 2220

tccaacgtca caaggctacc catttctatg tggctccaac tgctttaaga ttaatcaaac 2280

gtgtaggtga agccgaaatt gccaaatatg acacttcctc attacgtgtc ttgggttccg 2340

tcggtgaacc aatctctcca gacttatggg aatggtatca tgaaaaagtg ggtaacaaaa 2400

actgtgtcat ttgtgacact atgtggcaaa cagagtctgg ttctcattta attgctcctt 2460

tggcaggtgc tgtcccaaca aaacctggtt ctgctaccgt gccattcttt ggtattaacg 2520

cttgtatcat tgaccctgtt acaggtgtgg aattagaagg taatgatgtc gaaggtgtcc 2580

ttgccgttaa atcaccatgg ccatcaatgg ctagatctgt ttggaaccac cacgaccgtt 2640

acatggatac ttacttgaaa ccttatcctg gtcactattt cacaggtgat ggtgctggta 2700

gagatcatga tggttactac tggatcaggg gtagagttga cgacgttgta aatgtttccg 2760

gtcatagatt atccacatca gaaattgaag catctatctc aaatcacgaa aacgtctcgg 2820

aagctgctgt tgtcggtatt ccagatgaat tgaccggtca aaccgtcgtt gcatatgttt 2880

ccctaaaaga tggttatcta caaaacaacg ctactgaagg tgatgcagaa cacatcacac 2940

cagataattt acgtagagaa ttgatcttac aagttagggg tgagattggt cctttcgcct 3000

caccaaaaac cattattcta gttagagatc taccaagaac aaggtcagga aagattatga 3060

gaagagttct aagaaaggtt gcttctaacg aagccgaaca gctaggtgac ctaactactt 3120

tggccaaccc agaagttgta cctgccatca tttctgctgt agagaaccaa tttttctctc 3180

aaaaaaagaa ataaattgaa ttgaattgaa atcgatagat caatttttt cttttctctt 3240

tccccatcct ttacgctaaa ataatagttt attttatttt ttgaatattt tttatttata 3300

tacgtatata tagactatta tttatctttt aatgattatt aagattttta ttaaaaaaaa 3360

attcgctcct cttttaatgc ctttatgcag ttttttttc ccattcgata tttctatgtt 3420

cgggttcagc gtattttaag tttaataact cgaaaattct gcgttcgtta aagctttcga 3480

gaaggatatt atttcgaaat aaaccgtgtt gtgtaagctt gaagcctttt tgcgctgcca 3540

atattcttat ccatctattg tactctttag atccagtata gtgtattctt cctgctccaa 3600

gctcatccca tccccgcgtg cttggccggc cgttttgcca gcttactatc cttcttgaaa 3660

atatgcactc tatatctttt agttcttaat tgcaacacat agatttgctg tataacgaat 3720

tttatgctat tttttaaatt tggagttcag tgataaaagt gtcacagcga atttcctcac 3780

atgtagggac cgaattgttt acaagttctc tgtaccacca tggagacatc aaaaattgaa 3840

aatctatgga aagatatgga cggtagcaac aagaatatag cacgagccgc ggagttcatt 3900

tcgttacttt tgatatcact cacaactatt gcgaagcgct tcagtgaaaa aatcataagg 3960

aaaagttgta aatattattg gtagtattcg tttggtaaag tagaggggt aatttttccc 4020

ctttattttg ttcatacatt cttaaattgc tttgcctctc cttttggaaa gctatacttc 4080

ggagcactgt tgagcgaagg ctcattagat atattttctg tcattttcct taacccaaaa 4140

ataagggaaa gggtccaaaa agcgctcgga caactgttga ccgtgatccg aaggactggc 4200

tatacagtgt tcacaaaata gccaagctga aaataatgtg tagctatgtt cagttagttt 4260

ggctagcaaa gatataaaag caggtcggaa atatttatgg gcattattat gcagagcatc 4320

aacatgataa aaaaaaacag ttgaatattc cctcaaaaat gtcttacacc gtcggaacct 4380

acttggccga gaggttggtc cagatcggat tgaagcacca cttcgccgtc gccggtgact 4440

acaacttggt cttgttggac aacttgttgt tgaacaagaa catggagcag gtctattgct 4500

gcaacgagtt gaactgcggt ttctcagcag aaggttatgc aagagccaag ggagcagccg 4560

ctgccgtcgt cacctactca gtcggtgcat tatcagcatt cgatgcaatt ggaggtgctt 4620

acgctgagaa cttgccagtc atcttgatct ctggagcacc taacaacaac gaccatgctg 4680

ctggtcacgt attgcaccac gccttgggta aaacagacta ccactaccag ttggaaatgg 4740

caaaaaatat taccgcagcc gcagaggcca tctacacccc agaggaagca cctgccaaaa 4800

ttgaccacgt cataaagacc gctttgagag agaagaagcc tgtttacttg gagatcgcct 4860

gcaacatcgc ttctatgcca tgcgccgcac ctggtccagc ctctgctttg ttcaacgacg 4920

aggcctctga cgaagcttca ttgaacgccg cagtcgaaga gacattaaag ttcatcgcca 4980

acagggacaa agttgccgtc ttagtcggtt caaagttgag ggccgctggt gccgaagagg 5040

cagctgtcaa gttcgctgac gccttgggag gagccgtcgc caccatggcc gcagcaaaat 5100

ctttctttcc tgaggagaac ccacattaca tcggaacctc atggggtgaa gtatcatatc 5160

ctggagtaga aaaaaccatg aaagaggccg atgccgtaat agcattggct cctgtcttca 5220

acgactactc aaccacagga tggactgata taccagatcc aaagaaatta gtcttggctg 5280

agcctaggtc tgtcgtcgta aacggtatca ggttcccttc tgttcatttg aaggactact 5340

taacaagatt ggcccaaaag gtatctaaaa agactggtgc cttggacttc ttcaagtcat 5400

taaacgcagg agaattgaaa aaagcagcac cagccgatcc atcagcccca ttagttaacg 5460

ctgaaatcgc tagacaagta gaggctttgt tgactccaaa cactaccgtc atagctgaga 5520

caggtgactc ttggttcaac gcacagagaa tgaaattgcc aaatggtgcc agggtcgagt 5580

atgaaatgca gtggggacat ataggttggt cagtcccagc cgcctttgga tacgcagtag 5640

gtgcccctga gaggaggaac atattgatgg ttggtgatgg ttcattccaa ttaacagccc 5700

aggaggtagc ccaaatggtc aggttgaagt tgcctgtcat catcttcttg atcaacaatt 5760

acggatacac catcgaggtc atgatccacg acggacctta caacaacatc aaaaactggg 5820

actacgccgg tttgatggag gttttcaacg gtaacggtgg ttatgactca ggagccggta 5880

agggattaaa ggctaagacc ggtggtgaat tggctgaagc aattaaggtc gcattggcca 5940

acaccgatgg acctacattg attgaatgct tcatcggaag ggaggactgc accgaggaat 6000

tggttaaatg gggtaaaagg gtagccgctg ctaattcaag aaaaccagtt aataaattat 6060

tataataagt gaatttactt taaatcttgc atttaaataa attttctttt tatagcttta 6120

tgacttagtt tcaatttata tactatttta atgacatttt cgattcattg attgaaagct 6180

ttgtgttttt tcttgatgcg ctattgcatt gttcttgtct ttttcgccac atgtaatatc 6240

tgtagtagat acctgataca ttgtggatgc tgagtgaaat tttagttaat aatggaggcg 6300

ctcttaataa ttttggggat attggcttaa cctgcaggcc gcgagcgccg atataaacta 6360

atgattttaa atcgttaaaa aaatatgcga attctgtgga tcgaacacag gacctccaga 6420

taacttgacc gaagtttttt cttcagtctg gcgctctccc aactgagcta aatccgctta 6480

ctatttgtta tcagttccct tcatatctac atagaatagg ttaagtattt tattagttgc 6540

cagaagaact actgatagtt gggaatattt ggtgaataat gaagattggg tgaataattt 6600

gataattttg agattcaatt gttaatcaat gttacaatat tatgtataca gagtatacta 6660

gaagttctct tcggagatct tgaagttcac aaaagggaat cgatatttct acataatatt 6720

atcattactt cttccccatc ttatatttgt cattcattat tgattatgat caatgcaata 6780

atgattggta gttgccaaac atttaatacg atcctctgta atatttctat gaataattat 6840

cacagcaacg ttcaattatc ttcaattccg gtgtttaaac cccagcgcct ggcggg 6896

<210> 103
<211> 7038
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i2124

<400> 103
aagaaggacg tgagaaaact ttaacatctg cttggtaagg gcctcattta attctggatt 60

attgtacccg tgaataacac accaccacga cgacatggcg tcgatcacct cgacgtccac 120

tggtgagtcg gtatccaaca ccagcttgca tccgtgagca ctctttaccg gataaacgtt 180

caatggtgaa ctcaatgacg tataaggatg ccaaatatgt tttttatcaa agtctagcag 240

ttccgcgaca tctggtgtat atgaaatttc ttgagacatt agttgttatc ctagcaatag 300

aaaacgaatt gcgctgttga catcctcccg accaaaagaa aatgaaatat acaaacaatg 360
gctatttata attcaaaatt attgggcaaa acaaaataaa atcccgctgg tagttcgttt 420
actgaagtat ataaagagat atacttttt ccacaagtag gccagtgaaa agaactcaaa 480
aaatcactag cgcacaggtc gttcatcatc tcatggatct gcacatgaac aaacaccaga 540
gtcaaacgac gttgaaattg aggctactgc gccaattgat gacaatacag acgatgataa 600
caaaccgaag ttatctgatg tagaaaagga ttaaagatgc taagagatag tgatgatatt 660
tcataaataa tgtaattcta tatatgttaa ttacctttt tgcgaggcat atttatggtg 720
aaggataagt tttgaccatc aaagaaggtt aatgtggctg tggtttcagg gtccataaag 780
cttttcaatt catcttttt ttttttgttc tttttttga ttccggtttc tttgaaattt 840
ttttgattcg gtaatctccg agcagaagga agaacgaagg aaggagcaca gacttagatt 900
ggtatatata cgcatatgtg gtgttgaaga aacatgaaat tgcccagtat tcttaaccca 960
actgcacaga acaaaaacct gcaggaaacg aagataaatc atgtcgaaag ctacatataa 1020
ggaacgtgct gctactcatc ctagtcctgt tgctgccaag ctatttaata tcatgcacga 1080
aaagcaaaca aacttgtgtg cttcattgga tgttcgtacc accaaggaat tactggagtt 1140
agttgaagca ttaggtccca aaatttgttt actaaaaaca catgtggata tcttgactga 1200
tttttccatg gagggcacag ttaagccgct aaaggcatta tccgccaagt acaatttttt 1260
actcttcgaa gacagaaaat ttgctgacat tggtaataca gtcaaattgc agtactctgc 1320
gggtgtatac agaatagcag aatgggcaga cattacgaat gcacacggtg tggtgggccc 1380
aggtattgtt agcggtttga agcaggcggc agaagaagta acaaaggaac ctagaggcct 1440
tttgatgtta gcagaattgt catgcaaggg ctccctatct actggagaat atactaaggg 1500
tactgttgac attgcgaaga gcgacaaaga ttttgttatc ggctttattg ctcaaagaga 1560
catgggtgga agagatgaag gttacgattg gttgattatg acacccggtg tgggtttaga 1620
tgacaaggga gacgcattgg gtcaacagta tagaaccgtg gatgatgtgg tctctacagg 1680
atctgacatt attattgttg gaagaggact atttgcaaag ggaagggatg ctaaggtaga 1740
gggtgaacgt tacagaaaag caggctggga agcatatttg agaagatgcg gccagcaaaa 1800
ctaaaaaact gtattataag taaatgcatg tatactaaac tcacaaatta gagcttcaat 1860
ttaattatat cagttattac ccgggaatct cggtcgtaat gatttctata atgacgaaaa 1920
aaaaaaaatt ggaaagaaaa agcttcatgg cctttataaa aaggaactat ccaatacctc 1980
gccagaacca agtaacagta ttttacgggg cacaaatcaa gaacaataag acaggactgt 2040
aaagatggac gcatgagcga cctcatgcta tacctgagaa agcaacctga cctacaggaa 2100
agagttactc aagaataaga attttcgttt taaaacctaa gagtcacttt aaaatttgta 2160
tacacttatt ttttttataa cttatttaat aataaaaatc ataaatcata agaaattcgc 2220
ttagactacc atagggtgaa caaagaatga cttcatgtat gatttcatgt caccctcggc 2280
gtgggtgaaa ccgtcattaa ctgaatataa gacttcgcac attcttgcta agtttatggc 2340

