SEQUENCE LISTING

<110> AMYRIS, INC.
SERBER, Zach
HORWITZ, Andrew

<120> METHODS FOR GENOMIC MODIFICATION

<130> AM-4800-US

<150> US 61/479,821
<151> 2011-04-27

<150> US 61/500,741
<151> 2011-06-24

<150> US 61/539,389
<151> 2011-09-26

<160> 66

<170> PatentIn version 3.5

<210> 1
<211> 741
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Wild-type Em.GFP coding sequence

<400> 1
atggtgagca agggcgagga gctgttcacc ggggtggtgc ccatcctggt cgagctggac 60

ggcgacgtaa acggccacaa gttcagcgtg tccggcgagg gcgagggcga tgccacctac 120

ggcaagctga ccctgaagtt catctgcacc accggcaagc tgcccgtgcc ctggcccacc 180

ctcgtgacca ccttgaccta cggcgtgcag tgcttcgccc gctaccccga ccacatgaag 240

cagcacgact tcttcaagtc cgccatgccc gaaggctacg tccaggagcg caccatcttc 300

ttcaaggacg acggcaacta caagacccgc gccgaggtga agttcgaggg cgacaccctg 360

gtgaaccgca tcgagctgaa gggcatcgac ttcaaggagg acggcaacat cctggggcac 420

aagctggagt acaactacaa cagccacaag gtctatatca ccgccgacaa gcagaagaac 480

ggcatcaagg tgaacttcaa gacccgccac aacatcgagg acggcagcgt gcagctcgcc 540

gaccactacc agcagaacac ccccatcggc gacggccccg tgctgctgcc cgacaaccac 600

tacctgagca cccagtccgc cctgagcaaa gaccccaacg agaagcgcga tcacatggtc 660

ctgctggagt tcgtgaccgc cgccgggatc actctcggca tggacgagct gtacaagtaa 720

ctcgagaagc ttgatccggc t 741

<210> 2
<211> 13
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: EmGFP linker encoding premature stop codon

<400> 2
cgtctaaatc atg 13

<210> 3
<211> 500
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: HO upstream integration sequence

<400> 3
cgcaagtcct gtttctatgc ctttctctta gtaattcacg aaataaacct atggtttacg 60

aaatgatcca cgaaaatcat gttattattt acatcaacat atcgcgaaaa ttcatgtcat 120

gtccacatta acatcattgc agagcaacaa ttcattttca tagagaaatt tgctactatc 180

acccactagt actaccattg gtacctacta ctttgaattg tactaccgct gggcgttatt 240

aggtgtgaaa ccacgaaaag ttcaccataa cttcgaataa agtcgcggaa aaaagtaaac 300

agctattgct actcaaatga ggtttgcaga agcttgttga agcatgatga agcgttctaa 360

acgcactatt catcattaaa tatttaaagc tcataaaatt gtattcaatt cctattctaa 420

atggctttta tttctattac aactattagc tctaaatcca tatcctcata agcagcaatc 480

aattctatct atactttaaa 500

<210> 4
<211> 200
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: HO downstream integration sequence

<400> 4
aatgtgtata ttagtttaaa aagttgtatg taataaaagt aaaatttaat attttggatg 60

aaaaaaacca tttttagact ttttcttaac tagaatgctg gagtagaaat acgccatctc 120

aagatacaaa aagcgttacc ggcactgatt tgtttcaacc agtatataga ttattattgg 180

gtcttgatca actttcctca 200

<210> 5
<211> 490
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: YGR250c upstream integration sequence

<400> 5

gtacgatgtt tctcccgctg atccgattac tagccgaaga cgtaaaattg gcgcttgatt 60

caatttatgc ccttcccggg aatagttgac caaagggcaa aaaaattcag tcggagattc 120

cctattgggc ggaatttagt agatctcttt ccgtgcataa cgcctgcccg ttagtcgtta 180

tttcacgtta acatttttctt ggccactgcg ctatataaat aaatacatat atatatgtca 240

agcacaataa agaaacttcc cttaaatatt gaataagtaa ataatagttg aaaagtgcct 300

tttgttcgaa ggattagagt gttcttaatt ttagttcgtt caacggtctc aaaaaaagtg 360

tgaacaagta aagcatagca cacatcccaa attacaaggc accctgatta aaaatccaaa 420

aataaaccat aagttttatt ttactaaaaa cattatacgt gaaagacaaa ccgcatcaga 480

agtttcgagg 490

<210> 6
<211> 185
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: YGR250c downstream integration sequence

<400> 6
attgcatcag gtccataaaa tgtttttgtc tgctttttt tcttcatgta ttagttggtt 60

tttatttta tattttcatt tatcttattc atactttta ctccttttt cttcattctt 120

tacgatcttg gacattcaac tagcctatgg taacttttct tattactttg cccctccttg 180

aggtg 185

<210> 7
<211> 504
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: NDT80 upstream integration sequence

<400> 7
catcaagcgc tccaagctga cataaatcgc actttgtatc tacttttttt tattcgaaaa 60

caaggcacaa caatgaatct atcgccctgt gagattttca atctcaagtt tgtgtaatag 120

atagcgttat attatagaac tataaaggtc cttgaatata catagtgttt cattcctatt 180

actgtatatg tgactttaca ttgttacttc cgcggctatt tgacgttttc tgcttcaggt 240

gcggcttgga gggcaaagtg tcagaaaatc ggccaggccg tatgacacaa aagagtagaa 300

aacgagatct caaatatctc gaggcctgtc ctctatacaa ccgcccagct ctctgacaaa 360

gctccagaac ggttgtcttt tgtttcgaaa agccaaggtc ccttataatt gccctccatt 420

ttgtgtcacc tatttaagca aaaaattgaa agtttactaa cctttcatta aagagaaata 480

acaatattat aaaaagcgct taaa 504

<210> 8
<211> 202
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: NDT80 downstream integration sequence

<400> 8
ataaactaat gattttaaat cgttaaaaaa atatgcgaat tctgtggatc gaacacagga 60

cctccagata acttgaccga agtttttttct tcagtctggc gctctcccaa ctgagctaaa 120

tccgcttact atttgttatc agttcccttc atatctacat agaataggtt aagtatttta 180

ttagttgcca gaagaactac tg 202

<210> 9
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Recognition sequence for ZFN.gfp

<400> 9
acaactacaa cagccacaac gtctatatca tggccgacaa gca 43

<210> 10
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Forward primer specific to Em.GFP

<400> 10
caactacaac agccacaagg tctatatcac c 31

<210> 11
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Reverse primer for HO locus

<400> 11
ctctaacgct gttggtagat tg 22

<210> 12
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Reverse primer for NDT80 locus

<400> 12
accatgtgat aatacactac taatgtgact actagttga 39

<210> 13
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Reverse primer for YGR250c locus

<400> 13
tcagacgcgt tcggaggaga gtgcattcac 30

<210> 14
<211> 5251
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Integration construct i8

<400> 14
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> 15
<211> 70
<212> DNA
<213> Artificial Sequence

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

<400> 15
ggtaagacgg ttgggtttta tcttttgcag ttggtactat taagaacaat cacaggaaac 60

agctatgacc 70

<210> 16
<211> 70
<212> DNA
<213> Artificial Sequence

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

<400> 16
ttgcgttttg tactttggtt cgctcaattt tgcaggtaga taatcgaaaa gttgtaaaac 60

gacggccagt 70

<210> 17
<211> 4162
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Integration construct i32

<400> 17
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 ttatttttagt ttgtttaatc ttatttttgag 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
ccttttttttt 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 ctttatttttt ttgttattcc tgacatgaag 3840
ctttatgtaa ttaaggaaac ggacatcgag gaatttgcat ctttttttaga 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> 18
<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> 18
atgaattggc cagtttttc 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 attttttttta ttctacaaac cttctataat 1260

ttcaaagtat ttacataatt ctgtatcagt ttaatcacca taatatcgtt ttctttgttt 1320

agtgcaatta atttttcctа 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 tgtttttac 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 atttttcac 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 ttttttcttc 4620

caacgctaga aggaaaagaa aaatctaatt aaattgattt ggtgattttc tgagagttcc 4680

ctttttcata tatcgaattt tgaatataaa aggagatcga aaaaattttt ctattcaatc 4740

tgttttctgg ttttatttga tagtttttt 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
tgcatttttct 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> 19
<211> 5714
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Integration construct i37

<400> 19
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 tttttgccgt 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 atctttttta 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> 20
<211> 7688
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Integration construct i301

<400> 20
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 ttattcccct 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 taccctgtg 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 aatttttaaca 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> 21
<211> 5025
<212> DNA

<213> Artificial Sequence

<220>
<223> Synthetic: Integration construct i476

<400> 21
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 tcctttttt cttgcccact tctaagctga tttcaatctc tcctttatat 1560

atatttttaa gttccaacat tttatgtttc aaaacattaa tgatgtctgg gttttgtttg 1620

ggatgcaatt tattgcttcc caatgtagaa aagtacatca tatgaaacaa cttaaactct 1680

taactacttc ttttaacctt cacttttttat 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 ataaaatcc 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 caccttcaa acttatcttt atcttattcg 4920

ccttcttggg tgcctccaca gtagaggtta cttccttttt aatatgtact tttaggatac 4980

tttcacgctt tataacacgg tgtttaaacc ccagcgcctg gcggg 5025

<210> 22
<211> 3665
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Integration construct i477

<400> 22
agctcgagga cggcacggcc acgcgtttaa accgccaagc ttttcaattc atcttttttt 60

tttttgttct tttttttgat 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
tatatttttct tcatttaccg gcgcactctc gcccgaacga cctcaaaatg tctgctacat 1140
tcataataac caaaagctca taacttttttt 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

ggtccttttac 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> 23
<211> 10623
<212> DNA
<213> Artificial Sequence

<220>

<223> Synthetic: Integration construct i94

<400> 23
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 ttttttttccg 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

tttttttagg 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
catttttcat 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 tgaacccccc 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> 24
<211> 8479
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Integration construct i467

<400> 24
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 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 gttttttttc 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 ggtccttttcg 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
tttttgaata ttttttattt atatacgtat atatagacta ttatttatct tttaatgatt 4920
attaagattt ttattaaaaa aaaattcgct cctcttttaa tgcctttatg cagttttttt 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 tatttttttaa 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

taaatttttct 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> 25
<211> 5628
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: URA3 FcphI target site cassette