aggcattaat aatgggaaag ggactgcggt tggcctcaat gactctctgt tgataacttt 2400

ccatgcatct tcgacttttc tagagatgta ctcacaggct tcttcttcag atgctcctga 2460

ttcttttgaa taacactcga tagatgatgc tacatgtccc ctctcttgtt cctctttgtg 2520

agatacaata tcatccatca accttataat aacgcatgag gcctttacga taggtggata 2580

agatgatacc cacttgaatg tgtcttcgtt tacaatgtct cctctaccga cataagatct 2640

agcagtcatt aatccgtagg ttccagtgac catagaaaca gacatatatt cctccaaggt 2700

aggcatgtaa ccctccttca accatctagc ttctaccaag tagtttctta ccaactcttt 2760

tgccatctcc ttgacatagt ggatctgata agttttaccc tctttctcca aagattcttc 2820

catctcgacg tgtaagttga ctaactcctg gtagatcaac ttcatatact ctggtaacat 2880

gtccaagcat gaaattgacc atctctctac agcttgagtg aagatctcta attcctcgta 2940

ggtaccgtaa ttgtcaaaag tgtcgtctaa aacgaccaac cacatgcaag acttcattaa 3000

gaacattctt gttctagcgt gctgaggctc gtagtagata gacaatatcc agaaatatcc 3060

ctcaacgact ctgtctctaa caaaaggcaa cttattctgc aaatccaaat ccttccacca 3120

tttgcagata tgagacaatt ccttttatg cattgactgc aatacagaga agtccaattt 3180

ggccaacttc aacaaaactt catcatgtga tgtttcctgc tgatagatag gcatatagtg 3240

caaggcttct atccttgcta accttctcct caaaggttgc ttcaatgctt gatgtatttg 3300

tgttcttaaa gaagagtcgc atgaaggatc ctttgcgatg atgtctaagt ggactttaga 3360

gaattccaat gcgttgtcta atatagtctc gtcctctacc ctcataaagg cagcttcata 3420

taatgccaaa attccttgag catcgttgca taatgactcc ttaaactttc ccttttcgtc 3480

catgaaatct ttaaagacac ctgaagagac gttgaatccc tgttgcctta acaacctaaa 3540

ccataaagag attgattgca agttctcctt gtcaacccat tgttctccat aagtaacatg 3600

aatatgctgc aatgcctctt caatctcctc ttcgaaatga tatgcaattc ctaacctttg 3660

aacagcgtca attaactcta tcaacttgac gtgttgcata ggctcgtttg aacctttttat 3720

ggtgatcaac tccttcttaa cctcctcctt taactcctcg accaactgtt ttttcatgac 3780

taaatcctct ggttcgtcat aggtcaagaa ctggtctccc catatagagg cgttgaagtt 3840

cgttgtatgc cttatgacgt ctggctttgt agaatctttg tcgtctacaa ccaatggtga 3900

ggtagaagat gaggatgaga ctgaagatat aggcaatgtt gacatttata ttgaattttc 3960

aaaaattctt actttttttt tggatggacg caaagaagtt taataatcat attacatggc 4020

aataccacca tatacatatc catatctaat cttacttata tgttgtggaa atgtaaagag 4080

ccccattatc ttagcctaaa aaaaccttct ctttggaact ttcagtaata cgcttaactg 4140

ctcattgcta tattgaagta cggattagaa gccgccgagc gggcgacagc cctccgacgg 4200

aagactctcc tccgtgcgtc ctggtcttca ccggtcgcgt tcctgaaacg cagatgtgcc 4260

tcgcgccgca ctgctccgaa caataaagat tctacaatac tagcttttat ggttatgaag 4320

aggaaaaatt ggcagtaacc tggccccaca aaccttcaaa tcaacgaatc aaattaacaa 4380

ccataggata ataatgcgat tagtttttta gccttatttc tggggtaatt aatcagcgaa 4440
gcgatgattt ttgatctatt aacagatata taaatgcaaa agctgcataa ccactttaac 4500
taatactttc aacattttcg gtttgtatta cttcttattc aaatgtcata aaagtatcaa 4560
caaaaaattg ttaatatacc tctatacttt aacgtcaagg agaaaaaact ataatgtcaa 4620
ctttgcctat ttcttctgtg tcatcttcct cttctacatc accattagtc gtggacgaca 4680
aagattcaac caagcccgac gttatcagac atacaacgaa tttcaatgct tctatttggg 4740
gagatcaatt cttgacctat gatgagcctg aagatttagt tatgaagaaa caattagtgg 4800
aggaattaaa agaggaagtt aagaaggaat tgataactat caaaggttca aatgagccca 4860
tgcagcatgt gaaattgatt gaattaattg atgctgttca acgtttaggt atagcttacc 4920
attttgaaga agagatcgag gaagctttgc aacatatgca tgttacctat ggtgaacagt 4980
gggtggataa ggaaaattta cagagtattt cattgtggtt caggttgttg cgtcaacagg 5040
gctttaacgt ctcctctggc gttttcaaag actttatgga cgaaaaaggt aaattcaaag 5100
agtctttatg caatgatgca caaggaatat tagccttata tgaagctgca tttatgaggg 5160
ttgaagatga aaccatctta gacaatgctt tggaattctc aaaagttcat ttagatatca 5220
tagcaaaaga cccatcttgc gattcttcat tgcgtacaca aatccatcaa gccttaaaac 5280
aacctttaag aaggagatta gcaaggattg aagcattaca ttacatgcca atctaccaac 5340
aggaaacatc tcatgatgaa gtattgttga aattagccaa gttggatttc agtgttttgc 5400
agtctatgca taaaaaggaa ttgtcacata tctgtaagtg gtggaaagat ttagatttac 5460
aaaataagtt acctttgta cgtgatcgtg ttgtcgaagg ctacttctgg atattgtcca 5520
tatactatga gccacaacac gctagaacaa gaatgttttt gatgaaatca tgcatgtggt 5580
tagtagtttt ggacgatact tttgataatt atggaacata cgaagaattg gagattttta 5640
ctcaagccgt cgagagatgg tctatctcat gcttagatat gttgcccgaa tatatgaaat 5700
taatctacca agaattagtc aatttgcatg tggaaatgga agaatctttg gaaaaggagg 5760
gaaagaccta tcagattcat tacgttaagg agatggctaa agaattagtt cgtaattact 5820
tagtagaagc aagatggttg aaggaaggtt atatgcctac tttagaagaa tacatgtctg 5880
tttctatggt tactggtact tatggtttga tgactgcaag gtcctatgtt ggcagaggag 5940
acattgttaa tgaagacaca ttcaaatggg tttctagtta cccacctatt gttaaagctt 6000
cctgtgtaat aattagatta atggacgata ttgtatctca caaggaagaa caagaaagag 6060
gacatgtggc ttcatctata gaatgttact ctaaagaatc aggtgcttct gaagaggaag 6120
catgtgaata tattagtagg aaagttgagg atgcctggaa agtaatcaat agagaatctt 6180
tgcgtccaac agccgttccc ttccctttgt taatgccagc aataaactta gctagaatgt 6240
gtgaggtctt gtactctgtt aatgatggtt ttactcatgc tgagggtgac atgaaatctt 6300
atatgaagtc cttcttcgtt catcctatgg tcgtttgagc tagctaagat ccgctctaac 6360
cgaaaaggaa ggagttagac aacctgaagt ctaggtccct atttattttt ttatagttat 6420

gttagtatta agaacgttat ttatatttca aatttttctt ttttttctgt acagacgcgt 6480

gtacgcatgt aacattatac tgaaaacctt gcttgagaag gttttgggac gctcgaagtt 6540

taaataaaaa agttgcaagg ctttcatcag ctatatataa gtagcatggt atgaacagag 6600

taggggcagt gttcctattt gtatatgaaa gaaatttttt tttgtctatt gttccagatc 6660

gtcacaggac ggaaataaga atgtctagtt cagaaaggtc agaagtcaag tttgacaagc 6720

actttaattg gtggtcccta ttaggtatcg cgttctcatt aagttgctca tgggtcggta 6780

tctcagcgtc gatggccgtt ggtattgcca gtggagggcc actgcttatc atctatgggt 6840

tgataattgc tgcttttttc agtctcatgt gtggtatatc tctgggagat tttgctgcta 6900

tcctgccaaa cagcagcggt ggttcatttt gggttcttaa aatgttggaa caagaatcag 6960

tcactttgaa aacccctgag tacgaggacc cttctgacga tgatgaagaa gtgttcctcg 7020

agaattattg tcaaactt 7038

<210> 104
<211> 4376
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i65

<400> 104
gtttaaaccc tggaaattcg gtgtccttct cattatctat cagcatgtac tcggcggtaa 60

aaacatcctt tgaaggattt tgaatgatgg gtcccaaaaa tctttttctg tggaaagaac 120

cgatactact atgattcgca ttaacgccgt tattaacggt taactgatag tctttgttgc 180

ataaactaaa cttacccttc gaaatacgat tagcatacct gccgatcgtg gcgcctatat 240

aagcactatc aggattcaaa tacccttcct cattttcata gccaagaaca actgattgtc 300

cgttcacttt caggtcaaca atgctggcgc ccaaattggc aaacgtggct tgaaatctgg 360

tgccggcacc aatagtcaca aatcttgcgt cataacgcat atcttcagcg gaaaatctgg 420

cctcgacacc ccttaactgg taaccaaaag gattctcagt agtccatttc cataaatcct 480

tgcaggagtc ttcaacctgc aactcggtct gccatttcag ttcgcgtttg gccctatctg 540

gtttagccgt caagttcaaa acatcacctg ctcttctgcc cgtaactttg tatggaagat 600

caataccaga agctttgcag aatgcatgat aaacttcaaa aactgtagaa cctttaccgg 660

aacccaagtt ccactcacga cacaaacctt cattttcatt gtaggcctct aggtattgca 720

gggctgcaat atgacctttt gctagatcaa ctacgtggat ataatccctg atcggggtac 780

catctctgga atcataatcg tctccgaaga tgtaaagctt ctcgcgccta ccaacagcta 840

cttgagccat atatggcaac aaattgtttg gtatacctag cggatcttct ccgattaatc 900

cagagggatg tgcgccaatt gggttaaaat aacgcaagat agcaaacttc caacttttt 960

tgtcgctatt gtaaagatca ttcaagatat tctcaatggc gtatttcgta tgaccatacg 1020

gattagtagg ccctaaggga cattcttctg ggataggaat catatttggg aatctcgtag 1080

catcaccata gacagtagca gaagatgaaa aaacaaattt ggaaacgttg tattgttgca 1140

ttaactctaa taaaacgaca gttcccaaaa tgttattgtg atagtatctc agcgggattt 1200

gtgtagattc acctacagcc tttaaaccag caaagtgaat taccgaatca attttatatt 1260

ctttgaaaac cttttccaga ccttttcggt cacacaaatc aacctcatag aagggaatgt 1320

gatgcttggt caagacctct aacctggcta cagaatcata agttgaattc gacaggttat 1380

cagcaacaac acagtcatat ccattctcaa ttagctctac cacagtgtgt gaaccaatgt 1440

atccagcacc acctgtaacc aaaacaattt tagaagtact ttcactttgt aactgagctg 1500

tgtcgacact agtaatacac atcatcgtcc tacaagttca tcaaagtgtt ggacagacaa 1560

ctataccagc atggatctct tgtatcggtt cttttctccc gctctctcgc aataacaatg 1620

aacactgggt caatcatagc ctacacaggt gaacagagta gcgtttatac agggtttata 1680

cggtgattcc tacggcaaaa atttttcatt tctaaaaaaa aaaagaaaaa tttttctttc 1740

caacgctaga aggaaaagaa aaatctaatt aaattgattt ggtgattttc tgagagttcc 1800

ctttttcata tatcgaattt tgaatataaa aggagatcga aaaaattttt ctattcaatc 1860

tgttttctgg ttttatttga tagttttttt gtgtattatt attatggatt agtactggtt 1920

tatatgggtt tttctgtata acttcttttt attttagttt gtttaatctt attttgagtt 1980

acattatagt tccctaactg caagagaagt aacattaaaa atgaaaaagc ctgaactcac 2040

cgcgacgtct gtcgagaagt ttctgatcga aaagttcgac agcgtctccg acctgatgca 2100

gctctcggag ggcgaagaat ctcgtgcttt cagcttcgat gtaggagggc gtggatatgt 2160

cctgcgggta aatagctgcg ccgatggttt ctacaaagat cgttatgttt atcggcactt 2220

tgcatcggcc gcgctcccga ttccggaagt gcttgacatt ggggaattca gcgagagcct 2280

gacctattgc atctcccgcc gtgcacaggg tgtcacgttg caagacctgc ctgaaaccga 2340

actgcccgct gttctgcagc cggtcgcgga ggccatggat gcgatcgctg cggccgatct 2400

tagccagacg agcgggttcg gcccattcgg accgcaagga atcggtcaat acactacatg 2460

gcgtgatttc atatgcgcga ttgctgatcc ccatgtgtat cactggcaaa ctgtgatgga 2520

cgacaccgtc agtgcgtccg tcgcgcaggc tctcgatgag ctgatgcttt gggccgagga 2580

ctgccccgaa gtccggcacc tcgtgcacgc ggatttcggc tccaacaatg tcctgacgga 2640

caatggccgc ataacagcgg tcattgactg gagcgaggcg atgttcgggg attcccaata 2700

cgaggtcgcc aacatcttct tctggaggcc gtggttggct tgtatggagc agcagacgcg 2760

ctacttcgag cggaggcatc cggagcttgc aggatcgccg cggctccggg cgtatatgct 2820

ccgcattggt cttgaccaac tctatcagag cttggttgac ggcaatttcg atgatgcagc 2880

ttgggcgcag ggtcgatgcg acgcaatcgt ccgatccgga gccgggactg tcgggcgtac 2940

acaaatcgcc cgcagaagcg cggccgtctg gaccgatggc tgtgtagaag tactcgccga 3000

tagtggaaac cgacgcccca gcactcgtcc gagggcaaag gaataggttt aacttgatac 3060

tactagattt tttctcttca tttataaaat ttttggttat aattgaagct ttagaagtat 3120

gaaaaaatcc ttttttttca ttctttgcaa ccaaaataag aagcttcttt tattcattga 3180

aatgatgaat ataaacctaa caaaagaaaa agactcgaat atcaaacatt aaaaaaaaat 3240

aaaagaggtt atctgttttc ccatttagtt ggagtttgca ttttctaata gatagaactc 3300

tcaattaatg tggatttagt ttctctgttc gttttttttt gttttgttct cactgtattt 3360

acatttctat ttagtattta gttattcata taatcttaac ttctcgagac tcataacttt 3420

agcatcacaa aatacgcaat aataacgagt agtaacactt ttatagttca tacatgcttc 3480

aactacttaa taaatgattg tatgataatg ttttcaatgt aagagatttc gattatccac 3540

aaactttaaa acacagggac aaaattcttg atatgctttc aaccgctgcg ttttggatac 3600

ctattcttga catgatatga ctaccatttt gttattgtac gtggggcagt tgacgtctta 3660

tcatatgtca aagtcatttg cgaagttctt ggcaagttgc caactgacga gatgcagtaa 3720

aaagagattg ccgtcttgaa acttttttgtc cttttttttt tccggggact ctacgagaac 3780

cctttgtcct actgattaat tttgtactga atttggacaa ttcagatttt agtagacaag 3840

cgcgaggagg aaaagaaatg acagaaaaat tccgatggac aagaagatag gaaaaaaaaa 3900

aagctttcac cgatttccta gaccggaaaa aagtcgtatg acatcagaat gaaaaatttt 3960

caagttagac aaggacaaaa tcaggacaaa ttgtaaagat ataataaact atttgattca 4020

gcgccaattt gccctttttcc attttccatt aaatctctgt tctctcttac ttatatgatg 4080

attaggtatc atctgtataa aactcctttc ttaatttcac tctaaagcat accccataga 4140

gaagatcttt cggttcgaag acattcctac gcataataag aataggaggg aataatgcca 4200

gacaatctat cattacattt aagcggctct tcaaaaagat tgaactctcg ccaacttatg 4260

gaatcttcca atgagacctt tgcgccaaat aatgtggatt tggaaaaaga gtataagtca 4320

tctcagagta atataactac cgaagtttat gaggcatcga gctttgaagt ttaaac 4376

<210> 105
<211> 7686
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Integration construct i10

<400> 105
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 gccaagcttg 240

gtaccgagct cggatccact agtaacggcc gccagtgtgc tggaattcgc ccttctcgag 300

aagttaagat tatatgaata actaaatact aaatagaaat gtaaatacag tgagaacaaa 360

acaaaaaaaa acgaacagag aaactaaatc cacattaatt gagagttcta tctattagaa 420

aatgcaaact ccaactaaat gggaaaacag ataacctctt ttatttttt ttaatgtttg 480

atattcgagt ctttttcttt tgttaggttt atattcatca tttcaatgaa taaaagaagc 540
ttcttatttt ggttgcaaag aatgaaaaaa aaggattttt tcatacttct aaagcttcaa 600
ttataaccaa aaattttata aatgaagaga aaaaatctag tagtatcaag ttaaacttaa 660
cggccttttg ccagatattg attcatctct tcttccggca ccattccacc tcccgtcgcc 720
cacaccagat gagtggtatt acgcagttgt tctgcgctga aaccgtgcat ctgttggtaa 780
cttactgatg cacacacgcg ctgaggtccg gccatacccg ccagtgccga aggttcaaga 840
cgaatacctt cttcctgcgc cagccagcca agcatgtcat acatggtttg atcgctaagg 900
gtatagaagc catccagcag acgctccatt gcccgcccga caaagcctga tgcgcgacca 960
actgcaaggc catccgctgc ggtaaggttg tcgataccaa tatcctgaac agaaatctga 1020
tcgtgtaatc ctgtatggac gcctaacaac atacaagggg agtgcgttgg ttcggcaaaa 1080
aagcagtgaa catgatcgcc aaacgccagt ttaagcccga atgcgacgcc accaggacca 1140
ccgccaacac cacacggcag atagacaaac agagggttat cagcatcgac gatacggcct 1200
tgctgggcaa attgcgcttt aagacgctgg ccagcgacgg aatacccaag gaacaacgtg 1260
cgggaatttt cgtcatcaat aaagaaacag ttcgggtcag actgcgctgc tttacgtcct 1320
tcctcgacgg caacaccata atcttgctca tattccacga ccgtaacgcc atgcgtgcgc 1380
agtttcgctt ttttccatgc ccgggcatca gcagacatat gaactgtcac cttaaagcca 1440
atgcgggcgc tcataatgcc gattgataac cccagatttc cggttgagcc cacagcaatg 1500
ctgtattggc taaagaactg tttaaactcc ggagaaagca gtttgctgta gtcatcatca 1560
agcgtcagca accccgcttc cagagccagt ttttctgcgt gtgccaggac ttcataaatc 1620
ccgccgcgtg cttttatgga gccggaaatg ggcaaatggc tatctttttt cagtaacagt 1680
tgcccgctga tcggttgctg atattctttt tccagccgtt tttgcatagc tcgaatggca 1740
accagttctg attcaataat ccccccagtg gcagcagttt caggaaatgc ttttgccaga 1800
tagggtgcaa aacgggataa gcgcgcatgg gcgtcctgaa catcctgttc ggtcaggcca 1860
acataaggta aaccttcagc caatgaggtc gtgccaggat taaaccaggt ggtttcttta 1920
agagcaacca gatcctttac caacggatac tgggcgatga gcgagttcat tttagcgttt 1980
tccatttttа atgttacttc tcttgcagtt agggaactat aatgtaactc aaaataagat 2040
taaacaaact aaaataaaaa gaagttatac agaaaaaccc atataaacca gtactaatcc 2100
ataataataa tacacaaaaa aactatcaaa taaaaccaga aaacagattg aatagaaaaa 2160
ttttttcgat ctccttttat attcaaaatt cgatatatga aaaagggaac tctcagaaaa 2220
tcaccaaatc aatttaatta gatttttctt ttccttctag cgttggaaag aaaaattttt 2280
ctttttttтt ttagaaatga aaaatttttg ccgtaggaat caccgtataa accctgtata 2340
aacgctactc tgttcacctg tgtaggctat gattgaccca gtgttcattg ttattgcgag 2400
agagcgggag aaaagaaccg atacaagaga tccatgctgg tatagttgtc tgtccaacac 2460
tttgatgaac ttgtaggacg atgatgtgta ttactagtgt cgacgtattc caatgagaat 2520

cgctagaaat gctttaccag aactagacta cttgtcgcag atcacttttg aactgtatga 2580

gagtacggat gcttctggtc aaaaatcgca ttccattaga ctgaaaatgt ctcctgggtg 2640

tcatactcaa gatccgttag atgttcaatt agatgacagg cattatatta gttgtattcc 2700

aaagatttcc ctgacgaagc atttggatat ggactacgtt caacagaaat tgagaaacaa 2760

atttaccagg gtcattatgc ctccgaaatt tacaccagta aacattacga gccccaactt 2820

gagtttccag aaacgcaaaa ccagaagaaa gtcggtatct gttgagaagt tgaagcttcc 2880

tgcctcgtcc ggatcttcat catctacctc cgttaacaag acattagatt agtgatcaca 2940

cccaattttt aatttagcaa cccaaaataa ataagtattt actcaacttt tttttaataa 3000

aaaaaaactt aattgaattt tgctcgcgat ctttaggtcc ggggttttcg ttgaaccctt 3060

agacgagcaa attagcgcca taaggatata cgtcagagca cattaattag tgacatatac 3120

ctatataaag agcaaccttc tccgatagac ttgtaattta tcttatttca tttcctaaca 3180

ctttggtcga agaagaggga taaaaacaga cgaaaacaca tttaagggct atacaaagat 3240

gggaaagcta ttacaattgg cattgcatcc ggtcgagatg aaggcagctt tgaagctgaa 3300

gttttgcaga acaccgctat tctccatcta tgatcagtcc acgtctccat atctcttgca 3360

ctgtttcgaa ctgttgaact tgacctccag atcgtttgct gctgtgatca gagagctgca 3420

tccagaattg agaaactgtg ttactctctt ttatttgatt ttaagggctt tggataccat 3480

cgaagacgat atgtccatcg aacacgattt gaaaattgac ttgttgcgtc acttccacga 3540

gaaattgttg ttaactaaat ggagtttcga cggaaatgcc cccgatgtga aggacagagc 3600

cgttttgaca gatttcgaat cgattcttat tgaattccac aaattgaaac cagaatatca 3660

agaagtcatc aaggagatca ccgagaaaat gggtaatggt atggccgact acatcttaga 3720

tgaaaattac aacttgaatg ggttgcaaac cgtccacgac tacgacgtgt actgtcacta 3780

cgtagctggt ttggtcggtg atggtttgac ccgtttgatt gtcattgcca agtttgccaa 3840

cgaatctttg tattctaatg agcaattgta tgaaagcatg ggtcttttcc tacaaaaaac 3900

caacatcatc agagattaca atgaagattt ggtcgatggt agatccttct ggcccaagga 3960

aatctggtca caatacgctc ctcagttgaa ggacttcatg aaacctgaaa acgaacaact 4020

ggggttggac tgtataaacc acctcgtcta agggcgaatt ctgcagatat ccatcacact 4080

ggcggccgct cgagcatgca tctagagggc ccaattcgcc ctatagtgag tcgtattaca 4140

attcactggc cgtcgtttta caacgtcgtg actgggaaaa ccctggcgtt acccaactta 4200

atcgccttgc agcacatccc cctttcgcca gctggcgtaa tagcgaagag gcccgcaccg 4260

atcgcccttc ccaacagttg cgcagcctga atggcgaatg gacgcgccct gtagcggcgc 4320

attaagcgcg gcgggtgtgg tggttacgcg cagcgtgacc gctacacttg ccagcgccct 4380

agcgcccgct cctttcgctt tcttcccttc ctttctcgcc acgttcgccg gctttccccg 4440

tcaagctcta aatcgggggc tccctttagg gttccgattt agtgctttac ggcacctcga 4500

ccccaaaaaa cttgattagg gtgatggttc acgtagtggg ccatcgccct gatagacggt 4560

ttttcgccct ttgacgttgg agtccacgtt ctttaatagt ggactcttgt tccaaactgg 4620

aacaacactc aaccctatct cggtctattc ttttgattta taagggattt tgccgatttc 4680

ggcctattgg ttaaaaaatg agctgattta acaaaaattt aacgcgaatt ttaacaaaat 4740

tcagggcgca agggctgcta aaggaagcgg aacacgtaga aagccagtcc gcagaaacgg 4800

tgctgacccc ggatgaatgt cagctactgg gctatctgga caagggaaaa cgcaagcgca 4860

aagagaaagc aggtagcttg cagtgggctt acatggcgat agctagactg ggcggtttta 4920

tggacagcaa gcgaaccgga attgccagct ggggcgccct ctggtaaggt tgggaagccc 4980

tgcaaagtaa actggatggc tttcttgccg ccaaggatct gatggcgcag gggatcaaga 5040

tctgatcaag agacaggatg aggatcgttt cgcatgattg aacaagatgg attgcacgca 5100

ggttctccgg ccgcttgggt ggagaggcta ttcggctatg actgggcaca acagacaatc 5160

ggctgctctg atgccgccgt gttccggctg tcagcgcagg ggcgcccggt tctttttgtc 5220

aagaccgacc tgtccggtgc cctgaatgaa ctgcaggacg aggcagcgcg gctatcgtgg 5280

ctggccacga cgggcgttcc ttgcgcagct gtgctcgacg ttgtcactga agcgggaagg 5340

gactggctgc tattgggcga agtgccgggg caggatctcc tgtcatccca ccttgctcct 5400

gccgagaaag tatccatcat ggctgatgca atgcggcggc tgcatacgct tgatccggct 5460

acctgcccat tcgaccacca agcgaaacat cgcatcgagc gagcacgtac tcggatggaa 5520

gccggtcttg tcgatcagga tgatctggac gaagagcatc aggggctcgc gccagccgaa 5580

ctgttcgcca ggctcaaggc gcgcatgccc gacggcgagg atctcgtcgt gacccatggc 5640

gatgcctgct tgccgaatat catggtggaa aatggccgct tttctggatt catcgactgt 5700

ggccggctgg gtgtggcgga ccgctatcag gacatagcgt tggctacccg tgatattgct 5760

gaagagcttg gcggcgaatg ggctgaccgc ttcctcgtgc tttacggtat cgccgctccc 5820

gattcgcagc gcatcgcctt ctatcgcctt cttgacgagt tcttctgaat tgaaaaagga 5880

agagtatgag tattcaacat ttccgtgtcg cccttattcc ctttttgcg gcattttgcc 5940

ttcctgtttt tgctcaccca gaaacgctgg tgaaagtaaa agatgctgaa gatcagttgg 6000

gtgcacgagt gggttacatc gaactggatc tcaacagcgg taagatcctt gagagttttc 6060

gccccgaaga acgttttcca atgatgagca cttttaaagt tctgctatgt ggcgcggtat 6120

tatcccgtat tgacgccggg caagagcaac tcggtcgccg catacactat tctcagaatg 6180

acttggttga gtactcacca gtcacagaaa agcatcttac ggatggcatg acagtaagag 6240

aattatgcag tgctgccata accatgagtg ataacactgc ggccaactta cttctgacaa 6300

cgatcggagg accgaaggag ctaaccgctt ttttgcacaa catgggggat catgtaactc 6360

gccttgatcg ttgggaaccg gagctgaatg aagccatacc aaacgacgag cgtgacacca 6420

cgatgcctgt agcaatggca acaacgttgc gcaaactatt aactggcgaa ctacttactc 6480

tagcttcccg gcaacaatta atagactgga tggaggcgga taaagttgca ggaccacttc 6540

tgcgctcggc ccttccggct ggctggttta ttgctgataa atctggagcc ggtgagcgtg 6600

ggtctcgcgg tatcattgca gcactggggc cagatggtaa gccctcccgt atcgtagtta 6660

tctacacgac ggggagtcag gcaactatgg atgaacgaaa tagacagatc gctgagatag 6720

gtgcctcact gattaagcat tggtaactgt cagaccaagt ttactcatat atactttaga 6780

ttgatttaaa acttcatttt taatttaaaa ggatctaggt gaagatcctt tttgataatc 6840

tcatgaccaa aatcccttaa cgtgagtttt cgttccactg agcgtcagac cccgtagaaa 6900

agatcaaagg atcttcttga gatccttttt ttctgcgcgt aatctgctgc ttgcaaacaa 6960

aaaaaccacc gctaccagcg gtggtttgtt tgccggatca agagctacca actcttttc 7020

cgaaggtaac tggcttcagc agagcgcaga taccaaatac tgttcttcta gtgtagccgt 7080

agttaggcca ccacttcaag aactctgtag caccgcctac atacctcgct ctgctaatcc 7140

tgttaccagt ggctgctgcc agtggcgata agtcgtgtct taccgggttg gactcaagac 7200

gatagttacc ggataaggcg cagcggtcgg gctgaacggg gggttcgtgc acacagccca 7260

gcttggagcg aacgacctac accgaactga gatacctaca gcgtgagcta tgagaaagcg 7320

ccacgcttcc cgaagggaga aaggcggaca ggtatccggt aagcggcagg gtcggaacag 7380

gagagcgcac gagggagctt ccagggggaa acgcctggta tctttatagt cctgtcgggt 7440

ttcgccacct ctgacttgag cgtcgatttt tgtgatgctc gtcaggggg cggagcctat 7500

ggaaaaacgc cagcaacgcg gccttttac ggttcctggc cttttgctgg ccttttgctc 7560

acatgttctt tcctgcgtta tcccctgatt ctgtggataa ccgtattacc gcctttgagt 7620

gagctgatac cgctcgccgc agccgaacga ccgagcgcag cgagtcagtg agcgaggaag 7680

cggaag 7686

<210> 106
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer LX-268-139-S2D-F

<400> 106
ggtcaccata tggacactct gccgatctct tcc 33

<210> 107
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer LX-268-139-S2D-R

<400> 107
gtataaggat cctcatacga ccatagggtg tacg 34

<210> 108
<211> 1725
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, FS_D_3.5 coding sequence

<400> 108
atgtctactt tacctatttc ttctgtttcc tcatcttcta gtacctcccc attggtagtc 60

gatgacaagg attctactaa accggacgta atcagacata ccacaaattt caacgcgtct 120

atttggggtg accagttttt aacatacgat gaacccgagg atttggttat gaagaagcaa 180

ctcgtagagg aactgaagga agaggttaag aaagaactta ttacaatcaa aggatcaaat 240

gagcctatgc aacatgttaa actcatcgag ctgatcgatg ccgtgcagcg tcttggaatt 300

gcttaccatt ttgaggagga aattgaggaa gctttgcaac atattcacgt tacttacgga 360

gagcagtggg tcgataaaga aaatcttcag tcaatctcgc tatggtttcg attacttaga 420

caacagggat tcaacgtttc gagtggagtg tttaaagatt ttatggacga aaagggaaag 480

tttaaagaaa gcctctgtaa tgatgctcaa ggtattttag ctctctatga ggcggcgttt 540

atgagggttg aggatgaaac tatcttagat aacgccttgg agttcagtaa ggttcatctc 600

gatataattg ctaaagatcc aagctgtgat tcatctctac gtacacagat tcatcaggca 660

ttaaagcagc cactcagacg cagactggct cgaatagaag ctcttcacta tatgccaatc 720

tatcaacagg agactagtca tgatgaagtt ttattgaagc tagcgaagct ggatttttct 780

gtgctccaat ctatgcacaa aaaggaattg tcgcatattt gtaagtggtg gaaggacctc 840

gatttgcaga acaaactacc gtttgttcgt gacagagtcg tcgagggata tttttggatt 900

ttgagtattt attatgaacc tcagcatgca cgtactcgta tgtttcttat gaagtcgtgt 960

atgtggctgg tagtcctgga tgatacattt gataactacg gaacatacga ggagttggag 1020

attttcacgc aagctgtcga gaggtggtca atatcatgtc tcgacatgct accagaatac 1080

atgaaattga tctatcaaga gcttgtcaac cttcacgttg aaatggagga gagtcttgag 1140

aaagaaggta aaacttatca aatccactac gttaaggaaa tggccaaaga actggtaaga 1200

aattatctag ttgaagctag atggttaaag gaaggctaca tgcctacttt agaggagtac 1260

atgagcgtta gcatggttac ggggacttac gggcttatga ccgctcggag ttacgttggt 1320

cgtggggaca tcgtcaatga agatacgttt aagtgggtgt cttcgtaccc gcctatcgta 1380

aaagcgtcgt gtgttattat ccgtctgatg gatgatatcg tgtctcataa agaagaacaa 1440

gaacgagggc atgttgcaag ttctatcgaa tgctattcga aagaatctgg ggccagtgaa 1500

gaagaggcct gcgagtacat tagccgtaag gttgaggatg catggaaagt tatcaaccga 1560

gagtcgttgc gtccaactgc cgttccgttt cctttgctta tgcctgccat caatttggct 1620

agaatgtgtg aggttctcta tagtgtaaac gacggattta cacatgcaga aggagatatg 1680

aagtcttaca tgaagtcatt cttcgtccac ccgatggtcg tttga 1725

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

<220>
<223> Synthetic, Primer LX-268-130-4-S2D-R

<400> 109
ctttaacgtc aaggagaaaa aaccccggat ccatggacac tctgccgatc tcttcc 56

<210> 110
<211> 59
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer LX-268-130-3-S2D-F

<400> 110
ccttcctttt cggttagagc ggatcttagc tagctcatac gaccataggg tgtacgaag 59

<210> 111
<211> 574
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic, A. annua b-farnesene synthase amino acid sequence