<400> 25
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 ctttgtgagc 960

gttgcgctcg tgcatcatgc gtccatcttt acagtcctgt cttattgttc ttgatttgtg 1020

ccccgtaaaa tactgttact tggttctggc gaggtattgg atagttcctt tttataaagg 1080

ccatgaagct ttttctttcc aatttttttt ttttcgtcat tatagaaatc attacgaccg 1140

agattcccgg gtaataactg atataattaa attgaagctc taatttgtga gtttagtata 1200

catgcattta cttataatac agtttttag ttttgctggc cgcatcttct caaatatgct 1260

tcccagcctg cttttctgta acgttcaccc tctaccttag catcccttcc ctttgcaaat 1320

agtcctcttc caacaataat aatgtcagat cctgtagaga ccacatcatc cacggttcta 1380

tactgttgac ccaatgcgtc tcccttgtca tctaaaccca caccgggtgt cataatcaac 1440

caatcgtaac cttcatctct tccacccatg tctctttgag caataaagcc gataacaaaa 1500

tctttgtcac tcttcgcaat gtcaacagta cccttagtat attctccagt agatagggag 1560

cccttgcatg acaattctgc taacatcaaa aggcctctag gttcctttgt tacttcttct 1620

gccgcctgct tcaaaccgct aacaatacct gggcccacca caccgtgtgc attcgtaatg 1680

tctgcccatt ctgctattct gtatacaccc gcagagtact gcaatttgac tgtattacca 1740

atgtcagcaa attttctgtc ttcgaagagt aaaaaattgt acttggcgga taatgccttt 1800

agcggcttaa ctgtgccctc catggaaaaa tcagtcaaga tatccacatg tgtttttagt 1860

aaacaaattt tgggacctaa tgcttcaact aactccagta attccttggt ggtacgaaca 1920

tccaatgaag cacacaagtt tgtttgcttt tcgtgcatga tattaaatag cttggcagca 1980

acaggactag gatgagtagc agcacgttcc ttatatgtag ctttcgacat gatttatctt 2040

cgtttcctgc aggtttttgt tctgtgcagt tgggttaaga atactgggca atttcatgtt 2100

tcttcaacac cacatatgcg tatatatacc aatctaagtc tgtgctcctt ccttcgttct 2160

tccttctgct cggagattac cgaatcaaaa aaatttcaaa gaaaccggaa tcaaaaaaaa 2220

gaacaaaaaa aaaaaagatg aattgaaaag ctttatggac cctgaaacca cagccacatt 2280

aaccttcttt gatggtcaaa acttatcctt caccataaat atgcctcgca aaaaaggtaa 2340

ttaacatata tagaattaca ttatttatga aatatcatca ctatctctta gcatctttaa 2400

tccttttcta catcagataa cttcggtttg ttatcatcgt ctgtattgtc atcaattggc 2460

gcagtagcct caatttcaac gtcgtttgac tctggtgttt gttcatgtgc agatccatga 2520

gatgatgaac ttgtgagcgt tgcgctcgtg catcaccata tacatatcca tatctaatct 2580

tacttatatg ttgtggaaat gtaaagagcc ccattatctt agcctaaaaa aaccttctct 2640

ttggaacttt cagtaatacg cttaactgct cattgctata ttgaagtacg gattagaagc 2700

cgccgagcgg gcgacagccc tccgacggaa gactctcctc cgtgcgtcct ggtcttcacc 2760

ggtcgcgttc ctgaaacgca gatgtgcctc gcgccgcact gctccgaaca ataaagattc 2820

tacaatacta gcttttatgg ttatgaagag gaaaaattgg cagtaacctg gccccacaaa 2880
ccttcaaatc aacgaatcaa attaacaacc ataggataat aatgcgatta gttttttagc 2940
cttatttctg gggtaattaa tcagcgaagc gatgattttt gatctattaa cagatatata 3000
aatgcaaaag ctgcataacc actttaacta atactttcaa cattttcggt ttgtattact 3060
tcttattcaa atgtcataaa agtatcaaca aaaaattgtt aatatacctc tatactttaa 3120
cgtcaaggag aaaaaactat aatgtcatta ccgttcttaa cttctgcacc gggaaaggtt 3180
attatttttg gtgaacactc tgctgtgtac aacaagcctg ccgtcgctgc tagtgtgtct 3240
gcgttgagaa cctacctgct aataagcgag tcatctgcac cagatactat tgaattggac 3300
ttcccggaca ttagctttaa tcataagtgg tccatcaatg atttcaatgc catcaccgag 3360
gatcaagtaa actcccaaaa attggccaag gctcaacaag ccaccgatgg cttgtctcag 3420
gaactcgtta gtcttttgga tccgttgtta gctcaactat ccgaatcctt ccactaccat 3480
gcagcgtttt gtttcctgta tatgtttgtt tgcctatgcc cccatgccaa gaatattaag 3540
ttttctttaa agtctacttt acccatcggt gctgggttgg gctcaagcgc ctctatttct 3600
gtatcactgg ccttagctat ggcctacttg ggggggttaa taggatctaa tgacttggaa 3660
aagctgtcag aaaacgataa gcatatagtg aatcaatggg ccttcatagg tgaaaagtgt 3720
attcacggta ccccttcagg aatagataac gctgtggcca cttatggtaa tgccctgcta 3780
tttgaaaaag actcacataa tggaacaata aacacaaaca attttaagtt cttagatgat 3840
ttcccagcca ttccaatgat cctaacctat actagaattc caaggtctac aaaagatctt 3900
gttgctcgcg ttcgtgtgtt ggtcaccgag aaatttcctg aagttatgaa gccaattcta 3960
gatgccatgg gtgaatgtgc cctacaaggc ttagagatca tgactaagtt aagtaaatgt 4020
aaaggcaccg atgacgaggc tgtagaaact aataatgaac tgtatgaaca actattggaa 4080
ttgataagaa taaatcatgg actgcttgtc tcaatcggtg tttctcatcc tggattagaa 4140
cttattaaaa atctgagcga tgatttgaga attggctcca caaaacttac cggtgctggt 4200
ggcggcggtt gctctttgac tttgttacga agagacatta ctcaagagca aattgacagt 4260
ttcaaaaaga aattgcaaga tgattttagt tacgagacat ttgaaacaga cttgggtggg 4320
actggctgct gtttgttaag cgcaaaaaat ttgaataaag atcttaaaat caaatcccta 4380
gtattccaat tatttgaaaa taaaactacc acaaagcaac aaattgacga tctattattg 4440
ccaggaaaca cgaatttacc atggacttca taagctaatt tgcgataggc attatttatt 4500
agttgttttt aatcttaact gtgtatgaag ttttatgtaa taaagataga aagagaaaca 4560
aaaaaaaatt tttcgtagta tcaattcagc tttcgaagac agaatgaaat ttaagcagac 4620
catcatcttg ccctgtgctt ggcccccagt gcagcgaacg ttataaaaac gaatactgag 4680

tatatatcta tgtaaaacaa ccatatcatt tcttgttctg aactttgttt acctaactag 4740

ttttaaattt ccctttttcg tgcatgcggg tgttcttatt tattagcata ctacatttga 4800

aatatcaaat ttccttagta gaaaagtgag agaaggtgca ctgacacaaa aaataaaatg 4860

ctacgtataa ctgtcaaaac tttgcagcag cgggcatcct tccatcatag cttcaaacat 4920

attagcgttc ctgatcttca tacccgtgct caaaatgatc aaacaaactg ttattgccaa 4980

gaaataaacg caaggctgcc ttcaaaaact gatccattag atcctcatat caagcttcct 5040

catagaacgc ccaattacaa taagcatgtt ttgctgttat caccgggtga taggtttgct 5100

caaccatgga aggtagcatg gaatcataat ttggatacta atacaaatcg gccatataat 5160

gccattagta aattgcgctc ccatttaggt ggttctccag gcaaatttga atactaataa 5220

atgcggtgca tttgcaaaat gaatttattc caaggccaaa acaacacgat gaatggcttt 5280

atttttttgt tattcctgac atgaagcttt atgtaattaa ggaaacggac atcgaggaat 5340

ttgcatcttt tttagatgaa ggagctattc aagcaccaaa gctatccttc caggattatt 5400

taagcggtaa ggccaaggct tcccaacagg ttcatgaagt gcatcataga aagcttacaa 5460

ggtttcaggg tgaaactttt ctaagagatt ggaacttagt ctgtgggcat tataagagag 5520

atgctaagtg tggagaaatg ggacccgaca taattgcagc atttcaagat gaaaagcttt 5580

ttcctgagaa taatctagcc ttaatttctc atattggggg tcatattt 5628

<210> 26
<211> 10019
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: HXT3 FcphI target site cassette

<400> 26
accggtatat caaatggcgg tgtagtttga aaagtacact gtatgtccat taataaaatt 60

acgccgaaga acactgacta gctataaatt ctcttccggc gtccaatttc aacctaaggc 120

aagtattgtt aatcaataat gcgtgttggt aaatatgaag cccgatgttg attaagaaga 180

attattcgta taagaattaa gcaagcaaaa ttaaggaaaa ttttttcttt cctattcgtc 240

atcgcagaca gccttcatct tctcgagata acacctggag gaggagcaat gaaatgaaag 300

gaaaaaaaaa tactttcttt ttcttgaaaa aagaaaaaaa ttgtaagatg agctattcgc 360

ggaacattct agctcgtttg catcttcttg catttggtag gttttcaata gttcggtaat 420

attaacggat acctactatt atcccctagt aggctctttt cacggagaaa ttcgggagtg 480

ttttttttcc gtgcgcattt tcttagctat attcttccag cttcgcctgc tgcccggtca 540

tcgttcctgt cacgtagttt ttccggattc gtccggctca tataataccg caataaacac 600

ggaatatctc gttccgcgga ttcggttaaa ctctcggtcg cggattatca cagagaaagc 660

ttcgtggaga atttttccag attttccgct ttccccgatg ttggtatttc cggaggtcat 720
tatactgacc gccattataa tgactgtaca acgaccttct ggagaaagaa acaactcaat 780
aacgatgtgg gacattgggg gcccactcaa aaaatctggg gactatatcc ccagagaatt 840
tctccagaag agaagaaaag tcaaagtttt ttttcgcttg ggggttgcat ataaattgtg 900
agcgttgcgc tcgtgcatcg tcgacactag taatacacat catcgtccta caagttcatc 960
aaagtgttgg acagacaact ataccagcat ggatctcttg tatcggttct tttctcccgc 1020
tctctcgcaa taacaatgaa cactgggtca atcatagcct acacaggtga acagagtagc 1080
gtttatacag ggtttatacg gtgattccta cggcaaaaat ttttcatttc taaaaaaaaa 1140
aagaaaaatt tttctttcca acgctagaag gaaaagaaaa atctaattaa attgatttgg 1200
tgattttctg agagttccct ttttcatata tcgaattttg aatataaaag gagatcgaaa 1260
aaatttttct attcaatctg ttttctggtt ttatttgata gttttttttgt gtattattat 1320
tatggattag tactggttta tatgggtttt tctgtataac ttctttttat tttagtttgt 1380
ttaatcttat tttgagttac attatagttc cctaactgca agagaagtaa cattaaaaat 1440
gaccactctt gacgacacgg cttaccggta ccgcaccagt gtcccggggg acgccgaggc 1500
catcgaggca ctggatgggt ccttcaccac cgacaccgtc ttccgcgtca ccgccaccgg 1560
ggacggcttc accctgcggg aggtgccggt ggacccgccc ctgaccaagg tgttccccga 1620
cgacgaatcg gacgacgaat cggacgccgg ggaggacggc gacccggact cccggacgtt 1680
cgtcgcgtac ggggacgacg gcgacctggc gggcttcgtg gtcgtctcgt actccggctg 1740
gaaccgccgg ctgaccgtcg aggacatcga ggtcgccccg gagcaccggg ggcacggggt 1800
cgggcgcgcg ttgatggggc tcgcgacgga gttcgcccgc gagcggggcg ccgggcacct 1860
ctggctggag gtcaccaacg tcaacgcacc ggcgatccac gcgtaccggc ggatggggtt 1920
caccctctgc ggcctggaca ccgccctgta cgacggcacc gcctcggacg gcgagcaggc 1980
gctctacatg agcatgccct gcccctgagt ttaacttgat actactagat tttttctctt 2040
catttataaa atttttggtt ataattgaag ctttagaagt atgaaaaaat ccttttttttt 2100
cattctttgc aaccaaaata agaagcttct tttattcatt gaaatgatga atataaacct 2160
aacaaaagaa aaagactcga atatcaaaca ttaaaaaaaa ataaaagagg ttatctgttt 2220
tcccatttag ttggagtttg cattttctaa tagatagaac tctcaattaa tgtggattta 2280
gtttctctgt tcgtttttttt ttgttttgtt ctcactgtat ttacatttct atttagtatt 2340
tagttattca tataatctta acttctcgag gagctcgatg cgtccatctt tacagtcctg 2400
tcttattgtt cttgatttgt gccccgtaaa atactgttac ttggttctgg cgaggtattg 2460
gatagttcct ttttataaag gccatgaagc tttttctttc caatttttttt tttttcgtca 2520

ttatagaaat cattacgacc gagattcccg ggtaataact gatataatta aattgaagct 2580

ctaatttgtg agtttagtat acatgcattt acttataata cagtttttta gttttgctgg 2640

ccgcatcttc tcaaatatgc ttcccagcct gcttttctgt aacgttcacc ctctacctta 2700

gcatcccttc cctttgcaaa tagtcctctt ccaacaataa taatgtcaga tcctgtagag 2760

accacatcat ccacggttct atactgttga cccaatgcgt ctcccttgtc atctaaaccc 2820

acaccgggtg tcataatcaa ccaatcgtaa ccttcatctc ttccacccat gtctctttga 2880

gcaataaagc cgataacaaa atctttgtca ctcttcgcaa tgtcaacagt acccttagta 2940

tattctccag tagataggga gcccttgcat gacaattctg ctaacatcaa aaggcctcta 3000

ggttcctttg ttacttcttc tgccgcctgc ttcaaaccgc taacaatacc tgggcccacc 3060

acaccgtgtg cattcgtaat gtctgcccat tctgctattc tgtatacacc cgcagagtac 3120

tgcaatttga ctgtattacc aatgtcagca aattttctgt cttcgaagag taaaaaattg 3180

tacttggcgg ataatgcctt tagcggctta actgtgccct ccatggaaaa atcagtcaag 3240

atatccacat gtgtttttag taaacaaatt ttgggaccta atgcttcaac taactccagt 3300

aattccttgg tggtacgaac atccaatgaa gcacacaagt ttgtttgctt ttcgtgcatg 3360

atattaaata gcttggcagc aacaggacta ggatgagtag cagcacgttc cttatatgta 3420

gctttcgaca tgatttatct tcgtttcctg caggtttttg ttctgtgcag ttgggttaag 3480

aatactgggc aatttcatgt ttcttcaaca ccacatatgc gtatatatac caatctaagt 3540

ctgtgctcct tccttcgttc ttccttctgc tcggagatta ccgaatcaaa aaaatttcaa 3600

agaaaccgga atcaaaaaaa agaacaaaaa aaaaaaagat gaattgaaaa gctttatgga 3660

ccctgaaacc acagccacat taaccttctt tgatggtcaa aacttatcct tcaccataaa 3720

tatgcctcgc aaaaaaggta attaacatat atagaattac attatttatg aaatatcatc 3780

actatctctt agcatcttta atccttttct acatcagata acttcggttt gttatcatcg 3840

tctgtattgt catcaattgg cgcagtagcc tcaatttcaa cgtcgtttga ctctggtgtt 3900

tgttcatgtg cagatccatg agatgatgaa cttgtgagcg ttgcgctcgt gcatccgctc 3960

gtccaacgcc ggcggacctc gctcgtccaa cgccggcgga cctcttttaa ttctgctgta 4020

acccgtacat gcccaaaata gggggcgggt tacacagaat atataacatc gtaggtgtct 4080

gggtgaacag tttattcctg gcatccacta aatataatgg agcccgcttt ttaagctggc 4140

atccagaaaa aaaaagaatc ccagcaccaa aatattgttt tcttcaccaa ccatcagttc 4200

ataggtccat tctcttagcg caactacaga gaacaggggc acaaacaggc aaaaaacggg 4260

cacaacctca atggagtgat gcaacctgcc tggagtaaat gatgacacaa ggcaattgac 4320

ccacgcatgt atctatctca ttttcttaca ccttctatta ccttctgctc tctctgattt 4380

ggaaaaagct gaaaaaaaag gttgaaacca gttccctgaa attattcccc tacttgacta 4440

ataagtatat aaagacggta ggtattgatt gtaattctgt aaatctattt cttaaacttc 4500
ttaaattcta cttttatagt tagtcttttt tttagtttta aaacaccaag aacttagttt 4560
cgatccccgc gtgcttggcc ggccgtatcc ccgcgtgctt ggccggccgt atgtctcaga 4620
acgtttacat tgtatcgact gccagaaccc caattggttc attccagggt tctctatcct 4680
ccaagacagc agtggaattg ggtgctgttg ctttaaaagg cgccttggct aaggttccag 4740
aattggatgc atccaaggat tttgacgaaa ttatttttgg taacgttctt tctgccaatt 4800
tgggccaagc tccggccaga caagttgctt tggctgccgg tttgagtaat catatcgttg 4860
caagcacagt taacaaggtc tgtgcatccg ctatgaaggc aatcattttg ggtgctcaat 4920
ccatcaaatg tggtaatgct gatgttgtcg tagctggtgg ttgtgaatct atgactaacg 4980
caccatacta catgccagca gcccgtgcgg gtgccaaatt tggccaaact gttcttgttg 5040
atggtgtcga aagagatggg ttgaacgatg cgtacgatgg tctagccatg ggtgtacacg 5100
cagaaaagtg tgcccgtgat tgggatatta ctagagaaca acaagacaat tttgccatcg 5160
aatcctacca aaaatctcaa aaatctcaaa aggaaggtaa attcgacaat gaaattgtac 5220
ctgttaccat taagggattt agaggtaagc ctgatactca agtcacgaag gacgaggaac 5280
ctgctagatt acacgttgaa aaattgagat ctgcaaggac tgttttccaa aaagaaaacg 5340
gtactgttac tgccgctaac gcttctccaa tcaacgatgg tgctgcagcc gtcatcttgg 5400
tttccgaaaa agttttgaag gaaaagaatt tgaagccttt ggctattatc aaaggttggg 5460
gtgaggccgc tcatcaacca gctgatttta catgggctcc atctcttgca gttccaaagg 5520
ctttgaaaca tgctggcatc gaagacatca attctgttga ttactttgaa ttcaatgaag 5580
ccttttcggt tgtcggtttg gtgaacacta agattttgaa gctagaccca tctaaggtta 5640
atgtatatgg tggtgctgtt gctctaggtc acccattggg ttgttctggt gctagagtgg 5700
ttgttacact gctatccatc ttacagcaag aaggaggtaa gatcggtgtt gccgccattt 5760
gtaatggtgg tggtggtgct tcctctattg tcattgaaaa gatatgatta cgttctgcga 5820
ttttctcatg atctttttca taaaatacat aaatatataa atggctttat gtataacagg 5880
cataatttaa agttttattt gcgattcatc gtttttcagg tactcaaacg ctgaggtgtg 5940
ccttttgact tacttttccg ccttggcaag ctggccgggt gatacttgca caagttccac 6000
taattactga catttgtggt attaactcgt ttgactgctc tacaattgta ggatgttaat 6060
caatgtcttg gctgcctaac ctgcaggccg cgagcgccga tatgctatgt aatagacaat 6120
aaaaccatgt ttatataaaa aaaattcaaa atagaaaacg attctgtaca aggagtattt 6180
tttttttgtt ctagtgtgtt tatattatcc ttggctaaga ggcactgcgt atacttcaag 6240
gtacccctgt gttttgaaaa aaaacaacag taaaatagga actccgcgag gttcaggaac 6300