<400> 111

Met Ser Thr Leu Pro Ile Ser Ser Val Ser Phe Ser Ser Ser Thr Ser
1 5 10 15

Pro Leu Val Val Asp Asp Lys Val Ser Thr Lys Pro Asp Val Ile Arg
20 25 30

His Thr Met Asn Phe Asn Ala Ser Ile Trp Gly Asp Gln Phe Leu Thr
35 40 45

Tyr Asp Glu Pro Glu Asp Leu Val Met Lys Lys Gln Leu Val Glu Glu
50 55 60

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

Glu Pro Met Gln His Val Lys Leu Ile Glu Leu Ile Asp Ala Val Gln
85 90 95

Arg Leu Gly Ile Ala Tyr His Phe Glu Glu Glu Ile Glu Glu Ala Leu
100 105 110

Gln His Ile His Val Thr Tyr Gly Glu Gln Trp Val Asp Lys Glu Asn
115 120 125

Leu Gln Ser Ile Ser Leu Trp Phe Arg Leu Leu Arg Gln Gln Gly Phe
130 135 140

Asn Val Ser Ser Gly Val Phe Lys Asp Phe Met Asp Glu Lys Gly Lys
145 150 155 160

```
Phe Lys Glu Ser Leu Cys Asn Asp Ala Gln Gly Ile Leu Ala Leu Tyr
                165                 170                 175

Glu Ala Ala Phe Met Arg Val Glu Asp Glu Thr Ile Leu Asp Asn Ala
            180                 185                 190

Leu Glu Phe Thr Lys Val His Leu Asp Ile Ile Ala Lys Asp Pro Ser
        195                 200                 205

Cys Asp Ser Ser Leu Arg Thr Gln Ile His Gln Ala Leu Lys Gln Pro
    210                 215                 220

Leu Arg Arg Arg Leu Ala Arg Ile Glu Ala Leu His Tyr Met Pro Ile
225                 230                 235                 240

Tyr Gln Gln Glu Thr Ser His Asp Glu Val Leu Leu Lys Leu Ala Lys
                245                 250                 255

Leu Asp Phe Ser Val Leu Gln Ser Met His Lys Lys Glu Leu Ser His
            260                 265                 270

Ile Cys Lys Trp Trp Lys Asp Leu Asp Leu Gln Asn Lys Leu Pro Tyr
        275                 280                 285

Val Arg Asp Arg Val Val Glu Gly Tyr Phe Trp Ile Leu Ser Ile Tyr
    290                 295                 300

Tyr Glu Pro Gln His Ala Arg Thr Arg Met Phe Leu Met Lys Thr Cys
305                 310                 315                 320

Met Trp Leu Val Val Leu Asp Asp Thr Phe Asp Asn Tyr Gly Thr Tyr
                325                 330                 335

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

Cys Leu Asp Met Leu Pro Glu Tyr Met Lys Leu Ile Tyr Gln Glu Leu
        355                 360                 365

Val Asn Leu His Val Glu Met Glu Glu Ser Leu Glu Lys Glu Gly Lys
    370                 375                 380

Thr Tyr Gln Ile His Tyr Val Lys Glu Met Ala Lys Glu Leu Val Arg
385                 390                 395                 400

Asn Tyr Leu Val Glu Ala Arg Trp Leu Lys Glu Gly Tyr Met Pro Thr
                405                 410                 415

Leu Glu Glu Tyr Met Ser Val Ser Met Val Thr Gly Thr Tyr Gly Leu
            420                 425                 430
```

Met Ile Ala Arg Ser Tyr Val Gly Arg Gly Asp Ile Val Thr Glu Asp
435 440 445

Thr Phe Lys Trp Val Ser Ser Tyr Pro Pro Ile Ile Lys Ala Ser Cys
450 455 460

Val Ile Val Arg Leu Met Asp Asp Ile Val Ser His Lys Glu Glu Gln
465 470 475 480

Glu Arg Gly His Val Ala Ser Ser Ile Glu Cys Tyr Ser Lys Glu Ser
485 490 495

Gly Ala Ser Glu Glu Glu Ala Cys Glu Tyr Ile Ser Arg Lys Val Glu
500 505 510

Asp Ala Trp Lys Val Ile Asn Arg Glu Ser Leu Arg Pro Thr Ala Val
515 520 525

Pro Phe Pro Leu Leu Met Pro Ala Ile Asn Leu Ala Arg Met Cys Glu
530 535 540

Val Leu Tyr Ser Val Asn Asp Gly Phe Thr His Ala Glu Gly Asp Met
545 550 555 560

Lys Ser Tyr Met Lys Ser Phe Phe Val His Pro Met Val Val
565 570

<210> 112
<211> 1725
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, A. annua b-farnesene synthase nucleotide sequence

<400> 112
atgtcgactc ttcctatttc tagtgtttca ttctcttcat ctacgtcacc tttggttgtt 60

gacgataaag ttagcacgaa accagatgtt atccgccata ccatgaattt caatgctagc 120

atatggggag atcaatttct tacatatgat gagccagaag atttggttat gaagaaacaa 180

cttgttgaag agctcaaaga ggaagtcaag aaagagctaa taacgatcaa aggttcaaat 240

gaaccgatgc agcatgtcaa gttgatagaa cttattgatg cagtccaacg gcttggcata 300

gcctatcatt ttgaagagga gattgaagaa gccttgcaac atatccatgt tacatatggc 360

gagcagtggg tcgataaaga aaacctacaa agcatttctc tttggttccg actcctacga 420

caacaaggct tcaacgtctc atcaggagta ttcaaggact ttatggacga gaagggaaaa 480

tttaaggaat ccttatgtaa tgatgctcag ggaattcttg ctctgtatga agcggcattt 540

atgagggtgg aagatgaaac aatactagat aatgcgctcg agttcactaa agttcacctt 600

gacatcatag ccaaggatcc ttcttgtgac tcttccctaa gaacccaaat acaccaagcg 660

ttaaagcagc cacttaggag aaggctggca aggattgagg cgttgcatta catgcctatc 720

taccaacaag aaacatccca cgatgaggtc ttactgaagc ttgcaaaatt agattttagc 780

gtgcttcagt cgatgcacaa aaaggaactt agccacattt gcaaatggtg gaaggatttg 840

gacctccaaa ataagcttcc ttatgttcga gacagggtgg tggaaggcta tttttggata 900

ctatccatct attacgagcc tcaacatgct cgaacaagaa tgttcctaat gaaaacatgc 960

atgtggttag tcgttttaga tgatacattt gataattatg gtacttatga agaactcgaa 1020

atctttacac aagctgttga aagatggtca ataagctgcc tggatatgct tccagaatac 1080

atgaaactaa tatatcaaga gcttgtgaat cttcacgtgg aaatggagga atcacttgaa 1140

aaggagggaa aaacatatca aattcactat gtcaaggaga tggcaaaaga gttggttcgc 1200

aattacttgg tagaagccag atggctaaaa gaggggtaca tgccaactct tgaggagtac 1260

atgtctgtgt caatggtgac tggtacctat ggcttgatga tagcgagatc ttatgtcggc 1320

aggggtgata tcgtcaccga ggataccttt aaatgggtgt cctcgtatcc tcctattata 1380

aaagcttcat gtgtgattgt aagacttatg gatgatattg tcagccacaa ggaggaacaa 1440

gagagaggcc atgttgcttc aagcatcgaa tgctattcta aggaaagtgg tgcatcagag 1500

gaggaagcgt gtgaatatat ctcaagaaaa gttgaagatg catggaaagt tataaaccga 1560

gagtcgctca ggcctacagc tgtcccattt cctctactta tgcctgcaat caaccttgca 1620

cgtatgtgtg aagtcctata tagcgtcaac gatggcttca ctcatgctga gggagacatg 1680

aaaagttaca tgaaatcgtt cttcgttcac cctatggttg tctaa 1725

<210> 113
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2090

<400> 113
cacgttcgcc ggccaaatta aagcagatct agatcggtga aaacatc 47

<210> 114
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2091

<400> 114
gaagaaatag gcaaagttga catggatccg tttagtccgt attgctattg 50

<210> 115
<211> 50
<212> DNA
<213> Artificial Sequence

<220>

<223> Synthetic, Primer AM-288-160-CPK2092

<400> 115
cacgttcgcc ggccaaatta aagcagatct ctctacaacc gcagggaaat 50

<210> 116
<211> 4309
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Construct D

<400> 116
gaagatccga ggcctagctt taacgaacgc agaattttcg agttattaaa cttaaaatac 60

gctgaacccg aacatagaaa tatcgaatgg gaaaaaaaaa ctgcataaag gcattaaaag 120

aggagcgaat ttttttttaa taaaaatctt aataatcatt aaaagataaa taatagtcta 180

tatatacgta tataaataaa aaatattcaa aaaataaaat aaactattat tttagcgtaa 240

aggatgggga aagagaaaag aaaaaaattg atctatcgat ttcaattcaa ttcaatttat 300

ttcttttcgg ataagaaagc aacacctggc aattccttac cttccaataa ttccaaagaa 360

gcaccaccac cagtagagac atgggagagt caaacgacca taggatgaac gaagaaggac 420

ttcatataag atttcatgtc accctcagca tgagtaaaac catcattaac agagtacaag 480

acctcacaca ttctagctaa gtttattgct ggcattaaca aagggaaggg aacggctgtt 540

ggacgcaaag attctctatt gattactttc caggcatcct caactttcct actaatatat 600

tcacatgctt cctcttcaga agcacctgat tctttagagt aacattctat agatgaagcc 660

acatgtcctc tttcttgttc ttccttgtga gatacaatat cgtccattaa tcttactatt 720

acacaggaag ctttaataat aggtgggtaa ctagaaaccc atttgaatgt gtcttcagta 780

acaatgtctc ctctgccaac ataggacctt gcaatcatca aaccataagt accagtaacc 840

atagaaacag acatgtattc ttctaaagta ggcatataac cttccttcaa ccatcttgct 900

tctactaagt aattacgaac taattcttta gccatctcct taacgtaatg aatctgatag 960

gtctttccct ccttttccaa agattcttcc atttccacat gcaaattgac taattcttgg 1020

tagattaatt tcatatattc gggcaacata tctaagcatg agatagacca tctctcgacg 1080

gcttgagtaa aaatctccaa ttcttcgtat gttccataat tatcaaaagt atcgtccaaa 1140

actactaacc acatgcatgt tttcatcaaa aacattcttg ttctagcgtg ttgtggctca 1200

tagtatatgg acaatatcca gaagtagcct tcgacaacac gatcacgtac ataaggtaac 1260

ttattttgta aatctaaatc tttccaccac ttacagatat gtgacaattc ctttttatgc 1320

atagactgca aaacactgaa atccaacttg gctaatttca acaatacttc atcatgagat 1380

gtttcctgtt ggtagattgg catgtaatgt aatgcttcaa tccttgctaa tctccttctt 1440

aaaggttgtt ttaaggcttg atggatttgt gtacgcaatg aagaatcgca agatgggtct 1500

tttgctatga tatctaaatg aacttttgtg aattccaaag cattgtctaa gatggtttca 1560

tcttcaaccc tcataaatgc agcttcatat aaggctaata ttccttgtgc atcattgcat 1620

aaagactctt tgaatttacc tttttcgtcc ataaagtctt tgaaaacgcc agaggagacg 1680

ttaaagccct gttgacgcaa caacctgaac cacaatgaaa tactctgtaa attttcctta 1740

tccacccact gttcaccata ggtaacatgt atatgttgca aagcttcctc gatctcttct 1800

tcaaaatggt aagctatacc taaacgttga acagcatcaa ttaattcaat caatttcaca 1860

tgctgcatgg gctcatttga acctttgata gttatcaatt ccttcttaac ttcctctttt 1920

aattcctcca ctaattgttt cttcataact aaatcttcag gctcatcata ggtcaagaat 1980

tgatctcccc aaatagaagc attgaaattc attgtatgtc tgataacgtc gggcttggtt 2040

gagactttgt cgtccacgac taatggtgat gtagaagagg aaaatgacac agaagaaata 2100

ggcaaagttg acatggatcc ggggtttttt ctccttgacg ttaaagtata gaggtatatt 2160

aacaattttt tgttgatact tttattacat ttgaataaga agtaatacaa accgaaaatg 2220

ttgaaagtat tagttaaagt ggttatgcag tttttgcatt tatatatctg ttaatagatc 2280

aaaaatcatc gcttcgctga ttaattaccc cagaaataag gctaaaaaac taatcgcatt 2340

atcatcctat ggttgttaat ttgattcgtt catttgaagg tttgtggggc caggttactg 2400

ccaatttttc ctcttcataa ccataaaagc tagtattgta gaatctttat tgttcggagc 2460

agtgcggcgc gaggcacatc tgcgtttcag gaacgcgacc ggtgaagacg aggacgcacg 2520

gaggagagtc ttccttcgga gggctgtcac ccgctcggcg gcttctaatc cgtactagat 2580

ctgctttaat ttggccggcg aacgtggcga gaaaggaagg gaagaaagcg aaaggagcgg 2640

gcgctagggc gctggcaagt gtagcggtca cgctgcgcgt aaccaccaca cccgccgcgc 2700

ttaatgcgcc gctacagggc gcgtcgcgcc attcgccatt caggctgcgc aactgttggg 2760

aagggcgatc ggtgcgggcc tcttcgctat tacgccagct gaattggagc gacctcatgc 2820

tatacctgag aaagcaacct gacctacagg aaagagttac tcaagaataa gaattttcgt 2880

tttaaaacct aagagtcact ttaaaatttg tatacactta ttttttttat aacttattta 2940

ataataaaaa tcataaatca taagaaattc gcttattcaa ctaattctat agatgataaa 3000

aatggtttct ggacctcttt gacgtccttt gatcttacgt tagctaactg ggcgactggt 3060

ggataggccc actcagaagg tgaaacggct cctacattgg cagcttgctc gtagaacttg 3120

caaaattttt gggcatcctc agtcttttcc tccttgactt tctcgtagat ttcagacaac 3180

ctgtacctcc tgtcgcataa atgccatgtg acataaccat gcatgaagca ctctatggtg 3240

tccattactt gagggtcctt gtctgagaaa actgcaacca tttgctttga agagtgcaag 3300

gtatcctggg tcaatttttc taaggcctcg tgtaatgata tctcgtcaga aacaacgtag 3360

ttctttacca aagagatctg atccctctcg tcgtcgaact ccttgtaaaa tgacatcaaa 3420

tcattaaccc agaccatcca attttccatt tgagctatgg ctgaagtgat ctccaaaaac 3480

aatgatcttt cattgaactg ctcctttggc cacaaagagg caccgacgca gtgtcctaaa 3540

ccgttcattc ttctcaagaa ctgtgggtag tcgtgagaac ctgggaatcc tccaaaattg 3600

tattgttcta tccagcaacc ctcgaagaag tctaaggtag acctgatcaa gttcaatgag 3660

caaaaaggac caaaatgcct caatacgttt ggaaagtgct cgtttactaa agcccaccaa 3720

ggatgagcct gttctctacc tgcttgtaag tcatcgaagt agtttaccat agtagggtat 3780

gggtcgtctt ttgaatcgtc caataccaag gtgtaggtat agtggattga caagtctgcc 3840

atacactctt tagatacctt ggcccatgaa tatacaacca taccgacaat ggtctgcaat 3900

gaagcttgca atctcttagg gtcgaccttc aacaactgct gctgtcttgg ctgggcgaag 3960

tggtgggcgg ctttgttgta ggcgtagtgt aagttctcaa tcctctcctc cctggtatag 4020

tttgagtccc tgtacctaat gtactccaac aacctgacgg tggtgttcaa gaagtactcg 4080

gttggaaagt tttccatgaa ttcgaatttt caaaaattct tactttttt ttggatggac 4140

gcaaagaagt ttaataatca tattacatgg cattaccacc atatacatat ccatatacat 4200

atccatatct aatcttactt atatgttgtg gaaatgtaaa gagccccatt atcttagcct 4260

aaaaaaacct tctctttgga actttcagta atacgcttaa ctgctcatt 4309

<210> 117
<211> 5714
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Expression plasmid pAM1490

<400> 117
ttcttgaaga cgaaagggcc tcgtgatacg cctattttta taggttaatg tcatgataat 60

aatggtttct tagacgtcag gtggcacttt tcggggaaat gtgcgcggaa cccctatttg 120

tttatttttc taaatacatt caaatatgta tccgctcatg agacaataac cctgataaat 180

gcttcaataa tattgaaaaa ggaagagtat gagtattcaa catttccgtg tcgcccttat 240

tccctttttt gcggcatttt gccttcctgt ttttgctcac ccagaaacgc tggtgaaagt 300

aaaagatgct gaagatcagt tgggtgcacg agtgggttac atcgaactgg atctcaacag 360

cggtaagatc cttgagagtt ttcgccccga agaacgtttt ccaatgatga gcacttttaa 420

agttctgcta tgtggcgcgg tattatcccg tgttgacgcc gggcaagagc aactcggtcg 480

ccgcatacac tattctcaga atgacttggt tgagtactca ccagtcacag aaaagcatct 540

tacggatggc atgacagtaa gagaattatg cagtgctgcc ataaccatga gtgataacac 600

tgcggccaac ttacttctga caacgatcgg aggaccgaag gagctaaccg ctttttgca 660

caacatgggg gatcatgtaa ctcgccttga tcgttgggaa ccggagctga atgaagccat 720

accaaacgac gagcgtgaca ccacgatgcc tgcagcaatg gcaacaacgt tgcgcaaact 780

attaactggc gaactactta ctctagcttc ccggcaacaa ttaatagact ggatggaggc 840

ggataaagtt gcaggaccac ttctgcgctc ggcccttccg gctggctggt ttattgctga 900

taaatctgga gccggtgagc gtgggtctcg cggtatcatt gcagcactgg ggccagatgg 960

taagccctcc cgtatcgtag ttatctacac gacggggagt caggcaacta tggatgaacg 1020

aaatagacag atcgctgaga taggtgcctc actgattaag cattggtaac tgtcagacca 1080

agtttactca tatatacttt agattgattt aaaacttcat ttttaattta aaaggatcta 1140

ggtgaagatc ctttttgata atctcatgac caaaatccct taacgtgagt tttcgttcca 1200

ctgagcgtca gaccccgtag aaaagatcaa aggatcttct tgagatcctt tttttctgcg 1260

cgtaatctgc tgcttgcaaa caaaaaaacc accgctacca gcggtggttt gtttgccgga 1320

tcaagagcta ccaactcttt ttccgaaggt aactggcttc agcagagcgc agataccaaa 1380

tactgtcctt ctagtgtagc cgtagttagg ccaccacttc aagaactctg tagcaccgcc 1440

tacatacctc gctctgctaa tcctgttacc agtggctgct gccagtggcg ataagtcgtg 1500

tcttaccggg ttggactcaa gacgatagtt accggataag gcgcagcggt cgggctgaac 1560

gggggttcg tgcacacagc ccagcttgga gcgaacgacc tacaccgaac tgagatacct 1620

acagcgtgag ctatgagaaa gcgccacgct tcccgaaggg agaaaggcgg acaggtatcc 1680

ggtaagcggc agggtcggaa caggagagcg cacgagggag cttccagggg gaaacgcctg 1740

gtatctttat agtcctgtcg ggtttcgcca cctctgactt gagcgtcgat ttttgtgatg 1800

ctcgtcaggg gggcggagcc tatggaaaaa cgccagcaac gcggcctttt tacggttcct 1860

ggccttttgc tggccttttg ctcacatgtt ctttcctgcg ttatcccctg attctgtgga 1920

taaccgtatt accgccttttg agtgagctga taccgctcgc cgcagccgaa cgaccgagcg 1980

cagcgagtca gtgagcgagg aagcggaaga gcgcctgatg cggtattttc tccttacgca 2040

tctgtgcggt atttcacacc gcatatatgg tgcactctca gtacaatctg ctctgatgcc 2100

gcatagttaa gccagtatac actccgctat cgctacgtga ctgggtcatg gctgcgcccc 2160

gacacccgcc aacacccgct gacgcgccct gacgggcttg tctgctcccg gcatccgctt 2220

acagacaagc tgtgaccgtc tccgggagct gcatgtgtca gaggttttca ccgtcatcac 2280

cgaaacgcgc gaggcagctg cggtaaagct catcagcgtg gtcgtgaagc gattcacaga 2340

tgtctgcctg ttcatccgcg tccagctcgt tgagtttctc cagaagcgtt aatgtctggc 2400

ttctgataaa gcgggccatg ttaagggcgg ttttttcctg tttggtcact gatgcctccg 2460

tgtaaggggg atttctgttc atgggggtaa tgataccgat gaaacgagag aggatgctca 2520

cgatacgggt tactgatgat gaacatgccc ggttactgga acgttgtgag ggtaaacaac 2580

tggcggtatg gatgcggcgg gaccagagaa aaatcactca gggtcaatgc cagcgcttcg 2640

ttaatacaga tgtaggtgtt ccacagggta gccagcagca tcctgcgatg cagatccgga 2700

acataatggt gcagggcgct gacttccgcg tttccagact ttacgaaaca cggaaaccga 2760

agaccattca tgttgttgct caggtcgcag acgttttgca gcagcagtcg cttcacgttc 2820

gctcgcgtat cggtgattca ttctgctaac cagtaaggca accccgccag cctagccggg 2880

tcctcaacga caggagcacg atcatgcgca cccgtggcca ggacccaacg ctgcccgaga 2940

tgcgccgcgt gcggctgctg gagatggcgg acgcgatgga tatgttctgc caagggttgg 3000

tttgcgcatt cacagttctc cgcaagaatt gattggctcc aattcttgga gtggtgaatc 3060

cgttagcgag gtgccgccgg cttccattca ggtcgaggtg gcccggctcc atgcaccgcg 3120

acgcaacgcg gggaggcaga caaggtatag ggcggcgcct acaatccatg ccaacccgtt 3180

ccatgtgctc gccgaggcgg cataaatcgc cgtgacgatc agcggtccag tgatcgaagt 3240

taggctggta agagccgcga gcgatccttg aagctgtccc tgatggtcgt catctacctg 3300

cctggacagc atggcctgca acgcgggcat cccgatgccg ccggaagcga gaagaatcat 3360

aatggggaag gccatccagc ctcgcgtcgc gaacgccagc aagacgtagc ccagcgcgtc 3420

ggccgccatg ccggcgataa tggcctgctt ctcgccgaaa cgtttggtgg cgggaccagt 3480

gacgaaggct tgagcgaggg cgtgcaagat tccgaatacc gcaagcgaca ggccgatcat 3540

cgtcgcgctc cagcgaaagc ggtcctcgcc gaaaatgacc cagagcgctg ccggcacctg 3600

tcctacgagt tgcatgataa agaagacagt cataagtgcg gcgacgatag tcatgccccg 3660

cgcccaccgg aaggagctga ctgggttgaa ggctctcaag ggcatcggtc gagatcccgg 3720

tgcctaatga gtgagctaac ttacattaat tgcgttgcgc tcactgcccg ctttccagtc 3780

gggaaacctg tcgtgccagc tgcattaatg aatcggccaa cgcgcgggga gaggcggttt 3840

gcgtattggg cgccagggtg gtttttcttt tcaccagtga cgggcaac agctgattgc 3900

ccttcaccgc ctggccctga gagagttgca gcaagcggtc cacgctggtt tgccccagca 3960

ggcgaaaatc ctgtttgatg gtggttaacg gcgggatata acatgagctg tcttcggtat 4020

cgtcgtatcc cactaccgag atatccgcac caacgcgcag cccggactcg gtaatggcgc 4080

gcattgcgcc cagcgccatc tgatcgttgg caaccagcat cgcagtggga acgatgccct 4140

cattcagcat ttgcatggtt tgttgaaaac cggacatggc actccagtcg ccttcccgtt 4200

ccgctatcgg ctgaatttga ttgcgagtga gatatttatg ccagccagcc agacgcagac 4260

gcgccgagac agaacttaat gggcccgcta acagcgcgat ttgctggtga cccaatgcga 4320

ccagatgctc cacgcccagt cgcgtaccgt cttcatggga gaaaataata ctgttgatgg 4380

gtgtctggtc agagacatca agaaataacg ccggaacatt agtgcaggca gcttccacag 4440

caatggcatc ctggtcatcc agcggatagt taatgatcag cccactgacg cgttgcgcga 4500

gaagattgtg caccgccgct ttacaggctt cgacgccgct tcgttctacc atcgacacca 4560

ccacgctggc acccagttga tcggcgcgag atttaatcgc cgcgacaatt tgcgacggcg 4620

cgtgcagggc cagactggag gtggcaacgc caatcagcaa cgactgtttg cccgccagtt 4680

gttgtgccac gcggttggga atgtaattca gctccgccat cgccgcttcc acttttccc 4740

gcgttttcgc agaaacgtgg ctggcctggt tcaccacgcg ggaaacggtc tgataagaga 4800

caccggcata ctctgcgaca tcgtataacg ttactggttt cacattcacc accctgaatt 4860

gactctcttc cgggcgctat catgccatac cgcgaaaggt tttgcgccat tcgatggtgt 4920

ccgggatctc gacgctctcc cttatgcgac tcctgcatta ggaagcagcc cagtagtagg 4980

ttgaggccgt tgagcaccgc cgccgcaagg aatggtgcat gcaaggagat ggcgcccaac 5040

agtcccccgg ccacggggcc tgccaccata cccacgccga aacaagcgct catgagcccg 5100

aagtggcgag cccgatcttc cccatcggtg atgtcggcga tataggcgcc agcaaccgca 5160

cctgtggcgc cggtgatgcc ggccacgatg cgtccggcgt agaggatcga gatctcgatc 5220

ccgcgaaatt aatacgactc actatagggg aattgtgagc ggataacaat tcccctctag 5280

aaataatttt gtttaacttt aagaaggaga tataccatgg gcagcagcca tcatcatcat 5340

catcacagca gcggcctgga agttctgttc caggggcccc atatgctcga ggatccggct 5400

gctaacaaag cccgaaagga agctgagttg gctgctgcca ccgctgagca ataactagca 5460

taacccctg gggcctctaa acgggtcttg aggggttttt tgctgaaagg aggaactata 5520

tccggatatc ccgcaagagg cccggcagta ccggcataac caagcctatg cctacagcat 5580

ccagggtgac ggtgccgagg atgacgatga gcgcattgtt agatttcata cacggtgcct 5640

gactgcgtta gcaatttaac tgtgataaac taccgcatta aagcttatcg atgataagct 5700

gtcaaacatg agaa 5714

<210> 118
<211> 1725
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, FS_A coding sequence

<400> 118
atgtcaactt tgcctatttc ttctgtgtca ttttcctctt ctacatcacc attagtcgtg 60

gacgacaaag tctcaaccaa gcccgacgtt atcagacata caatgaattt caatgcttct 120

atttggggag atcaattctt gacctatgat gagcctgaag atttagttat gaagaaacaa 180

ttagtggagg aattaaaaga ggaagttaag aaggaattga taactatcaa aggttcaaat 240

gagcccatgc agcatgtgaa attgattgaa ttaattgatg ctgttcaacg tttaggtata 300

gcttaccatt ttgaagaaga gatcgaggaa gctttgcaac atatacatgt tacctatggt 360

gaacagtggg tggataagga aaatttacag agtatttcat tgtggttcag gttgttgcgt 420

caacagggct ttaacgtctc ctctggcgtt ttcaaagact ttatggacga aaaaggtaaa 480

ttcaaagagt ctttatgcaa tgatgcacaa ggaatattag ccttatatga agctgcattt 540

atgagggttg aagatgaaac catcttagac aatgctttgg aattcacaaa agttcattta 600

gatatcatag caaaagaccc atcttgcgat tcttcattgc gtacacaaat ccatcaagcc 660

ttaaaacaac ctttaagaag gagattagca aggattgaag cattacatta catgccaatc 720

taccaacagg aaacatctca tgatgaagta ttgttgaaat tagccaagtt ggatttcagt 780

gttttgcagt ctatgcataa aaaggaattg tcacatatct gtaagtggtg gaaagattta 840

gatttacaaa ataagttacc ttatgtacgt gatcgtgttg tcgaaggcta cttctggata 900

ttgtccatat actatgagcc acaacacgct agaacaagaa tgtttttgat gaaaacatgc 960

atgtggttag tagttttgga cgatactttt gataattatg gaacatacga agaattggag 1020

atttttactc aagccgtcga gagatggtct atctcatgct tagatatgtt gcccgaatat 1080

atgaaattaa tctaccaaga attagtcaat ttgcatgtgg aaatggaaga atctttggaa 1140

aaggagggaa agacctatca gattcattac gttaaggaga tggctaaaga attagttcgt 1200

aattacttag tagaagcaag atggttgaag gaaggttata tgcctacttt agaagaatac 1260

atgtctgttt ctatggttac tggtacttat ggtttgatga ttgcaaggtc ctatgttggc 1320

agaggagaca ttgttactga agacacattc aaatgggttt ctagttaccc acctattatt 1380

aaagcttcct gtgtaatagt aagattaatg gacgatattg tatctcacaa ggaagaacaa 1440

gaaagaggac atgtggcttc atctatagaa tgttactcta aagaatcagg tgcttctgaa 1500

gaggaagcat gtgaatatat tagtaggaaa gttgaggatg cctggaaagt aatcaataga 1560

gaatctttgc gtccaacagc cgttcccttc cctttgttaa tgccagcaat aaacttagct 1620

agaatgtgtg aggtcttgta ctctgttaat gatggtttta ctcatgctga gggtgacatg 1680

aaatcttata tgaagtcctt cttcgttcat cctatggtcg tttga 1725

<210> 119
<211> 1725
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, FS_B coding sequence

<400> 119
atgtcaacat tgcctatatc ttcagtctca ttctcatctt ctacctcacc attggttgta 60

gacgacaaag tttctacaaa gccagacgtc ataaggcata caatgaactt caacgcctct 120

atatggggag accagttctt gacctatgac gaaccagagg atttagtcat gaaaaaacag 180

ttggtcgagg agttaaagga ggaggttaag aaggagttga tcaccataaa aggttcaaac 240

gagcctatgc aacacgtcaa gttgatagag ttaattgacg ctgttcaaag gttaggaatt 300

gcatatcatt tcgaagagga gattgaagag gcattgcagc atattcatgt tacttatgga 360

gaacaatggg ttgacaagga gaacttgcaa tcaatctctt tatggtttag gttgttaagg 420

caacagggat tcaacgtctc ttcaggtgtc tttaaagatt tcatggacga aaagggaaag 480

tttaaggagt cattatgcaa cgatgctcaa ggaattttgg cattatatga agctgccttt 540

atgagggtag aggacgagac tatattagac aacgcattgg aattcactaa agtccactta 600

gacatcatcg caaaggatcc ttcatgcgac tcttctttaa gaacacaaat acatcaagca 660

ttgaagcaac ctttgaggag aaggttagca aggatagaag ccttgcacta tatgcctatc 720

tatcagcagg aaacatcaca tgatgaagtt ttgttgaagt tggccaaatt ggacttctct 780

gtattgcagt caatgcataa aaaggaattg tctcatatct gcaaatggtg gaaggatttg 840

gatttgcaga ataagttgcc ttatgttaga gacagagtcg ttgagggata tttctggata 900

ttgtctatct actacgagcc tcagcacgct agaacaagaa tgttcttaat gaagacttgc 960

atgtggttgg tcgttttaga cgacactttt gacaattacg gtacctacga ggaattagag 1020

atcttcactc aagctgtaga gagatggtca atttcatgct tggacatgtt accagagtat 1080

atgaagttga tctaccagga gttagtcaac ttacacgtcg agatggaaga atctttggag 1140

aaagagggta aaacttatca gatccactat gtcaaggaga tggcaaaaga gttggtaaga 1200

aactacttgg tagaagctag atggttgaag gagggttaca tgcctacctt ggaggaatat 1260

atgtctgttt ctatggtcac tggaacctac ggattaatga ttgctagatc ttatgtcggt 1320

agaggagaca ttgtaaccga agacacattc aagtgggtat catcttatcc acctatcata 1380

aaggcctcat gcgttattgt aaggttgatg gatgatattg tatctcacaa agaggaacaa 1440

gagaggggac atgtagcatc atctatcgag tgttattcaa aagaatcagg agcatctgaa 1500

gaagaagcct gtgagtacat ctctagaaaa gtcgaagatg catggaaagt tatcaacaga 1560

gagtcattga ggccaaccgc agtccctttc ccattattaa tgcctgccat aaacttagca 1620

agaatgtgcg aagtcttata ttcagttaat gacggtttca cccacgccga gggtgacatg 1680

aaatcataca tgaagtcatt ctttgttcac cctatggtag tctaa 1725

<210> 120
<211> 1725
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, FS_C coding sequence