ctgaaacaaa atcaataaaa acattatatg cgtttcgaac aaaattaaag aaaaagaata 6360

aatatagatt aaaaaaaaaa agaagaaatt aaaagaattt ctactaaatc ccaattgtta 6420

tatatttgtt aaatgccaaa aaagtttata aaaaatttag aatgtataaa taataataaa 6480

ctaagtaacg cgatcgccga cgccgccgat atctccctcg ccagcggccg ccttatggct 6540

aagaatgttg gaattttggc catggacatc tacttcccac caacttgtgt tcagcaggag 6600

gctttagaag cacatgacgg agcctcaaag ggtaagtaca caatcggatt aggacaggat 6660

tgcttagcat tctgcactga attggaggac gtcatctcaa tgtctttcaa cgccgtcacc 6720

tcattgttag agaagtacaa aatcgaccca aaccagatcg gaaggttgga agtcggttct 6780

gaaaccgtca tcgacaagtc taaatcaatc aagactttcg ttatgcagtt gttcgaaaag 6840

tgcggtaata ctgacgtcga gggtgtagac tctactaacg cttgttatgg tggtaccgca 6900

gctttattga actgcgtaaa ctgggttgag tcaaactcat gggatggtag gtacggatta 6960

gtcatttgca ccgattctgc cgtctacgcc gagggtccag caaggccaac cggtggagct 7020

gcagctattg ctatgttaat cggaccagat gcccctatag tcttcgagtc taagttgagg 7080

ggttcacaca tccctaacgt ctacgacttc tacaagccaa acttggcctc agagtatcca 7140

gttgtcgacg gaaagttatc tcagacatgc tacttgatgg ccttagattc atgttacaag 7200

cacttatgca acaagttcga aaagttggag ggaaaggagt tctcaattaa cgacgccgac 7260

tacttcgttt ttcactctcc atacaacaaa ttggtccaga agtcattcgc caggttattg 7320

tacaacgatt ttttgagaaa cgcatcatct atcgatgagg ccgccaagga gaaattcacc 7380

ccatattctt ctttgtcatt ggacgagtct taccagtcta gggacttgga gaaggtatca 7440

cagcaattgg ctaaaacctt ctatgacgcc aaagttcagc caaccacctt ggtccctaaa 7500

caggtcggaa atatgtatac tgcatctttg tatgccgcct ttgcctcttt gatccacaac 7560

aagcacaacg atttagtcgg aaaaagggtt gtcatgtttt cttacggtgc cggatctact 7620

gccactatgt tctcattgag gttatgcgaa aaccagtcac cattttcatt gtctaacatc 7680

gcctcagtca tggacgtagg tgtctcacct gagaagttcg tagaaaccat gaagttgatg 7740

gagcacagat acggtgccaa agaattcgtc acttcaaaag agggaatctt ggatttgttg 7800

gccccaggaa cctactattt gaaggaggtc gactctttgt acagaaggtt ctatggaaag 7860

aagggagacg acggatctgt cgcaaacggt cagtaaatcg gcggcgtcgg cgatcgcgtt 7920

aaggcggccg ctggcgaggg agatatttca acctgggcct aacagtaaag atatcctcct 7980

caaaactggt gcacttaatc gctgaatttg ttctggcttc tcttcttttt ctttattccc 8040

cccatgggcc aaaaaaaata gtactatcag gaatttggcg ccgggtcacg atatacgtgt 8100

acagtgacct aggcgacgcc acaaggaaaa aggaaaaaaa cagaaaaaac aacaaaaact 8160

aaaacaaaca cgaaaacttt aatagatcta agtgaagtag tggtgaggca attggagtga 8220

catagcagct actacaacta caaaaaaggc gcgccacggt cgtgcggata tgaaagaggt 8280
cgttatagct tctgccgtca ggaccgccat cggatcttac ggtaagtcat taaaggacgt 8340
ccctgccgtt gatttaggag ccaccgcaat taaagaggcc gttaaaaagg caggtataaa 8400
gccagaggac gtcaacgagg tcatcttggg aaatgtctta caagccggat taggtcaaaa 8460
cccagcaaga caagcatcat tcaaagccgg tttacctgtc gagatacctg caatgaccat 8520
caacaaggtt tgcggttcag gattaaggac cgtttcttta gcagcacaga tcattaaggc 8580
tggagatgca gacgttatca ttgctggtgg tatggaaaac atgtcaagag ccccatactt 8640
ggctaataac gccaggtggg gatataggat gggaaacgcc aagtttgtcg acgaaatgat 8700
tactgacgga ttgtgggacg ccttcaatga ctatcacatg ggtataaccg cagaaaacat 8760
tgccgagagg tggaatatct caagagaaga acaggatgag tttgcattgg cctcacagaa 8820
aaaagcagag gaggcaataa agtcaggtca gtttaaggat gaaatcgtcc cagtcgtcat 8880
caagggaaga aagggtgaga cagttgtcga caccgacgaa caccctagat ttggttcaac 8940
catcgaggga ttagcaaagt tgaagccagc cttcaagaaa gacggaaccg taaccgccgg 9000
taatgcatct ggattgaacg attgcgcagc agttttggtc ataatgtcag ccgagaaagc 9060
taaggagttg ggtgtcaagc cattggcaaa aattgtttca tacggatcag ccggtgtcga 9120
ccctgccatc atgggttacg gacctttttа cgccaccaag gctgcaatcg aaaaggccgg 9180
ttggaccgta gatgaattgg atttgatcga gtcaaacgag gcctttgccg cccaatcatt 9240
ggctgtcgcc aaggacttga agttcgacat gaacaaggtc aacgtcaacg gtggtgccat 9300
cgcattgggt caccctatcg gagcctctgg tgccaggatc ttggttacct tggtccacgc 9360
catgcagaag agggacgcaa agaagggttt ggccaccttg tgcatcggtg gaggtcaggg 9420
aacagctatc ttgttagaga aatgcagccc ctcagccccc ctagcgtcga ataaaagaca 9480
ttggtacatg atatcaaaca gaattttaac atttcttgat ccagtttgta aacaaaacaa 9540
acaatttttc taccatttaa cttcatacca tcggcgagag ccgaacagga aaaaaaagaa 9600
gtctccggtt atcgtaagca gtatcaaata ataagaatgt atgtgtgtgc aatttgttat 9660
acccacgaag aagtgcgcag tagagttaga aaaccaactg agtaatcttt actcccgaca 9720
atcgtccaat aatcctcttg ttgctaggaa cgtgatgatg gatttcgttt gaaatccgga 9780
cggaaaactc aaaagaagtc caaccaccaa ccattttcga gcctcaagaa tctctaagca 9840
ggtttcttta ctaaggggat ggcctttctg tcctggacat tttttccttc ctttttttcat 9900
ttccttgaaa ggaacagatt ttttttgact tttgccacac agctgcacta tctcaacccc 9960
ttttacattt taagttttcg ggttgaatgg ccggtgttta aaccccagcg cctggcggg 10019

<210> 27

<211> 5027
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Mat alpha FcphI target site cassette

<400> 27
tgatgtctgg gttttgtttg ggatgcaatt tattgcttcc caatgtagaa aagtacatca 60

tatgaaacaa cttaaactct taactacttc ttttaacctt cacttttat gaaatgtatc 120

aaccatatat aataacttaa tagacgacat tcacaatatg tttacttcga agcctgcttt 180

caaaattaag aacaaagcat ccaaatcata cagaaacaca gcggtttcaa aaaagctgaa 240

agaaaaacgt ctagctgagc atgtgaggcc aagctgcttc aatattattc gaccactcaa 300

gaaagatatc cagattcctg ttccttcctc tcgattttta aataaaatcc aaattcacag 360

gatagcgtct ggaagtcaaa atactcagtt tcgacagttc aataagacat ctataaaatc 420

ttcaaagaaa tatttaaact catttatggc ttttagagca tattactcac agtttggctc 480

cggtgtaaaa caaaatgtct tgtcttctct gctcgctgaa gaatggcacg cggacaaaat 540

gcagcacgga atatgggact acttcgcgca acagtataat tttataaacc ctggttttgg 600

ttttgtagag tggttgacga ataattatgc tgaagtacgt ggtgacggat attgggaaga 660

tgtgtttgta catttggcct tatagagtgt ggtcgtggcg gaggttgttt atctttcgag 720

tactgaatgt tgtcagtata gctatcctat ttgaaactcc ccatcgtctt gctcttgttc 780

ccaatgtttg tttatacact catatggcta tacccttatc tacttgcctc ttttgtttat 840

gtctatgtat ttgtataaaa tatgatatta ctcagactca agcaaacaat caatttgtga 900

gcgttgcgct cgtgcatcga gaagttaaga ttatatgaat aactaaatac taaatagaaa 960

tgtaaataca gtgagaacaa aacaaaaaaa aacgaacaga gaaactaaat ccacattaat 1020

tgagagttct atctattaga aaatgcaaac tccaactaaa tgggaaaaca gataacctct 1080

tttatttttt tttaatgttt gatattcgag tctttttctt ttgttaggtt tatattcatc 1140

atttcaatga ataaaagaag cttcttattt tggttgcaaa gaatgaaaaa aaaggatttt 1200

ttcatacttc taaagcttca attataacca aaaattttat aaatgaagag aaaaaatcta 1260

gtagtatcaa gttaaactta gaaaaactca tcgagcatca aatgaaactg caatttattc 1320

atatcaggat tatcaatacc atatttttga aaaagccgtt tctgtaatga aggagaaaac 1380

tcaccgaggc agttccatag gatggcaaga tcctggtatc ggtctgcgat tccgactcgt 1440

ccaacatcaa tacaacctat taatttcccc tcgtcaaaaa taaggttatc aagtgagaaa 1500

tcaccatgag tgacgactga atccggtgag aatggcaaaa gcttatgcat ttctttccag 1560

acttgttcaa caggccagcc attacgctcg tcatcaaaat cactcgcatc aaccaaaccg 1620

ttattcattc gtgattgcgc ctgagcgaga cgaaatacgc gatcgctgtt aaaaggacaa 1680

ttacaaacag gaatcgaatg caaccggcgc aggaacactg ccagcgcatc aacaatattt 1740
tcacctgaat caggatattc ttctaatacc tggaatgctg ttttgccggg gatcgcagtg 1800
gtgagtaacc atgcatcatc aggagtacgg ataaaatgct tgatggtcgg aagaggcata 1860
aattccgtca gccagtttag tctgaccatc tcatctgtaa catcattggc aacgctacct 1920
ttgccatgtt tcagaaacaa ctctggcgca tcgggcttcc catacaatcg atagattgtc 1980
gcacctgatt gcccgacatt atcgcgagcc catttatacc catataaatc agcatccatg 2040
ttggaattta atcgcggcct cgaaacgtga gtcttttcct tacccatttt taatgttact 2100
tctcttgcag ttagggaact ataatgtaac tcaaaataag attaaacaaa ctaaaataaa 2160
aagaagttat acagaaaaac ccatataaac cagtactaat ccataataat aatacacaaa 2220
aaaactatca aataaaacca gaaaacagat tgaatagaaa aatttttttcg atctcctttt 2280
atattcaaaa ttcgatatat gaaaaaggga actctcagaa aatcaccaaa tcaatttaat 2340
tagatttttc ttttccttct agcgttggaa agaaaaattt ttctttttttt ttttagaaat 2400
gaaaaatttt tgccgtagga atcaccgtat aaaccctgta taaacgctac tctgttcacc 2460
tgtgtaggct atgattgacc cagtgttcat tgttattgcg agagagcggg agaaaagaac 2520
cgatacaaga gatccatgct ggtatagttg tctgtccaac actttgatga acttgtagga 2580
cgatgatgtg tattactagt gtcgacatgc gtccatcttt acagtcctgt cttattgttc 2640
ttgatttgtg ccccgtaaaa tactgttact tggttctggc gaggtattgg atagttcctt 2700
tttataaagg ccatgaagct ttttctttcc aatttttttt ttttcgtcat tatagaaatc 2760
attacgaccg agattcccgg gtaataactg atataattaa attgaagctc taatttgtga 2820
gtttagtata catgcattta cttataatac agtttttttag ttttgctggc cgcatcttct 2880
caaatatgct tcccagcctg cttttctgta acgttcaccc tctaccttag catcccttcc 2940
ctttgcaaat agtcctcttc caacaataat aatgtcagat cctgtagaga ccacatcatc 3000
cacggttcta tactgttgac ccaatgcgtc tcccttgtca tctaaaccca caccgggtgt 3060
cataatcaac caatcgtaac cttcatctct tccacccatg tctctttgag caataaagcc 3120
gataacaaaa tctttgtcac tcttcgcaat gtcaacagta cccttagtat attctccagt 3180
agatagggag cccttgcatg acaattctgc taacatcaaa aggcctctag gttccttttgt 3240
tacttcttct gccgcctgct tcaaaccgct aacaatacct gggcccacca caccgtgtgc 3300
attcgtaatg tctgcccatt ctgctattct gtatacaccc gcagagtact gcaatttgac 3360
tgtattacca atgtcagcaa attttctgtc ttcgaagagt aaaaaattgt acttggcgga 3420
taatgccttt agcggcttaa ctgtgccctc catggaaaaa tcagtcaaga tatccacatg 3480
tgtttttagt aaacaaattt tgggacctaa tgcttcaact aactccagta attccttggt 3540

ggtacgaaca tccaatgaag cacacaagtt tgtttgcttt tcgtgcatga tattaaatag 3600

cttggcagca acaggactag gatgagtagc agcacgttcc ttatatgtag ctttcgacat 3660

gatttatctt cgtttcctgc aggtttttgt tctgtgcagt tgggttaaga atactgggca 3720

atttcatgtt tcttcaacac cacatatgcg tatatatacc aatctaagtc tgtgctcctt 3780

ccttcgttct tccttctgct cggagattac cgaatcaaaa aaatttcaaa gaaaccggaa 3840

tcaaaaaaaa gaacaaaaaa aaaaaagatg aattgaaaag ctttatggac cctgaaacca 3900

cagccacatt aaccttcttt gatggtcaaa acttatcctt caccataaat atgcctcgca 3960

aaaaaggtaa ttaacatata tagaattaca ttatttatga aatatcatca ctatctctta 4020

gcatctttaa tccttttcta catcagataa cttcggtttg ttatcatcgt ctgtattgtc 4080

atcaattggc gcagtagcct caatttcaac gtcgtttgac tctggtgttt gttcatgtgc 4140

agatccatga gatgatgaac ttgtgagcgt tgcgctcgtg catccggagg ttgtttatct 4200

ttcgagtact gaatgttgtc agtatagcta tcctatttga aactccccat cgtcttgctc 4260

ttgttcccaa tgtttgttta tacactcata tggctatacc cttatctact tgcctctttt 4320

gtttatgtct atgtatttgt ataaaatatg atattactca gactcaagca aacaatcaat 4380

tcttagcatc attctttgtt cttatcttaa ccataaacga tcttgatgtg acttttgtaa 4440

tttgaacgaa ttggctatac gggacggatg acaaatgcac cattactcta ggttgttgtt 4500

ggatcttaac aaaccgtaaa ggtaaactgc ccatgcggtt cacatgactt ttgactttcc 4560

tttgtttgct agttaccttc ggcttcacaa tttgtttttc cacttttcta acaggtttat 4620

caccttttcaa acttatcttt atcttattcg ccttcttggg tgcctccaca gtagaggtta 4680

cttccttttt aatatgtact tttaggatac tttcacgctt tataacaata tcaagtttac 4740

cttcttcatt actattcatc ttcgccacaa gtcttctctc ccttggtgtt tccaatctaa 4800

ctacaaaact gttgattagg gtgtacatca ccctaacaag atcatgtatt tgcttcctct 4860

ggtacaagct aagaacaggt aaattcaaaa catcccagag taatatcttc aaagggctat 4920

acccttttaaa catatctcgg catatttgta ttaacccact aatattttga cggccaatct 4980

tttctatttt tattttcata tcatcgacgt aatgaccact taaaaac 5027

<210> 28
<211> 6126
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: ADS_GAL80 donor cassette