<400> 120
atgtcaacct tgcctatttc ttctgtctca ttctcttcat ctacctctcc attggtcgta 60

gacgataagg tctctactaa accagacgtc atcaggcaca ccatgaattt caacgcttct 120

atatggggag accagttttt aacttacgac gaacctgagg atttggtcat gaaaaaacag 180

ttggtcgaag aattgaagga ggaggtcaag aaggagttga ttacaatcaa gggatcaaac 240

gaacctatgc agcacgttaa gttgatcgaa ttaatagatg ctgtccaaag attgggtata 300

gcctaccact tcgaggagga aatcgaggag gctttacaac atatacacgt cacatacggt 360

gaacagtggg tcgataaaga gaatttgcag tctatctcat tgtggttcag gttgttaagg 420

caacaaggtt ttaatgtttc atctggagtt ttcaaggact ttatggacga gaaaggtaaa 480

ttcaaggagt ctttgtgcaa cgatgctcag ggtattttag cattgtatga ggccgcattt 540

atgagggttg aagacgagac tatcttagat aacgcattgg agttcaccaa ggtccactta 600

gacattattg ctaaagaccc atcatgtgac tcttctttga gaactcaaat acaccaggca 660

ttaaagcaac ctttgaggag aaggttggct agaatcgaag cattacacta tatgccaata 720

tatcagcagg aaacctcaca cgacgaagtt ttgttaaagt tagcaaaatt ggacttctct 780

gtcttgcagt caatgcataa gaaggagttg tctcatatct gcaagtggtg gaaggattta 840

gatttacaaa ataagttgcc atacgtcaga gatagggttg tagagggata cttctggatc 900

ttgtctatat actatgagcc tcagcacgcc agaaccagaa tgttcttaat gaagacctgc 960

atgtggttag tagtattaga cgacaccttc gacaattatg gaacatacga ggaattggag 1020

atctttactc aagccgttga gagatggtct atttcttgct tggacatgtt gccagagtat 1080

atgaagttga tctaccagga gttagttaac ttgcacgtcg aaatggagga atctttggag 1140

aaagagggaa agacatacca gattcactat gtcaaggaaa tggccaaaga gttggtaagg 1200

aactatttgg ttgaggccag atggttgaaa gagggttata tgcctacctt ggaggagtac 1260

atgtcagtct caatggttac tggtacctat ggtttgatga ttgccagatc atacgtcgga 1320

agaggtgata tcgtaacaga ggataccttc aagtgggttt cttcataccc tcctatcatt 1380

aaggcctctt gcgtcatagt caggttgatg gatgacattg tttctcataa ggaggaacag 1440

gagaggggtc acgtagcctc atcaatagag tgctattcaa aagagtctgg tgcatcagag 1500

gaagaggcat gtgaatacat ctctagaaaa gtagaggatg cctggaaggt cattaacagg 1560

gagtcattga gacctactgc tgtacctttt cctttgttga tgcctgctat caacttggca 1620

aggatgtgcg aagttttgta ttcagtaaac gatggtttca ctcacgccga aggtgatatg 1680

aaatcatata tgaaatcttt tttcgtacat cctatggtag tataa 1725

<210> 121
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-110-CPK1849

<400> 121
gacacagaag aaataggcaa agttgacat 29

<210> 122
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-110-CPK1903

<400> 122
cggatccatg tcaactttgc ctatttctt 29

<210> 123
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2039

<400> 123
gaagatccga ggcctagctt 20

<210> 124
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2040

<400> 124
ccaccagtag agacatggga gagtcaaacg accataggat gaac 44

<210> 125
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2041

<400> 125
gttcatccta tggtcgtttg actctcccat gtctctactg gtgg 44

<210> 126
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2042

<400> 126
ggcttctaat ccgtactaga tctgctttaa tttggccgg 39

<210> 127
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2043

<400> 127
ccggccaaat taaagcagat ctagtacgga ttagaagcc 39

<210> 128
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2044

<400> 128
caggtatagc atgaggtcgc tccaattcag ctg 33

<210> 129
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2045

<400> 129
cagctgaatt ggagcgacct catgctatac ctg 33

<210> 130
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Synthetic, Primer AM-288-160-CPK2046

<400> 130
aatgagcagt taagcgtatt 20

<210> 131
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2051

<400> 131
gaagaaatag gcaaagttga catggatccg ttctcgaggc agccg 45

<210> 132
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2052

<400> 132
cacgttcgcc ggccaaatta aagcagatct ccacgatgtt gataatgagc 50

<210> 133
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2053

<400> 133
gaagaaatag gcaaagttga catggatccg ttcttaattg ttattcgtac 50

<210> 134
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2054

<400> 134
cacgttcgcc ggccaaatta aagcagatct tccaggtatg ggtttgagga 50

<210> 135
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2055

<400> 135
gaagaaatag gcaaagttga catggatccg tgtgatgatg ttttatttgt 50

<210> 136
<211> 42

<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2056

<400> 136
ccggccaaat taaagcagat ctaacggcgg gattcctcta tg 42

<210> 137
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2059

<400> 137
gaagaaatag gcaaagttga catggatccg tttgattgat ttgactgtgt 50

<210> 138
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2060

<400> 138
cacgttcgcc ggccaaatta aagcagatct gtaataaaca caccccgcgt 50

<210> 139
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2061

<400> 139
gaagaaatag gcaaagttga catggatccg ttttagttta tgtatgtgtt 50

<210> 140
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2062

<400> 140
cacgttcgcc ggccaaatta aagcagatct acgaagagtt tgaatc 46

<210> 141
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2063

<400> 141
gaagaaatag gcaaagttga catggatccg tttgaatatg tattacttgg 50

<210> 142
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2064

<400> 142
cacgttcgcc ggccaaatta aagcagatct cctcctttcc ccatgtttcc 50

<210> 143
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2065

<400> 143
gaagaaatag gcaaagttga catggatccg tgttgtattt agttttttt 50

<210> 144
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2066

<400> 144
cacgttcgcc ggccaaatta aagcagatct tccttctttt cctcttgata 50

<210> 145
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2067

<400> 145
gaagaaatag gcaaagttga catggatccg cttgactata ctttttata 50

<210> 146
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2068

<400> 146
cacgttcgcc ggccaaatta aagcagatct ttgcatcgcc ctgc 44

<210> 147
<211> 50
<212> DNA
<213> Artificial Sequence

<220>

<223> Synthetic, Primer AM-288-160-CPK2073

<400> 147
gaagaaatag gcaaagttga catggatccg gtttagttaa ttatagttcg 50

<210> 148
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2074

<400> 148
cacgttcgcc ggccaaatta aagcagatct acccaaaatg tgaaagaaat 50

<210> 149
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2079

<400> 149
gaagaaatag gcaaagttga catggatccg tgttttatat ttgttgtaa 49

<210> 150
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2080

<400> 150
ccaaattaaa gcagatctgg catttgcaag aattactc 38

<210> 151
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2085

<400> 151
gaagaaatag gcaaagttga catggatccg ggctatttgc ttatatgtat 50

<210> 152
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2086

<400> 152
cacgttcgcc ggccaaatta aagcagatct atttcctttt cttcctctta 50

<210> 153
<211> 46

<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2087

<400> 153
gaagaaatag gcaaagttga catggatccg tttgttcttt ctggaa 46

<210> 154
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2088

<400> 154
cacgttcgcc ggccaaatta aagcagatct tgtgttacgt atctttgatg 50

<210> 155
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer AM-288-160-CPK2089

<400> 155
gaagaaatag gcaaagttga catggatccg gttttagtgt gtgaatgaa 49

<210> 156
<211> 11151
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Expression plasmid pAM552

<400> 156
tcgcgcgttt cggtgatgac ggtgaaaacc tctgacacat gcagctcccg gagacggtca 60

cagcttgtct gtaagcggat gccgggagca gacaagcccg tcagggcgcg tcagcgggtg 120

ttggcgggtg tcggggctgg cttaactatg cggcatcaga gcagattgta ctgagagtgc 180

accatatcga ctacgtcgta aggccgtttc tgacagagta aaattcttga gggaactttc 240

accattatgg gaaatgcttc aagaaggtat tgacttaaac tccatcaaat ggtcaggtca 300

ttgagtgttt tttatttgtt gtatttttt ttttttagag aaaatcctcc aatatcaaat 360

taggaatcgt agtttcatga ttttctgtta cacctaactt tttgtgtggt gccctcctcc 420

ttgtcaatat taatgttaaa gtgcaattct ttttccttat cacgttgagc cattagtatc 480

aatttgctta cctgtattcc tttactatcc tccttttttct ccttcttgat aaatgtatgt 540

agattgcgta tatagtttcg tctaccctat gaacatattc cattttgtaa tttcgtgtcg 600

tttctattat gaatttcatt tataaagttt atgtacaaat atcataaaaa aagagaatct 660

ttttaagcaa ggattttctt aacttcttcg gcgacagcat caccgacttc ggtggtactg 720

ttggaaccac ctaaatcacc agttctgata cctgcatcca aaacctttt aactgcatct 780

tcaatggcct taccttcttc aggcaagttc aatgacaatt tcaacatcat tgcagcagac 840

aagatagtgg cgatagggtc aaccttattc tttggcaaat ctggagcaga accgtggcat 900

ggttcgtaca aaccaaatgc ggtgttcttg tctggcaaag aggccaagga cgcagatggc 960

aacaaaccca aggaacctgg gataacggag gcttcatcgg agatgatatc accaaacatg 1020

ttgctggtga ttataatacc atttaggtgg gttgggttct taactaggat catggcggca 1080

gaatcaatca attgatgttg aaccttcaat gtagggaatt cgttcttgat ggtttcctcc 1140

acagtttttc tccataatct tgaagaggcc aaaagattag ctttatccaa ggaccaaata 1200

ggcaatggtg gctcatgttg tagggccatg aaagcggcca ttcttgtgat tctttgcact 1260

tctggaacgg tgtattgttc actatcccaa gcgacaccat caccatcgtc ttcctttctc 1320

ttaccaaagt aaatacctcc cactaattct ctgacaacaa cgaagtcagt acctttagca 1380

aattgtggct tgattggaga taagtctaaa agagagtcgg atgcaaagtt acatggtctt 1440

aagttggcgt acaattgaag ttctttacgg atttttagta aaccttgttc aggtctaaca 1500

ctaccggtac cccatttagg accagccaca gcacctaaca aaacggcatc aaccttcttg 1560

gaggcttcca gcgcctcatc tggaagtggg acacctgtag catcgatagc agcaccacca 1620

attaaatgat tttcgaaatc gaacttgaca ttggaacgaa catcagaaat agctttaaga 1680

accttaatgg cttcggctgt gatttcttga ccaacgtggt cacctggcaa aacgacgatc 1740

ttcttagggg cagacattac aatggtatat ccttgaaata tataaaaaa aaggcgcctt 1800

agaccgctcg gccaaacaac caattacttg ttgagaaata gagtataatt atcctataaa 1860

tataacgttt ttgaacacac atgaacaagg aagtacagga caattgattt tgaagagaat 1920

gtggattttg atgtaattgt tgggattcca tttttaataa ggcaataata ttaggtatgt 1980

ggatatacta gaagttctcc tcgaccgtcg atatgcggtg tgaaataccg cacagatgcg 2040

taaggagaaa ataccgcatc aggaaattgt aaacgttaat attttgttaa aattcgcgtt 2100

aaatttttgt taaatcagct catttttaa ccaataggcc gaaatcggca aaatccctta 2160

taaatcaaaa gaatagaccg agatagggtt gagtgttgtt ccagtttgga acaagagtcc 2220

actattaaag aacgtggact ccaacgtcaa agggcgaaaa accgtctatc agggcgatgg 2280

cccactacgt ggaagatccg aggcctagct ttaacgaacg cagaattttc gagttattaa 2340

acttaaaata cgctgaaccc gaacatagaa atatcgaatg ggaaaaaaaa actgcataaa 2400

ggcattaaaa gaggagcgaa tttttttta ataaaaatct taataatcat taaaagataa 2460

ataatagtct atatatacgt atataaataa aaaatattca aaaaataaaa taaactatta 2520

ttttagcgta aaggatgggg aaagagaaaa gaaaaaaatt gatctatcga tttcaattca 2580

attcaattta tttcttttcg gataagaaag caacacctgg caattcctta ccttccaata 2640

attccaaaga agcaccacca ccagtagaga catgggagac ccgggccatg gttagataga 2700

catagggtaa actagcaatg atttgatcaa atgcttgtat tcatctccca ttctcgtaaa 2760

attgtcttta cctgcatatt ggacctctaa aaattggcaa agatatataa cagccataag 2820

taaaggtctt gggatattct ttgttgttaa atactctctg tttatgtctt tccaaacgtc 2880

ctccacttcc ttataaatca gtgtctgagc atattcttcg ttgacattgt attccttcat 2940

gtaagattct aaagagcttg aactatgttt tctctcctgt tccgctttat gagtcatcag 3000

gtcatttaat ctcctaccca gaataccact gtaacggaat aaaggcggag cagatacagc 3060

ccactcaact gattccttag tgaaaatatc gctcattcct agataacagg tagttgttag 3120

caagtttgca ccaccagtga taataactac gggatcgtgc tcttcagttg tcggtatgtg 3180

tccttcatta gcccatttcg cttctaccat tagattcctt acgaattctt taacgaactc 3240

cttcccacag ttgaataaat cagttctacc ttctttggcc agaaactcct ccatttctgt 3300

gtaggtatcc atgaataatt tgtaaatagg cttcatgtat tccggcaacg tgtctaagca 3360

ggtgatcgac catctttcca cggcttcagt gaaaatcttt aactcctcgt aagttccata 3420

tgcgtcatac gtgtcatcaa taagtgttat cacagcaact gccttagtga aaaaaactct 3480

agctcttgaa tactggggtt cgtaaccaga acctaaaccc caaaaatagc attcaacgat 3540

acgatctctc agacatgggg cattttctt aatatcaaat gccttccacc acttgcatac 3600

gtgactcaac tcttccttat gtaggctctg caatagattg aactccagtt tagctaactt 3660

tagcagagtt ttattatggg agtcttgttg ctgatagaag ggtatgtact gggcggcctc 3720

gatccttggc aatctcttcc acaatggttg ctttaaagct ctctggattt cagtgaataa 3780

agcggggttt gtactaaacg cgtcctttgt cataatcgat agccttgatc ttgtgaatcc 3840

cagggcatct tcaagaatta tttcgcccgg aactctcatg gacgtagcct catataattc 3900

caacaatcct tcaacatcat tcgctaacga ttgtttaaaa gcaccattct tgtctttata 3960

gttattaaac acatcacacg tgacatagta tccttgttta cgcatcagcc taaaccataa 4020

gctagacctg tcgccattcc aattatcacc ataggtctcg taaatacatt gcaatgcatg 4080

atcaatttca cgttcaaaat gatacggaat acctaaacgt tgaatctcgt caatcagctt 4140

caacaaattt gcatgtttca taggaatatc caatgcttcc tttaacaact gtcttacttc 4200

cttctttaga tcgtttacta tttgctccac accctgttca acttgtttct cataaatcaa 4260

aaattgatcg ccccaaatag aaggtgggaa atttgcaatt ggccttatag gtttctcttc 4320

agtcaaggcc attgttttct gcagatccgg ggtttttttct ccttgacgtt aaagtataga 4380

ggtatattaa caatttttg ttgatacttt tattacattt gaataagaag taatacaaac 4440

cgaaaatgtt gaaagtatta gttaaagtgg ttatgcagtt tttgcattta tatatctgtt 4500

aatagatcaa aaatcatcgc ttcgctgatt aattacccca gaaataaggc taaaaaacta 4560

atcgcattat catcctatgg ttgttaattt gattcgttca tttgaaggtt tgtggggcca 4620

ggttactgcc aatttttcct cttcataacc ataaaagcta gtattgtaga atctttattg 4680

ttcggagcag tgcggcgcga ggcacatctg cgtttcagga acgcgaccgg tgaagacgag 4740

gacgcacgga ggagagtctt ccttcggagg gctgtcaccc gctcggcggc ttctaatccg 4800

tactaagatc tgctttaatt tggccggcga acgtggcgag aaaggaaggg aagaaagcga 4860

aaggagcggg cgctagggcg ctggcaagtg tagcggtcac gctgcgcgta accaccacac 4920
ccgccgcgct taatgcgccg ctacagggcg cgtcgcgcca ttcgccattc aggctgcgca 4980
actgttggga agggcgatcg gtgcgggcct cttcgctatt acgccagctg aattggagcg 5040
acctcatgct atacctgaga aagcaacctg acctacagga aagagttact caagaataag 5100
aattttcgtt ttaaaaccta agagtcactt taaaatttgt atacacttat ttttttata 5160
acttatttaa taataaaaat cataaatcat aagaaattcg cttatttaga agtgtcaaca 5220
acgtatctac caacgatttg acccttttcc atcttttcgt aaatttctgg caaggtagac 5280
aagccgacaa ccttgattgg agacttgacc aaacctctgg cgaagaattg ttaattaaga 5340
gtcagtcgac ttaaaaacta gggaccaata gcaattctgt tttacgttgc attgttgcac 5400
ctgaactttc cgtcatgtca atttgatcat atgaaactcc attgggcaac ttccagttga 5460
aatgataaag aatgttggct agtggcagtt gaacattggc caaacctaac gcagcgccag 5520
gacacatacg acgtccagcc ccaaatggta aatattcata ttcggcgccc atcactgttg 5580
ccgaagagtt ttcaaatctt tcaggtataa acgcttctgc atccttccag tattcaggat 5640
ctctattgat cgcaaacaca ttaacgatta atttcgtttt gttagggata ttataaccag 5700
ccaagtttac tggctgacga cattctctag gtagcactaa cggcaagggt gggtgtagtc 5760
taagagtctc tttgatgacc atattcaagt aggacaattc ttgtatatct tcttcatgta 5820
ttttttcttt cccattcaag gccttacgta attcagcctg aacctttcc attgctttcg 5880
gacattttat tagctcgctt atagcccatt ctatggtaga acttgaagtg tcggtccctg 5940
caccgaacat gtccaaaatt attgctttga tattatccga agtcagagga aactcagcag 6000
aatcctttaa tctaagtaat acatctaata gggtttcgtt ggttttggat gacgtattta 6060
cggtatgttc agctaccaaa ttgtcaatta agttatcaat ctttttacgt aggctagtta 6120
atcttgctct cttaccgctc aagtgatgca agaacttttt agatgggaaa atatcggcaa 6180
catcgaaacc gcctgtttgt ctcagtattt ctttaacaat ttcagtaagt tccttttgat 6240
ctttaattcc cttaccaaac gcagcacggg atagtatagt ggcaattagt ttaaaaacgt 6300
tttcacttaa atttactggt ctaccactac ctgaagcctt tatttcctgg actaaattcc 6360
aacattcttc ttccctcaac gattgaaatg acttaacctt ttttacagac aacaattcaa 6420
gagtacaaat cttccttaat tgtctccagt attccccata tggagcaagg acaacatcag 6480
tgttatgata taaaactatt tccccagtta aagtttcggg tctattagcg aaagtaatat 6540
cgtaggttgt aagaatttcc ttagcccact taggactcga cacgactatt gtgggtacct 6600
ctcccaattg aaggtgcatt agcgaaccat attttctcgc taaatccctt acacccctgt 6660
gtggtgtggt tccgatcaaa tggtgcatgt gaccaatgat gggtagcctc caaggttccg 6720
gcaaggactt tttagttgac ttacttctag tggcaaattt gtacacgaac aacaaaatag 6780
ttgctaaagc aattgatgta gttaaagata gtgccatagc ctttaaaatt gacttcattg 6840
ttttcctagg cctttagtga gggttgaatt cgaattttca aaaattctta ctttttttt 6900

ggatggacgc aaagaagttt aataatcata ttacatggca ttaccaccat atacatatcc 6960

atatacatat ccatatctaa tcttacttat atgttgtgga aatgtaaaga gccccattat 7020

cttagcctaa aaaaaccttc tctttggaac tttcagtaat acgcttaact gctcattgct 7080

atattgaagt acggattaga agccgccgag cgggtgacag ccctccgaag gaagactctc 7140

ctccgtgcgt cctcgtcttc accggtcgcg ttcctgaaac gcagatgtgc ctcgcgccgc 7200

actgctccga acaataaaga ttctacaata ctagctttta tggttatgaa gaggaaaaat 7260

tggcagtaac ctggccccac aaaccttcaa atgaacgaat caaattaaca accataggat 7320

gataatgcga ttagtttttt agccttattt ctggggtaat taatcagcga agcgatgatt 7380

tttgatctat taacagatat ataaatgcaa aaactgcata accactttaa ctaatacttt 7440

caacattttc ggtttgtatt acttcttatt caaatgtaat aaaagtatca acaaaaaatt 7500

gttaatatac ctctatactt taacgtcaag gagaaaaaac cccaagctct agctaagatc 7560

cgctctaacc gaaaaggaag gagttagaca acctgaagtc taggtcccta tttatttttt 7620

tatagttatg ttagtattaa gaacgttatt tatatttcaa atttttcttt tttttctgta 7680

cagacgcgtg tacgcatgta acattatact gaaaaccttg cttgagaagg ttttgggacg 7740

ctcgaagatc cagctgcatt aatgaatcgg ccaacgcgcg gggagaggcg gtttgcgtat 7800

tgggcgctct tccgcttcct cgctcactga ctcgctgcgc tcggtcgttc ggctgcggcg 7860

agcggtatca gctcactcaa aggcggtaat acggttatcc acagaatcag gggataacgc 7920

aggaaagaac atgtgagcaa aaggccagca aaaggccagg aaccgtaaaa aggccgcgtt 7980

gctggcgttt ttccataggc tccgcccccc tgacgagcat cacaaaaatc gacgctcaag 8040

tcagaggtgg cgaaacccga caggactata aagataccag gcgtttcccc ctggaagctc 8100

cctcgtgcgc tctcctgttc cgaccctgcc gcttaccgga tacctgtccg cctttctccc 8160

ttcgggaagc gtggcgcttt ctcatagctc acgctgtagg tatctcagtt cggtgtaggt 8220

cgttcgctcc aagctgggct gtgtgcacga acccccccgtt cagcccgacc gctgcgcctt 8280

atccggtaac tatcgtcttg agtccaaccc ggtaagacac gacttatcgc cactggcagc 8340

agccactggt aacaggatta gcagagcgag gtatgtaggc ggtgctacag agttcttgaa 8400

gtggtggcct aactacggct acactagaag gacagtattt ggtatctgcg ctctgctgaa 8460

gccagttacc ttcggaaaaa gagttggtag ctcttgatcc ggcaaacaaa ccaccgctgg 8520

tagcggtggt ttttttgttt gcaagcagca gattacgcgc agaaaaaaag gatctcaaga 8580

agatcctttg atcttttcta cggggtctga cgctcagtgg aacgaaaact cacgttaagg 8640

gattttggtc atgagattat caaaaaggat cttcacctag atccttttaa attaaaaatg 8700

aagttttaaa tcaatctaaa gtatatatga gtaaacttgg tctgacagtt accaatgctt 8760

aatcagtgag gcacctatct cagcgatctg tctatttcgt tcatccatag ttgcctgact 8820

ccccgtcgtg tagataacta cgatacggga gggcttacca tctggcccca gtgctgcaat 8880

gataccgcga gacccacgct caccggctcc agatttatca gcaataaacc agccagccgg 8940

aagggccgag cgcagaagtg gtcctgcaac tttatccgcc tccatccagt ctattaattg 9000

ttgccgggaa gctagagtaa gtagttcgcc agttaatagt ttgcgcaacg ttgttgccat 9060

tgctacaggc atcgtggtgt cacgctcgtc gtttggtatg gcttcattca gctccggttc 9120

ccaacgatca aggcgagtta catgatcccc catgttgtgc aaaaaagcgg ttagctcctt 9180

cggtcctccg atcgttgtca gaagtaagtt ggccgcagtg ttatcactca tggttatggc 9240

agcactgcat aattctctta ctgtcatgcc atccgtaaga tgcttttctg tgactggtga 9300

gtactcaacc aagtcattct gagaatagtg tatgcggcga ccgagttgct cttgcccggc 9360

gtcaatacgg gataataccg cgccacatag cagaacttta aaagtgctca tcattggaaa 9420

acgttcttcg gggcgaaaac tctcaaggat cttaccgctg ttgagatcca gttcgatgta 9480

acccactcgt gcacccaact gatcttcagc atcttttact ttcaccagcg tttctgggtg 9540

agcaaaaaca ggaaggcaaa atgccgcaaa aaagggaata agggcgacac ggaaatgttg 9600

aatactcata ctcttccttt ttcaatatta ttgaagcatt tatcagggtt attgtctcat 9660

gagcggatac atatttgaat gtatttagaa aaataaacaa ataggggttc cgcgcacatt 9720

tccccgaaaa gtgccacctg aacgaagcat ctgtgcttca ttttgtagaa caaaaatgca 9780

acgcgagagc gctaattttt caaacaaaga atctgagctg cattttaca gaacagaaat 9840

gcaacgcgaa agcgctattt taccaacgaa gaatctgtgc ttcatttttg taaaacaaaa 9900

atgcaacgcg agagcgctaa tttttcaaac aaagaatctg agctgcattt ttacagaaca 9960

gaaatgcaac gcgagagcgc tattttacca acaaagaatc tatacttctt ttttgttcta 10020

caaaaatgca tcccgagagc gctatttttc taacaaagca tcttagatta ctttttttct 10080

cctttgtgcg ctctataatg cagtctcttg ataacttttt gcactgtagg tccgttaagg 10140

ttagaagaag gctactttgg tgtctatttt ctcttccata aaaaaagcct gactccactt 10200

cccgcgttta ctgattacta gcgaagctgc gggtgcattt tttcaagata aaggcatccc 10260

cgattatatt ctataccgat gtggattgcg catactttgt gaacagaaag tgatagcgtt 10320

gatgattctt cattggtcag aaaattatga acggtttctt ctattttgtc tctatatact 10380

acgtatagga aatgtttaca ttttcgtatt gttttcgatt cactctatga atagttctta 10440

ctacaatttt tttgtctaaa gagtaatact agagataaac ataaaaaatg tagaggtcga 10500

gtttagatgc aagttcaagg agcgaaaggt ggatgggtag gttatatagg gatatagcac 10560

agagatatat agcaaagaga tacttttgag caatgtttgt ggaagcggta ttcgcaatat 10620

tttagtagct cgttacagtc cggtgcgttt ttggtttttt gaaagtgcgt cttcagagcg 10680

cttttggttt tcaaaagcgc tctgaagttc ctatactttc tagagaatag gaacttcgga 10740

ataggaactt caaagcgttt ccgaaaacga gcgcttccga aaatgcaacg cgagctgcgc 10800

acatacagct cactgttcac gtcgcaccta tatctgcgtg ttgcctgtat atatatatac 10860

atgagaagaa cggcatagtg cgtgtttatg cttaaatgcg tacttatatg cgtctattta 10920

tgtaggatga aaggtagtct agtacctcct gtgatattat cccattccat gcggggtatc 10980

gtatgcttcc ttcagcacta ccctttagct gttctatatg ctgccactcc tcaattggat 11040

tagtctcatc cttcaatgct atcatttcct ttgatattgg atcatactaa gaaaccatta 11100

ttatcatgac attaacctat aaaaataggc gtatcacgag gccctttcgt c 11151

<210> 157
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-A13-F

<220>
<221> misc_feature
<222> (57)..(58)
<223> n is a, c, g, or t

<400> 157
ggagaaaaaa ccccggatcc atggccttga ctgaagagaa acctataagg ccaattnnka 60

atttcccacc ttctatttg 79

<210> 158
<211> 53
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-C260-F

<220>
<221> misc_feature
<222> (27)..(28)
<223> n is a, c, g, or t

<400> 158
catttgatat taagaaaaat gccccannkc tgagagatcg tatcgttgaa tgc 53

<210> 159
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-C260-R

<400> 159
catttttctt aatatcaaat gccttccacc 30

<210> 160
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-A291-F

<220>

<221> misc_feature
<222> (27)..(28)
<223> n is a, c, g, or t

<400> 160
caagagctag agttttttc actaagnnkg ttgctgtgat aacacttatt g 51

<210> 161
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-A291-R

<400> 161
gaaaaaaact ctagctcttg aatac 25

<210> 162
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-M341-F

<220>
<221> misc_feature
<222> (26)..(27)
<223> n is a, c, g, or t

<400> 162
catgaagcct atttacaaat tattcnnkga tacctacaca gaaatg 46

<210> 163
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-M341-R

<400> 163
aatttgtaaa taggcttcat gtattc 26

<210> 164
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-M406-F

<220>
<221> misc_feature
<222> (31)..(32)
<223> n is a, c, g, or t

<400> 164
gttattatca ctggtggtgc aaacttgcta nnkactacct gttatctag 49

<210> 165
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-M406-R

<400> 165
gtttgcacca ccagtgataa taactacggg 30

<210> 166
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-M418-F

<220>
<221> misc_feature
<222> (27)..(28)
<223> n is a, c, g, or t

<400> 166
gttatctagg aatgagcgat attttcnnka aggaatcagt tgagtgggc 49

<210> 167
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-M418-R

<400> 167
cgctcattcc tagataacag gtag 24

<210> 168
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-F432-F

<220>
<221> misc_feature
<222> (24)..(25)
<223> n is a, c, g, or t

<400> 168
gggctgtatc tgctccgcct ttannkcgtt acagtggtat tctg 44

<210> 169
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-F432-R

<400> 169
ggcggagcag atacagccca ctcaac 26

<210> 170
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-G439-F

<220>
<221> misc_feature
<222> (27)..(28)
<223> n is a, c, g, or t

<400> 170
ctttattccg ttacagtggt attctgnnka ggagattaaa tgacctgatg 50

<210> 171
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-G439-R

<400> 171
gaataccact gtaacggaat aaag 24

<210> 172
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-SM-5'