<400> 28
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 ctcttcgagc 960
gtcccaaaac cttctcaagc aaggttttca gtataatgtt acatgcgtac acgcgtctgt 1020
acagaaaaaa aagaaaaatt tgaaatataa ataacgttct taatactaac ataactataa 1080
aaaaataaat agggacctag acttcaggtt gtctaactcc ttccttttcg gttagagcgg 1140
atcttagcta gcttaaatag acatgggata aactaataaa gacttaatta aatgcttgta 1200
ctcatctccc atacgagtga agttatcttt acccgcgtac tgcacttcca ggaattgaca 1260
aagatagata actgccatca gtaatggtct gggtatgttt ttagtggtca agtattctct 1320
gtttatgtcc ttccaaacgt cttcgacttc cttgtatatg agggtttgtg cgtattcctc 1380
atttacatta tattccttca tataagattc tagagaagat gatgagtgct ttctctcctg 1440
ttctgccttg tgcgtcatca agtcgtttag acgacgaccc aaaataccag aataccggaa 1500
tagtggtggc gctgacacgg cccattcaac tgattcttta gtgaaaatat ctgacatccc 1560
caggtaacat gtggttgtca gtaggttcgc tccaccagtt ataataacaa ctggatcgtg 1620
ttcttcagtg gtcggtatgt gcccttcgtt tgcccacttt gcttcgacca tgagattccg 1680
tacaaattcc ttaacaaact cttttccgca attaaataaa tctgttctcc cttcttttgc 1740
aagaaattcc tccatttctg tatacgtatc catgaataat ttatagatag gcttcatgta 1800
ttctggcagc gtatcaaggc aggtaatcga ccaacgttct acagcttcag tgaaaatttt 1860
taattcttca tatgttccat aagcatcgta agtatcatca atcagggtta taacggctac 1920
cactttggtg aagaaaactc gtgctcttga atattgtggt tcataaccag aacctaaacc 1980

ccagaaataa cactctacaa tgcggtcgcg caaacaaggt gcgttctttt ttatatcaaa 2040

tgctttccac catttacaga cgtggctaag ctcctccttg tgcaaagatt gcagcaggtt 2100

gaattctaat tttgctaatt ttaaaagcgt cttattatga gagtcttgtt gttggtagaa 2160

aggaatatac tgagcagctt ctatgcgggg aagacgcttc cataaaggtt gttttaatgc 2220

tctttgtatt tcggtaaaca aagccggatt agtggagaat gcatccttag tcattataga 2280

taatcgactt ctagtaaacc caagcgcgtc ttccaaaata atttcgcctg gaacccgcat 2340

ggaagtcgcc tcatataact ctaataaccc ttccacatca ttagccaatg attgtttaaa 2400

agcaccgttt ttatctttgt aattattgaa aacatcacag gtcacgtagt agccttgctt 2460

cctcatcaag cgaaaccata gtgaactgcg atctccattc cagttgtctc cgtatgtctc 2520

gtaaatacat tgaagagcat ggtcaatttc cctttcaaaa tggtatggaa ttcctagtct 2580

ctgtatttca tctattaatt ttaacaaatt agcatgcttc ataggaatgt ctaaggcttc 2640

cttcaggagc tgtcttactt ctttcttcag atcgtttaca atttgttcga ccccttgttc 2700

tacttgtttc tcataaatga gaaactgatc accccaaata gagggaggga aattggctat 2760

aggtctaatc ggtttctcct cggttagtgc catggatcct tcagttacag taaatgtttt 2820

agttgcatcg tcataggtcc attcaccatc aacaccatta tcattagcat attgcttaaa 2880

gacctttttcg gctgttgctg catctactgc ttcggtagta gtttcaccct tcaaagtttt 2940

accattcaaa attaatttat attgacccat ttatattgaa ttttcaaaaa ttcttacttt 3000

ttttttggat ggacgcaaag aagtttaata atcatattac atggcattac caccatatac 3060

atatccatat ctaatcttac ttatatgttg tggaaatgta aagagcccca ttatcttagc 3120

ctaaaaaaac cttctctttg gaactttcag taatacgctt aactgctcat tgctatattg 3180

aagtacggat tagaagccgc cgagcgggcg acagccctcc gacggaagac tctcctccgt 3240

gcgtcctcgt cttcaccggt cgcgttcctg aaacgcagat gtgcctcgcg ccgcactgct 3300

ccgaacaata aagattctac aatactagct tttatggtta tgaagaggaa aaattggcag 3360

taacctggcc ccacaaacct tcaaattaac gaatcaaatt aacaaccata ggatgataat 3420

gcgattagtt ttttagcctt atttctgggg taattaatca gcgaagcgat gatttttgat 3480

ctattaacag atatataaat ggaaaagctg cataaccact ttaactaata ctttcaacat 3540

tttcagtttg tattacttct tattcaaatg tcataaaagt atcaacaaaa aattgttaat 3600

atacctctat actttaacgt caaggagaaa aaactataat gtcattaccg ttcttaactt 3660

ctgcaccggg aaaggttatt atttttggtg aacactctgc tgtgtacaac aagcctgccg 3720

tcgctgctag tgtgtctgcg ttgagaacct acctgctaat aagcgagtca tctgcaccag 3780

atactattga attggacttc ccggacatta gctttaatca taagtggtcc atcaatgatt 3840

tcaatgccat caccgaggat caagtaaact cccaaaaatt ggccaaggct caacaagcca 3900

ccgatggctt gtctcaggaa ctcgttagtc ttttggatcc gttgttagct caactatccg 3960
aatccttcca ctaccatgca gcgttttgtt tcctgtatat gtttgtttgc ctatgccccc 4020
atgccaagaa tattaagttt tctttaaagt ctactttacc catcggtgct gggttgggct 4080
caagcgcctc tatttctgta tcactggcct tagctatggc ctacttgggg gggttaatag 4140
gatctaatga cttggaaaag ctgtcagaaa acgataagca tatagtgaat caatgggcct 4200
tcataggtga aaagtgtatt cacggtaccc cttcaggaat agataacgct gtggccactt 4260
atggtaatgc cctgctattt gaaaaagact cacataatgg aacaataaac acaaacaatt 4320
ttaagttctt agatgatttc ccagccattc caatgatcct aacctatact agaattccaa 4380
ggtctacaaa agatcttgtt gctcgcgttc gtgtgttggt caccgagaaa tttcctgaag 4440
ttatgaagcc aattctagat gccatgggtg aatgtgccct acaaggctta gagatcatga 4500
ctaagttaag taaatgtaaa ggcaccgatg acgaggctgt agaaactaat aatgaactgt 4560
atgaacaact attggaattg ataagaataa atcatggact gcttgtctca atcggtgttt 4620
ctcatcctgg attagaactt attaaaaatc tgagcgatga tttgagaatt ggctccacaa 4680
aacttaccgg tgctggtggc ggcggttgct ctttgacttt gttacgaaga gacattactc 4740
aagagcaaat tgacagtttc aaaaagaaat tgcaagatga ttttagttac gagacatttg 4800
aaacagactt gggtgggact ggctgctgtt tgttaagcgc aaaaaatttg aataaagatc 4860
ttaaaatcaa atccctagta ttccaattat ttgaaaataa aactaccaca aagcaacaaa 4920
ttgacgatct attattgcca ggaaacacga atttaccatg gacttcataa gctaatttgc 4980
gataggcatt atttattagt tgtttttaat cttaactgtg tatgaagttt tatgtaataa 5040
agatagaaag agaaacaaaa aaaaattttt cgtagtatca attcagcttt cgaagacaga 5100
atgaaattta agcagaccat tcatcttgcc ctgtgcttgg cccccagtgc agcgaacgtt 5160
ataaaaacga atactgagta tatatctatg taaaacaacc atatcatttc ttgttctgaa 5220
ctttgtttac ctaactagtt ttaaatttcc ctttttcgtg catgcgggtg ttcttattta 5280
ttagcatact acatttgaaa tatcaaattt ccttagtaga aaagtgagag aaggtgcact 5340
gacacaaaaa ataaaatgct acgtataact gtcaaaactt tgcagcagcg ggcatccttc 5400
catcatagct tcaaacatat tagcgttcct gatcttcata cccgtgctca aaatgatcaa 5460
acaaactgtt attgccaaga aataaacgca aggctgcctt caaaaactga tccattagat 5520
cctcatatca agcttcctca tagaacgccc aattacaata agcatgtttt gctgttatca 5580
ccgggtgata ggtttgctca accatggaag gtagcatgga atcataattt ggatactaat 5640
acaaatcggc catataatgc cattagtaaa ttgcgctccc atttaggtgg ttctccaggc 5700
aaatttgaat actaataaat gcggtgcatt tgcaaaatga atttattcca aggccaaaac 5760

aacacgatga atggctttat ttttttgtta ttcctgacat gaagctttat gtaattaagg 5820

aaacggacat cgaggaattt gcatcttttt tagatgaagg agctattcaa gcaccaaagc 5880

tatccttcca ggattattta agcggtaagg ccaaggcttc ccaacaggtt catgaagtgc 5940

atcatagaaa gcttacaagg tttcagggtg aaacttttct aagagattgg aacttagtct 6000

gtgggcatta taagagagat gctaagtgtg gagaaatggg acccgacata attgcagcat 6060

ttcaagatga aaagcttttt cctgagaata atctagcctt aatttctcat attgggggtc 6120

atattt 6126

<210> 29
<211> 9550
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: ADS_HXT3 donor cassette

<400> 29
accggtatat caaatggcgg tgtagtttga aaagtacact gtatgtccat taataaaatt 60

acgccgaaga acactgacta gctataaatt ctcttccggc gtccaatttc aacctaaggc 120

aagtattgtt aatcaataat gcgtgttggt aaatatgaag cccgatgttg attaagaaga 180

attattcgta taagaattaa gcaagcaaaa ttaaggaaaa ttttttcttt cctattcgtc 240

atcgcagaca gccttcatct tctcgagata acacctggag gaggagcaat gaaatgaaag 300

gaaaaaaaaa tactttcttt ttcttgaaaa aagaaaaaaa ttgtaagatg agctattcgc 360

ggaacattct agctcgtttg catcttcttg catttggtag gttttcaata gttcggtaat 420

attaacggat acctactatt atcccctagt aggctctttt cacggagaaa ttcgggagtg 480

ttttttttcc gtgcgcattt tcttagctat attcttccag cttcgcctgc tgcccggtca 540

tcgttcctgt cacgtagttt ttccggattc gtccggctca tataataccg caataaacac 600

ggaatatctc gttccgcgga ttcggttaaa ctctcggtcg cggattatca cagagaaagc 660

ttcgtggaga atttttccag attttccgct ttccccgatg ttggtatttc cggaggtcat 720

tatactgacc gccattataa tgactgtaca acgaccttct ggagaaagaa acaactcaat 780

aacgatgtgg gacattgggg gcccactcaa aaaatctggg gactatatcc ccagagaatt 840

tctccagaag agaagaaaag tcaaagtttt ttttcgcttg ggggttgcat ataaacttcg 900

agcgtcccaa aaccttctca agcaaggttt tcagtataat gttacatgcg tacacgcgtc 960

tgtacagaaa aaaaagaaaa atttgaaata taaataacgt tcttaatact aacataacta 1020

taaaaaaata aatagggacc tagacttcag gttgtctaac tccttccttt tcggttagag 1080

cggatcttag atagacatag ggtagaccaa caaagactta attaagtgct tatattcgtc 1140

acccattctg gtgaaattgt ctttaccagc gtattgaact tctaagaatt gacataaata 1200

gataacagcc attaacaatg gacgtggaat atttttggtg gtcaagtatt ctctgttaat 1260
atctttccaa acgtcttcaa cttccttgta aatcaaagtt tgagcgtatt cttcgttaac 1320
gttgtattcc ttcatgtaag attctaagga agaggaggag tgctttcttt cttgctcagc 1380
cttgtgagtc atcaaatcgt ttaatcttct acccaaaata ccagagtatc tgaacaaagg 1440
tggagcggaa acggcccatt caacagattc cttggtgaaa atatcagaca tacctaagta 1500
acaagtagta gtcaacaagt tagcaccacc agtaatgata acgactggat cgtgttcttc 1560
agtagttgga atatgacctt cgttagccca tttagcttca accatcaagt tacgaacgaa 1620
ttccttaacg aattccttac cacaattgaa caagtcggta cgaccttcct tagccaagaa 1680
ttcttccatt tcggtgtaag tgtccatgaa caacttataa attggcttca tgtattctgg 1740
taaagtatct aaacaggtaa tggaccatct ttcgacagct tcagtgaaaa tcttcaattc 1800
ttcgtaggta ccgtaagcgt cgtaagtgtc gtcaatcaag gtaataacag caaccacctt 1860
agtaaagaaa actctagctc tagagtattg tggttcgtaa ccggaaccca aaccccagaa 1920
gtaacattcg acaattctat ctctcaaaca tggagcgttc ttcttaatat cgaaggcttt 1980
ccaccactta caaacgtgag acaattcttc cttgtgcaag gattgcaaca agttaaattc 2040
caatttagcc aatttcaaca aggttttgtt gtgagagtct tgttgttggt agaatgggat 2100
gtattgagca gcttcgattc ttggcaaacg cttccacaat ggttgtttca aagctctttg 2160
gatttcagtg aacaaagctg ggttagtaga gaaggcatct ttagtcatga tggacaatct 2220
agatctagta aaacccaaag cgtcttccaa gatgatttca ccaggaactc tcatggaggt 2280
ggcttcatac aattctaaca aaccttcaac atcgttggcc aaagattgct taaaagcacc 2340
attcttatct ttgtagttgt tgaaaacgtc acaagtaacg tagtaacctt gctttctcat 2400
taatctgaac cataaggaag atctgtcacc gttccagtta tcaccgtaag tttcgtaaat 2460
acattgcaaa gcgtgatcaa tttctctttc gaaatggtat ggaataccta atctttggat 2520
ttcgtcgatt aatttcaata agttagcgtg cttcattggg atgtccaaag cttccttcaa 2580
caattgtcta acttccttct tcaaatcgtt aacgatttgt tcaacacctt gctcaacttg 2640
cttttcgtag atcaagaatt ggtcacccca gatagaaggt ggaaaattag caattggtct 2700
gattggtttt tcttcagtca aagccatgga tccttcagtt acagtaaatg ttttagttgc 2760
atcgtcatag gtccattcac catcaacacc attatcatta gcatattgct taaagacctt 2820
ttcggctgtt gctgcatcta ctgcttcggt agtagtttca cccttcaaag ttttaccatt 2880
caaaattaat ttatattgac ccatttatat tgaattttca aaaattctta ctttttttt 2940
ggatggacgc aaagaagttt aataatcata ttacatggca ttaccaccat atacatatcc 3000
atatctaatc ttacttatat gttgtggaaa tgtaaagagc cccattatct tagcctaaaa 3060