<400> 172
gaaaaaaccc cggatccatg gccttgactg aagagaaac 39

<210> 173
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic, Primer ADS-SM-3'

<400> 173
ggttagagcg gatcttagct agcttagata gacatagggt aaac 44

<210> 174
<211> 546
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic, Artemisia annua Amorpha-4,11-diene Synthase A291V mutant

<400> 174

```
Met Ala Leu Thr Glu Glu Lys Pro Ile Arg Pro Ile Ala Asn Phe Pro
1               5                  10                  15

Pro Ser Ile Trp Gly Asp Gln Phe Leu Ile Tyr Glu Lys Gln Val Glu
            20                  25                  30

Gln Gly Val Glu Gln Ile Val Asn Asp Leu Lys Lys Glu Val Arg Gln
        35                  40                  45

Leu Leu Lys Glu Ala Leu Asp Ile Pro Met Lys His Ala Asn Leu Leu
    50                  55                  60

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

Arg Glu Ile Asp His Ala Leu Gln Cys Ile Tyr Glu Thr Tyr Gly Asp
                85                  90                  95

Asn Trp Asn Gly Asp Arg Ser Ser Leu Trp Phe Arg Leu Met Arg Lys
            100                 105                 110

Gln Gly Tyr Tyr Val Thr Cys Asp Val Phe Asn Asn Tyr Lys Asp Lys
        115                 120                 125

Asn Gly Ala Phe Lys Gln Ser Leu Ala Asn Asp Val Glu Gly Leu Leu
    130                 135                 140

Glu Leu Tyr Glu Ala Thr Ser Met Arg Val Pro Gly Glu Ile Ile Leu
145                 150                 155                 160

Glu Asp Ala Leu Gly Phe Thr Arg Ser Arg Leu Ser Ile Met Thr Lys
                165                 170                 175

Asp Ala Phe Ser Thr Asn Pro Ala Leu Phe Thr Glu Ile Gln Arg Ala
            180                 185                 190

Leu Lys Gln Pro Leu Trp Lys Arg Leu Pro Arg Ile Glu Ala Ala Gln
        195                 200                 205

Tyr Ile Pro Phe Tyr Gln Gln Gln Asp Ser His Asn Lys Thr Leu Leu
    210                 215                 220

Lys Leu Ala Lys Leu Glu Phe Asn Leu Leu Gln Ser Leu His Lys Glu
225                 230                 235                 240

Glu Leu Ser His Val Cys Lys Trp Trp Lys Ala Phe Asp Ile Lys Lys
                245                 250                 255

Asn Ala Pro Cys Leu Arg Asp Arg Ile Val Glu Cys Tyr Phe Trp Gly
            260                 265                 270
```

```
Leu Gly Ser Gly Tyr Glu Pro Gln Tyr Ser Arg Ala Arg Val Phe Phe
        275                 280                 285

Thr Lys Val Val Ala Val Ile Thr Leu Ile Asp Asp Thr Tyr Asp Ala
    290                 295                 300

Tyr Gly Thr Tyr Glu Glu Leu Lys Ile Phe Thr Glu Ala Val Glu Arg
305                 310                 315                 320

Trp Ser Ile Thr Cys Leu Asp Thr Leu Pro Glu Tyr Met Lys Pro Ile
                325                 330                 335

Tyr Lys Leu Phe Met Asp Thr Tyr Thr Glu Met Glu Glu Phe Leu Ala
            340                 345                 350

Lys Glu Gly Arg Thr Asp Leu Phe Asn Cys Gly Lys Glu Phe Val Lys
        355                 360                 365

Glu Phe Val Arg Asn Leu Met Val Glu Ala Lys Trp Ala Asn Glu Gly
    370                 375                 380

His Ile Pro Thr Thr Glu Glu His Asp Pro Val Val Ile Ile Thr Gly
385                 390                 395                 400

Gly Ala Asn Leu Leu Thr Thr Thr Cys Tyr Leu Gly Met Ser Asp Ile
                405                 410                 415

Phe Thr Lys Glu Ser Val Glu Trp Ala Val Ser Ala Pro Pro Leu Phe
            420                 425                 430

Arg Tyr Ser Gly Ile Leu Gly Arg Arg Leu Asn Asp Leu Met Thr His
        435                 440                 445

Lys Ala Glu Gln Glu Arg Lys His Ser Ser Ser Ser Leu Glu Ser Tyr
    450                 455                 460

Met Lys Glu Tyr Asn Val Asn Glu Glu Tyr Ala Gln Thr Leu Ile Tyr
465                 470                 475                 480

Lys Glu Val Glu Asp Val Trp Lys Asp Ile Asn Arg Glu Tyr Leu Thr
                485                 490                 495

Thr Lys Asn Ile Pro Arg Pro Leu Leu Met Ala Val Ile Tyr Leu Cys
            500                 505                 510

Gln Phe Leu Glu Val Gln Tyr Ala Gly Lys Asp Asn Phe Thr Arg Met
        515                 520                 525

Gly Asp Glu Tyr Lys His Leu Ile Lys Ser Leu Leu Val Tyr Pro Met
    530                 535                 540
```

Ser Ile
545

<210> 175
<211> 585
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic, Artemisia annua Amorpha-4,11-diene Synthase A291C mutant

<400> 175

Ala Arg Thr Glu Met Ile Ser Ile Ala Ala Asn Asn Ala Ala Met Arg
1 5 10 15

Pro His Ala Asp Ile Glu Asn Glu Ser Tyr Asn Thr His Ala Ser Glu
20 25 30

Ala Cys Met Thr Ala Asn Thr Met Ala Leu Thr Glu Glu Lys Pro Ile
35 40 45

Arg Pro Ile Ala Asn Phe Pro Pro Ser Ile Trp Gly Asp Gln Phe Leu
50 55 60

Ile Tyr Glu Lys Gln Val Glu Gln Gly Val Glu Gln Ile Val Asn Asp
65 70 75 80

Leu Lys Lys Glu Val Arg Gln Leu Leu Lys Glu Ala Leu Asp Ile Pro
85 90 95

Met Lys His Ala Asn Leu Leu Lys Leu Ile Asp Glu Ile Gln Arg Leu
100 105 110

Gly Ile Pro Tyr His Phe Glu Arg Glu Ile Asp His Ala Leu Gln Cys
115 120 125

Ile Tyr Glu Thr Tyr Gly Asp Asn Trp Asn Gly Asp Arg Ser Ser Leu
130 135 140

Trp Phe Arg Leu Met Arg Lys Gln Gly Tyr Tyr Val Thr Cys Asp Val
145 150 155 160

Phe Asn Asn Tyr Lys Asp Lys Asn Gly Ala Phe Lys Gln Ser Leu Ala
165 170 175

Asn Asp Val Glu Gly Leu Leu Glu Leu Tyr Glu Ala Thr Ser Met Arg
180 185 190

Val Pro Gly Glu Ile Ile Leu Glu Asp Ala Leu Gly Phe Thr Arg Ser
195 200 205

```
Arg Leu Ser Ile Met Thr Lys Asp Ala Phe Ser Thr Asn Pro Ala Leu
    210                 215                 220

Phe Thr Glu Ile Gln Arg Ala Leu Lys Gln Pro Leu Trp Lys Arg Leu
225                 230                 235                 240

Pro Arg Ile Glu Ala Ala Gln Tyr Ile Pro Phe Tyr Gln Gln Gln Asp
                245                 250                 255

Ser His Asn Lys Thr Leu Leu Lys Leu Ala Lys Leu Glu Phe Asn Leu
            260                 265                 270

Leu Gln Ser Leu His Lys Glu Glu Leu Ser His Val Cys Lys Trp Trp
        275                 280                 285

Lys Ala Phe Asp Ile Lys Lys Asn Ala Pro Cys Leu Arg Asp Arg Ile
    290                 295                 300

Val Glu Cys Tyr Phe Trp Gly Leu Gly Ser Gly Tyr Glu Pro Gln Tyr
305                 310                 315                 320

Ser Arg Ala Arg Val Phe Phe Thr Lys Cys Val Ala Val Ile Thr Leu
                325                 330                 335

Ile Asp Asp Thr Tyr Asp Ala Tyr Gly Thr Tyr Glu Glu Leu Lys Ile
            340                 345                 350

Phe Thr Glu Ala Val Glu Arg Trp Ser Ile Thr Cys Leu Asp Thr Leu
        355                 360                 365

Pro Glu Tyr Met Lys Pro Ile Tyr Lys Leu Phe Met Asp Thr Tyr Thr
    370                 375                 380

Glu Met Glu Glu Phe Leu Ala Lys Glu Gly Arg Thr Asp Leu Phe Asn
385                 390                 395                 400

Cys Gly Lys Glu Phe Val Lys Glu Phe Val Arg Asn Leu Met Val Glu
                405                 410                 415

Ala Lys Trp Ala Asn Glu Gly His Ile Pro Thr Thr Glu Glu His Asp
            420                 425                 430

Pro Val Val Ile Ile Thr Gly Gly Ala Asn Leu Leu Thr Thr Thr Cys
        435                 440                 445

Tyr Leu Gly Met Ser Asp Ile Phe Thr Lys Glu Ser Val Glu Trp Ala
    450                 455                 460

Val Ser Ala Pro Pro Leu Phe Arg Tyr Ser Gly Ile Leu Gly Arg Arg
465                 470                 475                 480
```

Leu Asn Asp Leu Met Thr His Lys Ala Glu Gln Glu Arg Lys His Ser
485 490 495

Ser Ser Ser Leu Glu Ser Tyr Met Lys Glu Tyr Asn Val Asn Glu Glu
500 505 510

Tyr Ala Gln Thr Leu Ile Tyr Lys Glu Val Glu Asp Val Trp Lys Asp
515 520 525

Ile Asn Arg Glu Tyr Leu Thr Thr Lys Asn Ile Pro Arg Pro Leu Leu
530 535 540

Met Ala Val Ile Tyr Leu Cys Gln Phe Leu Glu Val Gln Tyr Ala Gly
545 550 555 560

Lys Asp Asn Phe Thr Arg Met Gly Asp Glu Tyr Lys His Leu Ile Lys
565 570 575

Ser Leu Leu Val Tyr Pro Met Ser Ile
580 585

<210> 176
<211> 585
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic, Artemisia annua Amorpha-4,11-diene Synthase A291I mutant

<400> 176

Ala Arg Thr Glu Met Ile Ser Ile Ala Ala Asn Asn Ala Ala Met Arg
1 5 10 15

Pro His Ala Asp Ile Glu Asn Glu Ser Tyr Asn Thr His Ala Ser Glu
20 25 30

Ala Ile Met Thr Ala Asn Thr Met Ala Leu Thr Glu Glu Lys Pro Ile
35 40 45

Arg Pro Ile Ala Asn Phe Pro Pro Ser Ile Trp Gly Asp Gln Phe Leu
50 55 60

Ile Tyr Glu Lys Gln Val Glu Gln Gly Val Glu Gln Ile Val Asn Asp
65 70 75 80

Leu Lys Lys Glu Val Arg Gln Leu Leu Lys Glu Ala Leu Asp Ile Pro
85 90 95

Met Lys His Ala Asn Leu Leu Lys Leu Ile Asp Glu Ile Gln Arg Leu
100 105 110

Gly Ile Pro Tyr His Phe Glu Arg Glu Ile Asp His Ala Leu Gln Cys

115 120 125

Ile Tyr Glu Thr Tyr Gly Asp Asn Trp Asn Gly Asp Arg Ser Ser Leu
130 135 140

Trp Phe Arg Leu Met Arg Lys Gln Gly Tyr Tyr Val Thr Cys Asp Val
145 150 155 160

Phe Asn Asn Tyr Lys Asp Lys Asn Gly Ala Phe Lys Gln Ser Leu Ala
165 170 175

Asn Asp Val Glu Gly Leu Leu Glu Leu Tyr Glu Ala Thr Ser Met Arg
180 185 190

Val Pro Gly Glu Ile Ile Leu Glu Asp Ala Leu Gly Phe Thr Arg Ser
195 200 205

Arg Leu Ser Ile Met Thr Lys Asp Ala Phe Ser Thr Asn Pro Ala Leu
210 215 220

Phe Thr Glu Ile Gln Arg Ala Leu Lys Gln Pro Leu Trp Lys Arg Leu
225 230 235 240

Pro Arg Ile Glu Ala Ala Gln Tyr Ile Pro Phe Tyr Gln Gln Gln Asp
245 250 255

Ser His Asn Lys Thr Leu Leu Lys Leu Ala Lys Leu Glu Phe Asn Leu
260 265 270

Leu Gln Ser Leu His Lys Glu Glu Leu Ser His Val Cys Lys Trp Trp
275 280 285

Lys Ala Phe Asp Ile Lys Lys Asn Ala Pro Cys Leu Arg Asp Arg Ile
290 295 300

Val Glu Cys Tyr Phe Trp Gly Leu Gly Ser Gly Tyr Glu Pro Gln Tyr
305 310 315 320

Ser Arg Ala Arg Val Phe Phe Thr Lys Ile Val Ala Val Ile Thr Leu
325 330 335

Ile Asp Asp Thr Tyr Asp Ala Tyr Gly Thr Tyr Glu Glu Leu Lys Ile
340 345 350

Phe Thr Glu Ala Val Glu Arg Trp Ser Ile Thr Cys Leu Asp Thr Leu
355 360 365

Pro Glu Tyr Met Lys Pro Ile Tyr Lys Leu Phe Met Asp Thr Tyr Thr
370 375 380

Glu Met Glu Glu Phe Leu Ala Lys Glu Gly Arg Thr Asp Leu Phe Asn

```
385                 390                 395                 400

Cys Gly Lys Glu Phe Val Lys Glu Phe Val Arg Asn Leu Met Val Glu
                405                 410                 415

Ala Lys Trp Ala Asn Glu Gly His Ile Pro Thr Thr Glu Glu His Asp
            420                 425                 430

Pro Val Val Ile Ile Thr Gly Gly Ala Asn Leu Leu Thr Thr Thr Cys
        435                 440                 445

Tyr Leu Gly Met Ser Asp Ile Phe Thr Lys Glu Ser Val Glu Trp Ala
    450                 455                 460

Val Ser Ala Pro Pro Leu Phe Arg Tyr Ser Gly Ile Leu Gly Arg Arg
465                 470                 475                 480

Leu Asn Asp Leu Met Thr His Lys Ala Glu Gln Glu Arg Lys His Ser
                485                 490                 495

Ser Ser Ser Leu Glu Ser Tyr Met Lys Glu Tyr Asn Val Asn Glu Glu
            500                 505                 510

Tyr Ala Gln Thr Leu Ile Tyr Lys Glu Val Glu Asp Val Trp Lys Asp
        515                 520                 525

Ile Asn Arg Glu Tyr Leu Thr Thr Lys Asn Ile Pro Arg Pro Leu Leu
    530                 535                 540

Met Ala Val Ile Tyr Leu Cys Gln Phe Leu Glu Val Gln Tyr Ala Gly
545                 550                 555                 560

Lys Asp Asn Phe Thr Arg Met Gly Asp Glu Tyr Lys His Leu Ile Lys
                565                 570                 575

Ser Leu Leu Val Tyr Pro Met Ser Ile
            580                 585
```