aaaccttctc tttggaactt tcagtaatac gcttaactgc tcattgctat attgaagtac 3120

ggattagaag ccgccgagcg ggcgacagcc ctccgacgga agactctcct ccgtgcgtcc 3180

tcgtcttcac cggtcgcgtt cctgaaacgc agatgtgcct cgcgccgcac tgctccgaac 3240

aataaagatt ctacaatact agcttttatg gttatgaaga ggaaaaattg gcagtaacct 3300

ggccccacaa accttcaaat taacgaatca aattaacaac cataggatga taatgcgatt 3360

agtttttag ccttatttct ggggtaatta atcagcgaag cgatgatttt tgatctatta 3420

acagatatat aaatggaaaa gctgcataac cactttaact aatactttca acattttcag 3480

tttgtattac ttcttattca aatgtcataa aagtatcaac aaaaaattgt taatatttta 3540

attctgctgt aacccgtaca tgcccaaaat agggggcggg ttacacagaa tatataacat 3600

cgtaggtgtc tgggtgaaca gtttattcct ggcatccact aaatataatg gagcccgctt 3660

tttaagctgg catccagaaa aaaaaagaat cccagcacca aaatattgtt ttcttcacca 3720

accatcagtt cataggtcca ttctcttagc gcaactacag agaacagggg cacaaacagg 3780

caaaaaacgg gcacaacctc aatggagtga tgcaacctgc ctggagtaaa tgatgacaca 3840

aggcaattga cccacgcatg tatctatctc attttcttac accttctatt accttctgct 3900

ctctctgatt tggaaaaagc tgaaaaaaaa ggttgaaacc agttccctga aattattccc 3960

ctacttgact aataagtata taaagacggt aggtattgat tgtaattctg taaatctatt 4020

tcttaaactt cttaaattct acttttatag ttagtctttt ttttagtttt aaaacaccaa 4080

gaacttagtt tcgatccccg cgtgcttggc cggccgtatc cccgcgtgct tggccggccg 4140

tatgtctcag aacgtttaca ttgtatcgac tgccagaacc ccaattggtt cattccaggg 4200

ttctctatcc tccaagacag cagtggaatt gggtgctgtt gctttaaaag gcgccttggc 4260

taaggttcca gaattggatg catccaagga ttttgacgaa attatttttg gtaacgttct 4320

ttctgccaat ttgggccaag ctccggccag acaagttgct ttggctgccg gtttgagtaa 4380

tcatatcgtt gcaagcacag ttaacaaggt ctgtgcatcc gctatgaagg caatcatttt 4440

gggtgctcaa tccatcaaat gtggtaatgc tgatgttgtc gtagctggtg gttgtgaatc 4500

tatgactaac gcaccatact acatgccagc agcccgtgcg ggtgccaaat ttggccaaac 4560

tgttcttgtt gatggtgtcg aaagagatgg gttgaacgat gcgtacgatg gtctagccat 4620

gggtgtacac gcagaaaagt gtgcccgtga ttgggatatt actagagaac aacaagacaa 4680

ttttgccatc gaatcctacc aaaaatctca aaaatctcaa aaggaaggta aattcgacaa 4740

tgaaattgta cctgttacca ttaagggatt tagaggtaag cctgatactc aagtcacgaa 4800

ggacgaggaa cctgctagat tacacgttga aaaattgaga tctgcaagga ctgttttcca 4860

aaaagaaaac ggtactgtta ctgccgctaa cgcttctcca atcaacgatg gtgctgcagc 4920

cgtcatcttg gtttccgaaa aagttttgaa ggaaaagaat ttgaagcctt tggctattat 4980

caaaggttgg ggtgaggccg ctcatcaacc agctgatttt acatgggctc catctcttgc 5040
agttccaaag gctttgaaac atgctggcat cgaagacatc aattctgttg attactttga 5100
attcaatgaa gccttttcgg ttgtcggttt ggtgaacact aagattttga agctagaccc 5160
atctaaggtt aatgtatatg gtggtgctgt tgctctaggt cacccattgg gttgttctgg 5220
tgctagagtg gttgttacac tgctatccat cttacagcaa gaaggaggta agatcggtgt 5280
tgccgccatt tgtaatggtg gtggtggtgc ttcctctatt gtcattgaaa agatatgatt 5340
acgttctgcg attttctcat gatctttttc ataaaatata taaatatata aatggcttta 5400
tgtataacag gcataattta aagttttatt tgcgattcat cgtttttcag gtactcaaac 5460
gctgaggtgt gccttttgac ttacttttcc gccttggcaa gctggccggg tgatacttgc 5520
acaagttcca ctaattactg acatttgtgg tattaactcg tttgactgct ctacaattgt 5580
aggatgttaa tcaatgtctt ggctgcctaa cctgcaggcc gcgagcgccg atatgctatg 5640
taatagacaa taaaaccatg tttatataaa aaaaattcaa aatagaaaac gattctgtac 5700
aaggagtatt tttttttgt tctagtgtgt ttatattatc cttggctaag aggcactgcg 5760
tatacttcaa ggtacccctg tgttttgaaa aaaaacaaca gtaaaatagg aactccgcga 5820
ggttcaggaa cctgaaacaa aatcaataaa aacattatat gcgtttcgaa caaaattaaa 5880
gaaaaagaat aaatatagat taaaaaaaaa aagaagaaat taaaagaatt tctactaaat 5940
cccaattgtt atatatttgt taaatgccaa aaaagtttat aaaaaattta gaatgtataa 6000
ataataataa actaagtaac gcgatcgccg acgccgccga tatctccctc gccagcggcc 6060
gccttatggc taagaatgtt ggaattttgg ccatggacat ctacttccca ccaacttgtg 6120
ttcagcagga ggctttagaa gcacatgacg gagcctcaaa gggtaagtac acaatcggat 6180
taggacagga ttgcttagca ttctgcactg aattggagga cgtcatctca atgtctttca 6240
acgccgtcac ctcattgtta gagaagtaca aaatcgaccc aaaccagatc ggaaggttgg 6300
aagtcggttc tgaaaccgtc atcgacaagt ctaaatcaat caagactttc gttatgcagt 6360
tgttcgaaaa gtgcggtaat actgacgtcg agggtgtaga ctctactaac gcttgttatg 6420
gtggtaccgc agctttattg aactgcgtaa actgggttga gtcaaactca tgggatggta 6480
ggtacggatt agtcatttgc accgattctg ccgtctacgc cgagggtcca gcaaggccaa 6540
ccggtggagc tgcagctatt gctatgttaa tcggaccaga tgcccctata gtcttcgagt 6600
ctaagttgag gggttcacac atccctaacg tctacgactt ctacaagcca aacttggcct 6660
cagagtatcc agttgtcgac ggaaagttat ctcagacatg ctacttgatg gccttagatt 6720
catgttacaa gcacttatgc aacaagttcg aaaagttgga gggaaaggag ttctcaatta 6780
acgacgccga ctacttcgtt tttcactctc catacaacaa attggtccag aagtcattcg 6840

ccaggttatt gtacaacgat tttttgagaa acgcatcatc tatcgatgag gccgccaagg 6900

agaaattcac cccatattct tctttgtcat tggacgagtc ttaccagtct agggacttgg 6960

agaaggtatc acagcaattg gctaaaacct tctatgacgc caaagttcag ccaaccacct 7020

tggtccctaa acaggtcgga aatatgtata ctgcatcttt gtatgccgcc tttgcctctt 7080

tgatccacaa caagcacaac gatttagtcg gaaaaagggt tgtcatgttt tcttacggtg 7140

ccggatctac tgccactatg ttctcattga ggttatgcga aaaccagtca ccattttcat 7200

tgtctaacat cgcctcagtc atggacgtag gtgtctcacc tgagaagttc gtagaaacca 7260

tgaagttgat ggagcacaga tacggtgcca aagaattcgt cacttcaaaa gagggaatct 7320

tggatttgtt ggccccagga acctactatt tgaaggaggt cgactctttg tacagaaggt 7380

tctatggaaa gaagggagac gacggatctg tcgcaaacgg tcagtaaatc ggcggcgtcg 7440

gcgatcgcgt taaggcggcc gctggcgagg gagatatttc aacctgggcc taacagtaaa 7500

gatatcctcc tcaaaactgg tgcacttaat cgctgaattt gttctggctt ctcttctttt 7560

tctttattcc ccccatgggc caaaaaaaat agtactatca ggaatttggc gccgggtcac 7620

gatatacgtg tacagtgacc taggcgacgc cacaaggaaa aaggaaaaaa acagaaaaaa 7680

caacaaaaac taaaacaaac acgaaaactt taatagatct aagtgaagta gtggtgaggc 7740

aattggagtg acatagcagc tactacaact acaaaaaagg cgcgccacgg tcgtgcggat 7800

atgaaagagg tcgttatagc ttctgccgtc aggaccgcca tcggatctta cggtaagtca 7860

ttaaaggacg tccctgccgt tgatttagga gccaccgcaa ttaaagaggc cgttaaaaag 7920

gcaggtataa agccagagga cgtcaacgag gtcatcttgg gaaatgtctt acaagccgga 7980

ttaggtcaaa acccagcaag acaagcatca ttcaaagccg gtttacctgt cgagatacct 8040

gcaatgacca tcaacaaggt ttgcggttca ggattaagga ccgtttcttt agcagcacag 8100

atcattaagg ctggagatgc agacgttatc attgctggtg gtatggaaaa catgtcaaga 8160

gccccatact tggctaataa cgccaggtgg ggatatagga tgggaaacgc caagtttgtc 8220

gacgaaatga ttactgacgg attgtgggac gccttcaatg actatcacat gggtataacc 8280

gcagaaaaca ttgccgagag gtggaatatc tcaagagaag aacaggatga gtttgcattg 8340

gcctcacaga aaaaagcaga ggaggcaata aagtcaggtc agtttaagga tgaaatcgtc 8400

ccagtcgtca tcaagggaag aaagggtgag acagttgtcg acaccgacga acaccctaga 8460

tttggttcaa ccatcgaggg attagcaaag ttgaagccag ccttcaagaa agacggaacc 8520

gtaaccgccg gtaatgcatc tggattgaac gattgcgcag cagttttggt cataatgtca 8580

gccgagaaag ctaaggagtt gggtgtcaag ccattggcaa aaattgtttc atacggatca 8640

gccggtgtcg accctgccat catgggttac ggacctttt acgccaccaa ggctgcaatc 8700

gaaaaggccg gttggaccgt agatgaattg gatttgatcg agtcaaacga ggcctttgcc 8760

gcccaatcat tggctgtcgc caaggacttg aagttcgaca tgaacaaggt caacgtcaac 8820

ggtggtgcca tcgcattggg tcaccctatc ggagcctctg gtgccaggat cttggttacc 8880

ttggtccacg ccatgcagaa gagggacgca aagaagggtt tggccacctt gtgcatcggt 8940

ggaggtcagg gaacagctat cttgttagag aaatgcagcc cctcagcccc cctagcgtcg 9000

aataaaagac attggtacat gatatcaaac agaattttaa catttcttga tccagtttgt 9060

aaacaaaaca aacaattttt ctaccattta acttcatacc atcggcgaga gccgaacagg 9120

aaaaaaaaga agtctccggt tatcgtaagc agtatcaaat aataagaatg tatgtgtgtg 9180

caatttgtta tacccacgaa gaagtgcgca gtagagttag aaaaccaact gagtaatctt 9240

tactcccgac aatcgtccaa taatcctctt gttgctagga acgtgatgat ggatttcgtt 9300

tgaaatccgg acggaaaact caaaagaagt ccaaccacca accattttcg agcctcaaga 9360

atctctaagc aggtttcttt actaagggga tggcctttct gtcctggaca ttttttcctt 9420

ccttttttca tttccttgaa aggaacagat tttttttgac ttttgccaca cagctgcact 9480

atctcaaccc cttttacatt ttaagttttc gggttgaatg gccggtgttt aaaccccagc 9540

gcctggcggg 9550

<210> 30
<211> 4429
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: ADS_Mat alpha donor cassette

<400> 30
tgatgtctgg gttttgtttg ggatgcaatt tattgcttcc caatgtagaa aagtacatca 60

tatgaaacaa cttaaactct taactacttc ttttaacctt cacttttttat gaaatgtatc 120

aaccatatat aataacttaa tagacgacat tcacaatatg tttacttcga agcctgcttt 180

caaaattaag aacaaagcat ccaaatcata cagaaacaca gcggtttcaa aaaagctgaa 240

agaaaaacgt ctagctgagc atgtgaggcc aagctgcttc aatattattc gaccactcaa 300

gaaagatatc cagattcctg ttccttcctc tcgattttta aataaaatcc aaattcacag 360

gatagcgtct ggaagtcaaa atactcagtt tcgacagttc aataagacat ctataaaatc 420

ttcaaagaaa tatttaaact catttatggc ttttagagca tattactcac agtttggctc 480

cggtgtaaaa caaaatgtct tgtcttctct gctcgctgaa gaatggcacg cggacaaaat 540

gcagcacgga atatgggact acttcgcgca acagtataat tttataaacc ctggttttgg 600

ttttgtagag tggttgacga ataattatgc tgaagtacgt ggtgacggat attgggaaga 660

tgtgtttgta catttggcct tatagagtgt ggtcgtggcg gaggttgttt atctttcgag 720

tactgaatgt tgtcagtata gctatcctat ttgaaactcc ccatcgtctt gctcttgttc 780

ccaatgtttg tttatacact catatggcta tacccttatc tacttgcctc ttttgtttat 840

gtctatgtat ttgtataaaa tatgatatta ctcagactca agcaaacaat caattttcaa 900

aaattcttac ttttttttg gatggacgca aagaagttta ataatcatat tacatggcat 960

taccaccata tacatatcca tatacatatc catatctaat cttacttata tgttgtggaa 1020

atgtaaagag ccccattatc ttagcctaaa aaaaccttct ctttggaact ttcagtaata 1080

cgcttaactg ctcattgcta tattgaagta cggattagaa gccgccgagc gggtgacagc 1140

cctccgaagg aagactctcc tccgtgcgtc ctcgtcttca ccggtcgcgt tcctgaaacg 1200

cagatgtgcc tcgcgccgca ctgctccgaa caataaagat tctacaatac tagcttttat 1260

ggttatgaag aggaaaaatt ggcagtaacc tggccccaca aaccttcaaa tgaacgaatc 1320

aaattaacaa ccataggatg ataatgcgat tagtttttta gccttatttc tggggtaatt 1380

aatcagcgaa gcgatgattt ttgatctatt aacagatata taaatgcaaa aactgcataa 1440

ccactttaac taatactttc aacattttcg gtttgtatta cttcttattc aaatgtaata 1500

aaagtatcaa caaaaaattg ttaatatacc tctatacttt aacgtcaagg agaaaaaacc 1560

ccggatccat gggtcaatat aaattaattt tgaatggtaa aactttgaag ggtgaaacta 1620

ctaccgaagc agtagatgca gcaacagccg aaaaggtctt taagcaatat gctaatgata 1680

atggtgttga tggtgaatgg acctatgacg atgcaactaa aacatttact gtaactgaag 1740

gatccatggc cttaacagaa gagaagccaa tcagacccat agccaacttc cctccatcaa 1800

tatggggtga tcaatttctt atatacgaaa agcaagttga acaaggtgtc gaacaaatcg 1860

tcaacgatct aaagaaggag gtcaggcagt tattaaaaga agctctggac ataccgatga 1920

aacatgctaa tctactaaaa ttaattgatg agattcaaag attgggcatc ccttatcact 1980

tcgagagaga gattgatcat gcattgcaat gtatatacga gacgtacggt gataactgga 2040

acggagatag gagtagtcta tggttcaggt tgatgagaaa gcaaggctac tatgtgacat 2100

gcgatgtctt taataactat aaggacaaaa atggtgcatt taagcaatct ctagccaacg 2160

atgttgaagg tttattagaa ttatatgaag ccacaagcat gagagtccca ggagagatca 2220

tattggaaga tgctctaggg ttcacacgtt ctagattgtc aataatgacc aaggacgcat 2280

tcagtactaa ccctgcgtta ttcactgaaa tccaaagggc actaaagcaa cctctttgga 2340

aaagattgcc tcgtattgaa gcagcacaat atataccctt ctatcagcag caggactctc 2400

acaacaaaac tctacttaaa ttagcaaagt tagaattcaa tttgttgcaa agtttacata 2460

aggaagaatt atctcacgta tgcaaatggt ggaaagcttt cgatattaag aagaacgccc 2520

catgcctgag agacagaata gttgagtgtt atttctgggg tctgggttcc ggttatgaac 2580

cacaatattc tagggccaga gtctttttta ccaaagttgt cgcggtcata actttaatcg 2640

acgatactta tgatgcttat ggtacctacg aggagttaaa gatattcacc gaagctgtgg 2700
aaaggtggtc tataacttgc ttggacaccc taccagaata tatgaaacca atttacaaat 2760
tgtttatgga tacttatact gaaatggagg aattcctggc aaaagaaggt agaactgatt 2820
tgtttaattg cggtaaggaa tttgtgaagg aattcgtaag aaacttaatg gtcgaggcaa 2880
aatgggccaa cgaaggacac attccaacaa ccgaagagca tgatcctgtc gtgataatca 2940
ccggtggcgc taacctacta accactacct gctacctagg tatgtctgat atcttcacaa 3000
aagagagtgt tgaatgggca gttagtgctc cgcctttgtt caggtatagc ggtatacttg 3060
gcaggcgttt aaatgatctt atgacccata aagccgaaca agaaagaaaa cactcaagct 3120
cctctcttga atcctatatg aaggaataca atgttaacga ggaatatgcg caaactttaa 3180
tatacaagga ggtggaagat gtgtggaaag atatcaacag agaatatctt actacaaaga 3240
acataccccg tccacttttg atggcagtga tttacttgtg tcagttctta gaggtacaat 3300
acgctggtaa ggataacttt acaagaatgg gcgacgaata caaacatttg atcaagtcat 3360
tattagttta tcccatgtcc atctaagcta gctaagatcc gctctaaccg aaaaggaagg 3420
agttagacaa cctgaagtct aggtccctat ttatttttt atagttatgt tagtattaag 3480
aacgttattt atatttcaaa tttttctttt ttttctgtac agacgcgtgt acgcatgtaa 3540
cattatactg aaaaccttgc ttgagaaggt tttgggacgc tcgaagcgga ggttgtttat 3600
ctttcgagta ctgaatgttg tcagtatagc tatcctattt gaaactcccc atcgtcttgc 3660
tcttgttccc aatgtttgtt tatacactca tatggctata cccttatcta cttgcctctt 3720
ttgtttatgt ctatgtattt gtataaaata tgatattact cagactcaag caaacaatca 3780
attcttagca tcattctttg ttcttatctt aaccataaac gatcttgatg tgacttttgt 3840
aatttgaacg aattggctat acgggacgga tgacaaatgc accattactc taggttgttg 3900
ttggatctta acaaaccgta aaggtaaact gcccatgcgg ttcacatgac ttttgacttt 3960
cctttgtttg ctagttacct tcggcttcac aatttgtttt tccacttttc taacaggttt 4020
atcacctttc aaacttatct ttatcttatt cgccttcttg ggtgcctcca cagtagaggt 4080
tacttccttt ttaatatgta cttttaggat actttcacgc tttataacaa tatcaagttt 4140
accttcttca ttactattca tcttcgccac aagtcttctc tcccttggtg tttccaatct 4200
aactacaaaa ctgttgatta gggtgtacat caccctaaca agatcatgta tttgcttcct 4260
ctggtacaag ctaagaacag gtaaattcaa aacatcccag agtaatatct tcaaagggct 4320
atacccttta aacatatctc ggcatatttg tattaaccca ctaatatttt gacggccaat 4380
cttttctatt tttattttca tatcatcgac gtaatgacca cttaaaaac 4429

<210> 31

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

<220>
<223> Synthetic: Primer CUT24

<400> 31
gtttcttttg gattgcgctt gcc 23

<210> 32
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Primer ART12

<400> 32
tactgacaac cacatgttac 20

<210> 33
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Primer ART45

<400> 33
tactgcttcg gtagtagttt caccccttca 29

<210> 34
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Primer ART210

<400> 34
gggaagtcca attcaatagt 20

<210> 35
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Primer HJ207

<400> 35
catcttctcg agataacacc tggag 25

<210> 36
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Primer KB349

<400> 36
acgcgtgtac gcatgtaac 19

<210> 37
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Primer HJ602

<400> 37
caattggggt tctggcagtc 20

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

<220>
<223> Synthetic: Primer CUT76

<400> 38
gaagcctgct ttcaaaatta agaacaaagc 30

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

<220>
<223> Synthetic: Primer HJ362

<400> 39
gaatttacct gttcttagct tgtaccagag 30

<210> 40
<211> 6523
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: ADS_HIS3 donor cassette

<400> 40
attgtgaggg tcagttattt catccagata taacccgaga ggaaacttct tagcgtctgt 60

tttcgtacca taaggcagtt catgaggtat attttcgtta ttgaagccca gctcgtgaat 120

gcttaatgct gctgaactgg tgtccatgtc gcctaggtac gcaatctcca caggctgcaa 180

aggttttgtc tcaagagcaa tgttattgtg caccccgtaa ttggtcaaca agtttaatct 240

gtgcttgtcc accagctctg tcgtaacctt cagttcatcg actatctgaa gaaatttact 300

aggaatagtg ccatggtaca gcaaccgaga atggcaattt ctactcgggt tcagcaacgc 360

tgcataaacg ctgttggtgc cgtagacata ttcgaagata ggattatcat tcataagttt 420

cagagcaatg tccttattct ggaacttgga tttatggctc ttttggttta atttcgcctg 480

attcttgatc tcctttagct tctcgacgtg ggccttttttc ttgccatatg gatccgctgc 540

acggtcctgt tccctagcat gtacgtgagc gtatttcctt ttaaaccacg acgctttgtc 600

ttcattcaac gtttcccatt gttttttttct actattgctt tgctgtggga aaaacttatc 660

gaaagatgac gacttttttct taattctcgt tttaagagct tggtgagcgc taggagtcac 720

tgccaggtat cgtttgaaca cggcattagt cagggaagtc ataacacagt cctttcccgc 780

aattttcttt ttctattact cttggcctcc tctagtacac tctatatttt tttatgcctc 840

ggtaatgatt ttcatttttt ttttttccac ctagcggatg actcttttttt tttcttagcg 900

attggcatta tcacataatg aattatacat tatataaagt aatgtgattt cttcgaagaa 960

tatactaaaa aaatcgttat tgtcttgaag gtgaaatttc tactcttatt aatggtgaac 1020

gttaagctga tgctatgatg gaagctgatt ggtcttaact tgcttgtcat cttgctaatg 1080

gtcattggct cgtgttatta cttaagttat ttgtactcgt tttgaacgta atgctaatga 1140

tcatcttatg gaataatagt gagtggtttc agggtccata aagcttttca attcatcttt 1200

ttttttttttg ttctttttttt tgattccggt ttctttgaaa tttttttgat tcggtaatct 1260

ccgagcagaa ggaagaacga aggaaggagc acagacttag attggtatat atacgcatat 1320

gtggtgttga agaaacatga aattgcccag tattcttaac ccaactgcac agaacaaaaa 1380

cctgcaggaa acgaagataa atcatgtcga aagctacata taaggaacgt gctgctactc 1440

atcctagtcc tgttgctgcc aagctattta atatcatgca cgaaaagcaa acaaacttgt 1500

gtgcttcatt ggatgttcgt accaccaagg aattactgga gttagttgaa gcattaggtc 1560

ccaaaatttg tttactaaaa acacatgtgg atatcttgac tgatttttcc atggagggca 1620

cagttaagcc gctaaaggca ttatccgcca agtacaattt tttactcttc gaagacagaa 1680

aatttgctga cattggtaat acagtcaaat tgcagtactc tgcgggtgta tacagaatag 1740

cagaatgggc agacattacg aatgcacacg gtgtggtggg cccaggtatt gttagcggtt 1800

tgaagcaggc ggcggaagaa gtaacaaagg aacctagagg ccttttgatg ttagcagaat 1860

tgtcatgcaa gggctcccta gctactggag aatatactaa gggtactgtt gacattgcga 1920

agagtgacaa agattttgtt atcggcttta ttgctcaaag agacatgggt ggaagagatg 1980

aaggttacga ttggttgatt atgacacccg gtgtgggttt agatgacaag ggagacgcat 2040

tgggtcaaca gtatagaacc gtggatgatg tggtctctac aggatctgac attattattg 2100

ttggaagagg actatttgca aagggaaggg atgctaaggt agagggtgaa cgttacagaa 2160

aagcaggctg ggaagcatat ttgagaagat gcggccagca aaactaaaaa actgtattat 2220

aagtaaatgc atgtatacta aactcacaaa ttagagcttc aatttaatta tatcagttat 2280
taccacgaaa atcgttattg tcttgaaggt gaaatttcta ctcttattaa tggtgaacgt 2340
taagctgatg ctatgatgga agctgattgg tcttaacttg cttgtcatct tgctaatggt 2400
catatggctc gtgttattac ttaagttatt tgtactcgtt ttgaacgtaa tgctaatgat 2460
catcttatgc ttcgagcgtc ccaaaacctt ctcaagcaag gttttcagta taatgttaca 2520
tgcgtacacg cgtctgtaca gaaaaaaaag aaaaatttga aatataaata acgttcttaa 2580
tactaacata actataaaaa aataaatagg gacctagact tcaggttgtc taactccttc 2640
cttttcggtt agagcggatc ttagctagct tagctagctt agatagacat agggtagacc 2700
aacaaagact taattaagtg cttatattcg tcacccattc tggtgaaatt gtctttacca 2760
gcgtattgaa cttctaagaa ttgacataaa tagataacag ccattaacaa tggacgtgga 2820
atatttttgg tggtcaagta ttctctgtta atatctttcc aaacgtcttc aacttccttg 2880
taaatcaaag tttgagcgta ttcttcgtta acgttgtatt ccttcatgta agattctaag 2940
gaagaggagg agtgctttct ttcttgctca gccttgtgag tcatcaaatc gtttaatctt 3000
ctacccaaaa taccagagta tctgaacaaa ggtggagcgg aaacggccca ttcaacagat 3060
tccttggtga aaatatcaga catacctaag taacaagtag tagtcaacaa gttagcacca 3120
ccagtaatga taacgactgg atcgtgttct tcagtagttg gaatatgacc ttcgttagcc 3180
catttagctt caaccatcaa gttacgaacg aattccttaa cgaattcctt accacaattg 3240
aacaagtcgg tacgaccttc cttagccaag aattcttcca tttcggtgta agtgtccatg 3300
aacaacttat aaattggctt catgtattct ggtaaagtat ctaaacaggt aatggaccat 3360
ctttcgacag cttcagtgaa aatcttcaat tcttcgtagg taccgtaagc gtcgtaagtg 3420
tcgtcaatca aggtaataac agcaacagcc ttagtaaaga aaactctagc tctagagtat 3480
tgtggttcgt aaccggaacc caaaccccag aagtaacatt cgacaattct atctctcaaa 3540
catggagcgt tcttcttaat atcgaaggct ttccaccact tacaaacgtg agacaattct 3600
tccttgtgca aggattgcaa caagttaaat tccaatttag ccaatttcaa caaggttttg 3660
ttgtgagagt cttgttgttg gtagaatggg atgtattgag cagcttcgat tcttggcaaa 3720
cgcttccaca atggttgttt caaagctctt tggatttcag tgaacaaagc tgggttagta 3780
gagaaggcat ctttagtcat gatggacaat ctagatctag taaaacccaa agcgtcttcc 3840
aagatgattt caccaggaac tctcatggag gtggcttcat acaattctaa caaaccttca 3900
acatcgttgg ccaaagattg cttaaaagca ccattcttat ctttgtagtt gttgaaaacg 3960
tcacaagtaa cgtagtaacc ttgctttctc attaatctga accataagga agatctgtca 4020
ccgttccagt tatcaccgta agtttcgtaa atacattgca aagcgtgatc aatttctctt 4080

tcgaaatggt atggaatacc taatctttgg atttcgtcga ttaatttcaa taagttagcg 4140

tgcttcattg ggatgtccaa agcttccttc aacaattgtc taacttcctt cttcaaatcg 4200

ttaacgattt gttcaacacc ttgctcaact tgcttttcgt agatcaagaa ttggtcaccc 4260

cagatagaag gtggaaaatt agcaattggt ctgattggtt tttcttcagt caaagccatg 4320

gatccttcag ttacagtaaa tgttttagtt gcatcgtcat aggtccattc accatcaaca 4380

ccattatcat tagcatattg cttaaagacc ttttcggctg ttgctgcatc tactgcttcg 4440

gtagtagttt caccccttcaa agttttacca ttcaaaatta atttatattg acccattata 4500

gttttttctc cttgacgtta aagtatagag gtatattaac aatttttttgt tgatactttt 4560

attacatttg aataagaagt aatacaaacc gaaaatgttg aaagtattag ttaaagtggt 4620

tatgcagttt ttgcatttat atatctgtta atagatcaaa aatcatcgct tcgctgatta 4680

attaccccag aaataaggct aaaaaactaa tcgcattatc atcctatggt tgttaatttg 4740

attcgttcat ttgaaggttt gtggggccag gttactgcca atttttcctc ttcataacca 4800

taaaagctag tattgtagaa tctttattgt tcggagcagt gcggcgcgag gcacatctgc 4860

gtttcaggaa cgcgaccggt gaagacgagg acgcacggag gagagtcttc cttcggaggg 4920

ctgtcacccg ctcggcggct tctaatccgt acttcaatat agcaatgagc agttaagcgt 4980

attactgaaa gttccaaaga gaaggttttt ttaggctaag ataatggggc tctttacatt 5040

tccacaacat ataagtaaga ttagatatgg atatgtatat ggatatgtat atggtggtaa 5100

tgccatgtaa tatgattatt aaacttcttt gcgtccatcc aaaaaaaaag taagaatttt 5160

tgaaaattca atataaatgt ctcagaacgt ttacattgta tcgactgcca gaaccccaat 5220

tggttcattc cagggttctc tatcctccaa gacagcagtg gaattgggtg ctgttgcttt 5280

aaaaggcgcc ttggctaagg ttccagaatt ggatgcatcc aaggattttg acgaaattat 5340

ttttggtaac gttctttctg ccaatttggg ccaagctccg gccagacaag ttgctttggc 5400

tgccggtttg agtaatcata tcgttgcaag cacagttaac aaggtctgtg catccgctat 5460

gaaggcaatc attttgggtg ctcaatccat caaatgtggt aatgctgatg ttgtcgtagc 5520

tggtggttgt gaatctatga ctaacgcacc atactacatg ccagcagccc gtgcgggtgc 5580

caaatttggc caaactgttc ttgttgatgg tgtcgaaaga gatgggttga acgatgcgta 5640

cgatggtcta gccatgggtg tacacgcaga aaagtgtgcc cgtgattggg atattactag 5700

agaacaacaa gacaattttg ccatcgaatc ctaccaaaaa tctcaaaaat ctcaaaagga 5760

aggtaaattc gacaatgaaa ttgtacctgt taccattaag ggatttagag gtaagcctga 5820

tactcaagtc acgaaggacg aggaacctgc tagattacac gttgaaaaat tgagatctgc 5880

aaggactgtt ttccaaaaag aaaacggtac tgttactgcc gctaacgctt ctccaatcaa 5940

cgatggtgct gcagccgtca tcttggtttc cgaaaaagtt ttgaaggaaa agaatttgaa 6000

gcctttggct attatcaaag gttggggtga ggccgctcat caaccagctg attttacatg 6060

ggctccatct cttgcagttc caaaggcttt gaaacatgct ggcatcgaag acatcaattc 6120

tgttgattac tttgaattca atgaagcctt ttcggttgtc ggtttggtga acactaagat 6180

tttgaagcta gacccatcta aggttaatgt atatggtggt gctgttgctc taggtcaccc 6240

attgggttgt tctggtgcta gagtggttgt tacactgcta tccatcttac agcaagaagg 6300

aggtaagatc ggtgttgccg ccatttgtaa tggtggtggt ggtgcttcct ctattgtcat 6360

tgaaaagata tgattacgtt ctgcgatttt ctcatgatct ttttcataaa atacataaat 6420

atataaatgg ctttatgtat aacaggcata atttaaagtt ttatttgcga ttcatcgttt 6480

ttcaggtact caaacgctga ggtgtgcctt ttgacttact ttt 6523

<210> 41
<211> 10379
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: ADS_FS.1 donor cassette

<400> 41
atattgtttt ttccctagct gttttcggtt tggttatgaa cgcattgtct gcgaaaagaa 60

acgtggataa gtattataga aacagcactt cttcggccaa caatatcacg caaattgagc 120

aagatagtgc tataaaaggt cttttgccct tttttgccta ttatgcaagc attgctttac 180

tagtgtggat gcaaccaagc tttattacac tctctttcat cctttccgtt ggtttcacgg 240

gagcatttac cgtcggaaga ataatcgttt gccatttaac taagcagagc tttcccatgt 300

tcaatgcacc catgttaatt cctttgtgcc agatagtatt gtacaaaata tgtctatccc 360

tttggggaat tgagtctaat aaaatcgtct ttgccctatc ttggcttggg ttcggtctct 420

cactaggtgt tcacattatg tttatgaatg acattatcca tgaatttact gagtacctgg 480

acgtttatgc tttatccatc aagcgctcca agctgacata aatcgcactt tgtatctact 540

tttttttatt cgaaaacaag gcacaacaat gaatctatcg ccctgtgaga ttttcaatct 600

caagtttgtg taatagatag cgttatatta tagaactata aaggtccttg aatatacata 660

gtgtttcatt cctattactg tatatgtgac tttacattgt tacttccgcg gctatttgac 720

gttttctgct tcaggtgcgg cttggagggc aaagtgtcag aaaatcggcc aggccgtatg 780

acacaaaaga gtagaaaacg agatctcaaa tatctcgagg cctgtcctct atacaaccgc 840

ccagctctct gacaaagctc cagaacggtt gtcttttgtt tcgaaaagcc aaggtccctt 900

ataattgccc tccattttgt gtcacctatt taagcaaaaa attgaaagtt tactaacctt 960

tcattaaaga gaaataacaa tattataaaa agcgcttaaa tatacctgag aaagcaacct 1020

gacctacagg aaagagttac tcaagaataa gaattttcgt tttaaaacct aagagtcact 1080

ttaaaatttg tatacactta ttttttttat aacttattta ataataaaaa tcataaatca 1140

taagaaattc gcttatttag aagtgtcaac aacgtatcta ccaacgattt gacccttttc 1200

catcttttcg taaatttctg gcaaggtaga caagccgaca accttgattg gagacttgac 1260

caaacctctg gcgaagaatt gttaattaag agctcagatc ttatcgtcgt catccttgta 1320

atccatcgat actagtgcgg ccgcccttta gtgagggttg aattcgaatt ttcaaaaatt 1380

cttacttttt ttttggatgg acgcaaagaa gtttaataat catattacat ggcattacca 1440

ccatatacat atccatatac atatccatat ctaatcttac ttatatgttg tggaaatgta 1500

aagagcccca ttatcttagc ctaaaaaaac cttctctttg gaactttcag taatacgctt 1560

aactgctcat tgcgccgccg agcgggtgac agccctccga aggaagactc tcctccgtgc 1620

gtcctcgtct tcaccggtcg cgttcctgaa acgcagatgt gcctcgcgcc gcactgctcc 1680

gaacaataaa gattctacaa tactagcttt tatggttatg aagaggaaaa attggcagta 1740

acctggcccc acaaaccttc aaatgaacga atcaaattaa caaccatagg atgataatgc 1800

gattagtttt ttagccttat ttctggggta attaatcagc gaagcgatga tttttgatct 1860

attaacagat atataaatgc aaaaactgca taaccacttt aactaatact ttcaacattt 1920

tcggtttgta ttacttctta ttcaaatgta ataaaagtat caacaaaaaa ttgttaatat 1980

acctctatac tttaacgtca aggagaaaaa actataatgg gtcaatataa attaatttttg 2040

aatggtaaaa ctttgaaggg tgaaactact accgaagcag tagatgcagc aacagccgaa 2100

aaggtcttta agcaatatgc taatgataat ggtgttgatg gtgaatggac ctatgacgat 2160

gcaactaaaa catttactgt aactgaagga tccatggctt tgactgaaga aaaaccaatc 2220

agaccaattg ctaattttcc accttctatc tggggtgacc aattcttgat ctacgaaaag 2280

caagttgagc aaggtgttga acaaatcgtt aacgatttga agaaggaagt tagacaattg 2340

ttgaaggaag ctttggacat cccaatgaag cacgctaact tattgaaatt aatcgacgaa 2400

atccaaagat taggtattcc ataccatttc gaaagagaaa ttgatcacgc tttgcaatgt 2460

atttacgaaa cttacggtga taactggaac ggtgacagat cttccttatg gttcagatta 2520

atgagaaagc aaggttacta cgttacttgt gacgttttca acaactacaa agataagaat 2580

ggtgctttta agcaatcttt ggccaacgat gttgaaggtt tgttagaatt gtatgaagcc 2640

acctccatga gagttcctgg tgaaatcatc ttggaagacg ctttgggttt tactagatct 2700

agattgtcca tcatgactaa agatgccttc tctactaacc cagctttgtt cactgaaatc 2760

caaagagctt tgaaacaacc attgtggaag cgtttgccaa gaatcgaagc tgctcaatac 2820

atcccattct accaacaaca agactctcac aacaaaacct tgttgaaatt ggctaaattg 2880

gaatttaact tgttgcaatc cttgcacaag gaagaattgt ctcacgtttg taagtggtgg 2940

aaagccttcg atattaagaa gaacgctcca tgtttgagag atagaattgt cgaatgttac 3000
ttctggggtt tgggttccgg ttacgaacca caatactcta gagctagagt tttctttact 3060
aaggtggttg ctgttattac cttgattgac gacacttacg acgcttacgg tacctacgaa 3120
gaattgaaga ttttcactga agctgtcgaa agatggtcca ttacctgttt agatacttta 3180
ccagaataca tgaagccaat ttataagttg ttcatggaca cttacaccga aatggaagaa 3240
ttcttggcta aggaaggtcg taccgacttg ttcaattgtg gtaaggaatt cgttaaggaa 3300
ttcgttcgta acttgatggt tgaagctaaa tgggctaacg aaggtcatat tccaactact 3360
gaagaacacg atccagtcgt tatcattact ggtggtgcta acttgttgac tactacttgt 3420
tacttaggta tgtctgatat tttcaccaag gaatctgttg aatgggccgt ttccgctcca 3480
cctttgttca gatactctgg tattttgggt agaagattaa acgatttgat gactcacaag 3540
gctgagcaag aaagaaagca ctcctcctct tccttagaat cttacatgaa ggaatacaac 3600
gttaacgaag aatacgctca aactttgatt tacaaggaag ttgaagacgt ttggaaagat 3660
attaacagag aatacttgac caccaaaaat attccacgtc cattgttaat ggctgttatc 3720
tatttatgtc aattcttaga agttcaatac gctggtaaag acaatttcac cagaatgggt 3780
gacgaatata agcacttaat taagtctttg ttggtctacc ctatgtctat ctaagatccg 3840
ctctaaccga aaaggaagga gttagacaac ctgaagtcta ggtccctatt tatttttta 3900
tagttatgtt agtattaaga acgttattta tatttcaaat ttttcttttt tttctgtaca 3960
gacgcgtgta cgcatgtaac attatactga aaaccttgct tgagaaggtt ttgggacgct 4020
cgaaggtttt caatagttcg gtaatattaa cggataccta ctattatccc ctagtaggct 4080
cttttcacgg agaaattcgg gagtgttttt tttccgtgcg cattttctta gctatattct 4140
tccagcttcg cctgctgccc ggtcatcgtt cctgtcacgt agtttttccg gattcgtccg 4200
gctcatataa taccgcaata aacacggaat atctcgttcc gcggattcgg ttaaactctc 4260
ggtcgcggat tatcacagag aaagcttcgt ggagaatttt tccagatttt ccgctttccc 4320
cgatgttggt atttccggag gtcattatac tgaccgccat tataatgact gtacaacgac 4380
cttctggaga aagaaacaac tcaataacga tgtgggacat tgggggccca ctcaaaaaat 4440
ctggggacta tatccccaga gaatttctcc agaagagaag aaaagtcaaa gttttttttc 4500
gcttgggggt tgcatataaa tacaggcgct gttttatctt cagcatgaat attccataat 4560
tttacttaat agcttttcat aaataataga atcacaaaca aaatttacat ctgagttaaa 4620
caatcatgac aatcaaggaa cataaagtag tttatgaagc tcacaacgta aaggctctta 4680
aggctcctca acatttttac aacagccaac ccggcaaggg ttacgttact gatatgcaac 4740
attatcaaga aatgtatcaa caatctatca atgagccaga aaaattcttt gataagatgg 4800

ctaaggaata cttgcattgg gatgctccat acaccaaagt tcaatctggt tcattgaaca 4860

atggtgatgt tgcatggttt ttgaacggta aattgaatgc atcatacaat tgtgttgaca 4920

gacatgcctt tgctaatccc gacaagccag ctttgatcta tgaagctgat gacgaatccg 4980

acaacaaaat catcacattt ggtgaattac tcagaaaagt ttcccaaatc gctggtgtct 5040

taaaaagctg gggcgttaag aaaggtgaca cagtggctat ctatttgcca atgattccag 5100

aagcggtcat tgctatgttg gctgtggctc gtattggtgc tattcactct gttgtctttg 5160

ctgggttctc cgctggttcg ttgaaagatc gtgtcgttga cgctaattct aaagtggtca 5220

tcacttgtga tgaaggtaaa agaggtggta agaccatcaa cactaaaaaa attgttgacg 5280

aaggtttgaa cggagtcgat ttggtttccc gtatcttggt tttccaaaga actggtactg 5340

aaggtattcc aatgaaggcc ggtagagatt actggtggca tgaggaggcc gctaagcaga 5400

gaacttacct acctcctgtt tcatgtgacg ctgaagatcc tctatttttа ttatacactt 5460

ccggttccac tggttctcca aagggtgtcg ttcacactac aggtggttat ttattaggtg 5520

ccgctttaac aactagatac gtttttgata ttcacccaga agatgttctc ttcactgccg 5580

gtgacgtcgg ctggatcacg ggtcacacct atgctctata tggtccatta accttgggta 5640

ccgcctcaat aattttcgaa tccactcctg cctacccaga ttatggtaga tattggagaa 5700

ttatccaacg tcacaaggct acccatttct atgtggctcc aactgcttta agattaatca 5760

aacgtgtagg tgaagccgaa attgccaaat atgacacttc ctcattacgt gtcttgggtt 5820

ccgtcggtga accaatctct ccagacttat gggaatggta tcatgaaaaa gtgggtaaca 5880

aaaactgtgt catttgtgac actatgtggc aaacagagtc tggttctcat ttaattgctc 5940

ctttggcagg tgctgtccca acaaaacctg gttctgctac cgtgccattc tttggtatta 6000

acgcttgtat cattgaccct gttacaggtg tggaattaga aggtaatgat gtcgaaggtg 6060

tccttgccgt taaatcacca tggccatcaa tggctagatc tgtttggaac caccacgacc 6120

gttacatgga tacttacttg aaaccttatc ctggtcacta tttcacaggt gatggtgctg 6180

gtagagatca tgatggttac tactggatca ggggtagagt tgacgacgtt gtaaatgttt 6240

ccggtcatag attatccaca tcagaaattg aagcatctat ctcaaatcac gaaaacgtct 6300

cggaagctgc tgttgtcggt attccagatg aattgaccgg tcaaaccgtc gttgcatatg 6360

tttccctaaa agatggttat ctacaaaaca acgctactga aggtgatgca gaacacatca 6420

caccagataa tttacgtaga gaattgatct tacaagttag gggtgagatt ggtcctttcg 6480

cctcaccaaa aaccattatt ctagttagag atctaccaag aacaaggtca ggaaagatta 6540

tgagaagagt tctaagaaag gttgcttcta acgaagccga acagctaggt gacctaacta 6600

ctttggccaa cccagaagtt gtacctgcca tcatttctgc tgtagagaac caatttttct 6660

ctcaaaaaaa gaaataaatt gaattgaatt gaaatcgata gatcaatttt tttcttttct 6720

ctttccccat cctttacgct aaaataatag tttattttat tttttgaata ttttttattt 6780
atatacgtat atatagacta ttatttatct tttaatgatt attaagattt ttattaaaaa 6840
aaaattcgct cctcttttaa tgcctttatg cagtttttt ttcccattcg atatttctat 6900
gttcgggttc agcgtatttt aagtttaata actcgaaaat tctgcgttcg ttaaagcttt 6960
cgagaaggat attatttcga aataaaccgt gttgtgtaag cttgaagcct ttttgcgctg 7020
ccaatattct tatccatcta ttgtactctt tagatccagt atagtgtatt cttcctgctc 7080
caagctcatc ccatccccgc gtgcttggcc ggccgttttg ccagcttact atccttcttg 7140
aaaatatgca ctctatatct tttagttctt aattgcaaca catagatttg ctgtataacg 7200
aatttttatgc tatttttttaa atttggagtt cagtgataaa agtgtcacag cgaatttcct 7260
cacatgtagg gaccgaattg tttacaagtt ctctgtacca ccatggagac atcaaaaatt 7320
gaaaatctat ggaaagatat ggacggtagc aacaagaata tagcacgagc cgcggagttc 7380
atttcgttac ttttgatatc actcacaact attgcgaagc gcttcagtga aaaaatcata 7440
aggaaaagtt gtaaatatta ttggtagtat tcgtttggta aagtagaggg ggtaattttt 7500
ccccttttatt ttgttcatac attcttaaat tgctttgcct ctccttttgg aaagctatac 7560
ttcggagcac tgttgagcga aggctcatta gatatatttt ctgtcatttt ccttaaccca 7620
aaaataaggg aaagggtcca aaaagcgctc ggacaactgt tgaccgtgat ccgaaggact 7680
ggctatacag tgttcacaaa atagccaagc tgaaaataat gtgtagctat gttcagttag 7740
tttggctagc aaagatataa aagcaggtcg gaaatattta tgggcattat tatgcagagc 7800
atcaacatga taaaaaaaaa cagttgaata ttccctcaaa aatgtcttac accgtcggaa 7860
cctacttggc cgagaggttg gtccagatcg gattgaagca ccacttcgcc gtcgccggtg 7920
actacaactt ggtcttgttg gacaacttgt tgttgaacaa gaacatggag caggtctatt 7980
gctgcaacga gttgaactgc ggtttctcag cagaaggtta tgcaagagcc aagggagcag 8040
ccgctgccgt cgtcacctac tcagtcggtg cattatcagc attcgatgca attggaggtg 8100
cttacgctga gaacttgcca gtcatcttga tctctggagc acctaacaac aacgaccatg 8160
ctgctggtca cgtattgcac cacgccttgg gtaaaacaga ctaccactac cagttggaaa 8220
tggcaaaaaa tattaccgca gccgcagagg ccatctacac cccagaggaa gcacctgcca 8280
aaattgacca cgtcataaag accgctttga gagagaagaa gcctgtttac ttggagatcg 8340
cctgcaacat cgcttctatg ccatgcgccg cacctggtcc agcctctgct ttgttcaacg 8400
acgaggcctc tgacgaagct tcattgaacg ccgcagtcga agagacatta aagttcatcg 8460
ccaacaggga caaagttgcc gtcttagtcg gttcaaagtt gagggccgct ggtgccgaag 8520
aggcagctgt caagttcgct gacgccttgg gaggagccgt cgccaccatg gccgcagcaa 8580

aatctttctt tcctgaggag aacccacatt acatcggaac ctcatggggt gaagtatcat 8640

atcctggagt agaaaaaacc atgaaagagg ccgatgccgt aatagcattg gctcctgtct 8700

tcaacgacta ctcaaccaca ggatggactg atataccaga tccaaagaaa ttagtcttgg 8760

ctgagcctag gtctgtcgtc gtaaacggta tcaggttccc ttctgttcat ttgaaggact 8820

acttaacaag attggcccaa aaggtatcta aaaagactgg tgccttggac ttcttcaagt 8880

cattaaacgc aggagaattg aaaaaagcag caccagccga tccatcagcc ccattagtta 8940

acgctgaaat cgctagacaa gtagaggctt tgttgactcc aaacactacc gtcatagctg 9000

agacaggtga ctcttggttc aacgcacaga gaatgaaatt gccaaatggt gccagggtcg 9060

agtatgaaat gcagtgggga catataggtt ggtcagtccc agccgccttt ggatacgcag 9120

taggtgcccc tgagaggagg aacatattga tggttggtga tggttcattc caattaacag 9180

cccaggaggt agcccaaatg gtcaggttga agttgcctgt catcatcttc ttgatcaaca 9240

attacggata caccatcgag gtcatgatcc acgacggacc ttacaacaac atcaaaaact 9300

gggactacgc cggtttgatg gaggttttca acggtaacgg tggttatgac tcaggagccg 9360

gtaagggatt aaaggctaag accggtggtg aattggctga agcaattaag gtcgcattgg 9420

ccaacaccga tggacctaca ttgattgaat gcttcatcgg aagggaggac tgcaccgagg 9480

aattggttaa atggggtaaa agggtagccg ctgctaattc aagaaaacca gttaataaat 9540

tattataata agtgaattta ctttaaatct tgcatttaaa taaatttttct ttttatagct 9600

ttatgactta gtttcaattt atatactatt ttaatgacat tttcgattca ttgattgaaa 9660

gctttgtgtt ttttcttgat gcgctattgc attgttcttg tctttttcgc cacatgtaat 9720

atctgtagta gatacctgat acattgtgga tgctgagtga aattttagtt aataatggag 9780

gcgctcttaa taattttggg gatattggct taacctgcag gccgcgagcg ccgatataaa 9840

ctaatgattt taaatcgtta aaaaaatatg cgaattctgt ggatcgaaca caggacctcc 9900

agataacttg accgaagttt tttcttcagt ctggcgctct cccaactgag ctaaatccgc 9960

ttactatttg ttatcagttc ccttcatatc tacatagaat aggttaagta ttttattagt 10020

tgccagaaga actactgata gttgggaata tttggtgaat aatgaagatt gggtgaataa 10080

tttgataatt ttgagattca attgttaatc aatgttacaa tattatgtat acagagtata 10140

ctagaagttc tcttcggaga tcttgaagtt cacaaaaggg aatcgatatt tctacataat 10200

attatcatta cttcttcccc atcttatatt tgtcattcat tattgattat gatcaatgca 10260

ataatgattg gtagttgcca aacatttaat acgatcctct gtaatatttc tatgaataat 10320

tatcacagca acgttcaatt atcttcaatt ccggtgttta aaccccagcg cctggcggg 10379

<210> 42
<211> 4140

<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: ADS_FS.2 donor cassette

<400> 42
tcctcttgtg gtccgtggct tgtaattttc gggaaagata gaaatcactg cattcatcga 60

aagaagtgaa aataaattgt atcggggaag taatgagggg tggaatacgt aattgcttct 120

caatttgata atacaagtta cagtcttttt attgagagtc cctggaagga aaattattga 180

tgtttacctt tttttgcgac gcgcgtctgg ccataaataa aagggttctc ttgccaagaa 240

aaaataaaaa ggcgccttaa gggaccttct atgacaaata tggtgaggta tgcaacctca 300

atgaagagca atgagaaaat ttaaggggta agtaagcatc ggaatttgtt gtttcctaac 360

aatttgtcta atttactcaa taatatcagg agaattgatc gaaaaaagca aaccaggaac 420

ccctcacaaa taagggaaca taaagtaatt gctcgtcttt acatacatgg cactcaatcc 480

cagacgtcgc gtgctaaaaa tccttatatt attggcccct caggagttta tttgaatttt 540

gattgcattg ctttcagtgg acagtatatc ataaaatttg caagggcata gtgcctgccc 600

tacgatgttg taaaacaatt tctgaaaata ggttcagaat caaaaatgat gtataaatat 660

tgaaataaat tttcacataa attgtgctcc tccgcaaagt cttgactaaa taaacaattt 720

gttaatatcc tttcaaaaat tcttactttt tttttggatg gacgcaaaga agtttaataa 780

tcatattaca tggcattacc accatataca tatccatata catatccata tctaatctta 840

cttatatgtt gtggaaatgt aaagagcccc attatcttag cctaaaaaaa ccttctcttt 900

ggaactttca gtaatacgct taactgctca ttgctatatt gaagtacgga ttagaagccg 960

ccgagcgggt gacagccctc cgaaggaaga ctctcctccg tgcgtcctcg tcttcaccgg 1020

tcgcgttcct gaaacgcaga tgtgcctcgc gccgcactgc tccgaacaat aaagattcta 1080

caatactagc ttttatggtt atgaagagga aaaattggca gtaacctggc cccacaaacc 1140

ttcaaatgaa cgaatcaaat taacaaccat aggatgataa tgcgattagt tttttagcct 1200

tatttctggg gtaattaatc agcgaagcga tgatttttga tctattaaca gatatataaa 1260

tgcaaaaact gcataaccac tttaactaat actttcaaca ttttcggttt gtattacttc 1320

ttattcaaat gtaataaaag tatcaacaaa aaattgttaa tatacctcta tactttaacg 1380

tcaaggagaa aaaaccccgg atccatgggt caatataaat taattttgaa tggtaaaact 1440

ttgaagggtg aaactactac cgaagcagta gatgcagcaa cagccgaaaa ggtctttaag 1500

caatatgcta atgataatgg tgttgatggt gaatggacct atgacgatgc aactaaaaca 1560

tttactgtaa ctgaaggatc catggctttg actgaagaaa aaccaatcag accaattgct 1620

aattttccac cttctatctg gggtgaccaa ttcttgatct acgaaaagca agttgagcaa 1680

ggtgttgaac aaatcgttaa cgatttgaag aaggaagtta gacaattgtt gaaggaagct 1740

ttggacatcc caatgaagca cgctaactta ttgaaattaa tcgacgaaat ccaaagatta 1800

ggtattccat accatttcga aagagaaatt gatcacgctt tgcaatgtat ttacgaaact 1860

tacggtgata actggaacgg tgacagatct tccttatggt tcagattaat gagaaagcaa 1920

ggttactacg ttacttgtga cgttttcaac aactacaaag ataagaatgg tgcttttaag 1980

caatctttgg ccaacgatgt tgaaggtttg ttagaattgt atgaagccac ctccatgaga 2040

gttcctggtg aaatcatctt ggaagacgct ttgggtttta ctagatctag attgtccatc 2100

atgactaaag atgccttctc tactaaccca gctttgttca ctgaaatcca aagagctttg 2160

aaacaaccat tgtggaagcg tttgccaaga atcgaagctg ctcaatacat cccattctac 2220

caacaacaag actctcacaa caaaaccttg ttgaaattgg ctaaattgga atttaacttg 2280

ttgcaatcct tgcacaagga agaattgtct cacgtttgta agtggtggaa agccttcgat 2340

attaagaaga acgctccatg tttgagagat agaattgtcg aatgttactt ctggggtttg 2400

ggttccggtt acgaaccaca atactctaga gctagagttt tctttactaa ggtggttgct 2460

gttattacct tgattgacga cacttacgac gcttacggta cctacgaaga attgaagatt 2520

ttcactgaag ctgtcgaaag atggtccatt acctgtttag atactttacc agaatacatg 2580

aagccaattt ataagttgtt catggacact tacaccgaaa tggaagaatt cttggctaag 2640

gaaggtcgta ccgacttgtt caattgtggt aaggaattcg ttaaggaatt cgttcgtaac 2700

ttgatggttg aagctaaatg ggctaacgaa ggtcatattc caactactga agaacacgat 2760

ccagtcgtta tcattactgg tggtgctaac ttgttgacta ctacttgtta cttaggtatg 2820

tctgatattt tcaccaagga atctgttgaa tgggccgttt ccgctccacc tttgttcaga 2880

tactctggta ttttgggtag aagattaaac gatttgatga ctcacaaggc tgagcaagaa 2940

agaaagcact cctcctcttc cttagaatct tacatgaagg aatacaacgt taacgaagaa 3000

tacgctcaaa ctttgattta caaggaagtt gaagacgttt ggaaagatat taacagagaa 3060

tacttgacca ccaaaaatat tccacgtcca ttgttaatgg ctgttatcta tttatgtcaa 3120

ttcttagaag ttcaatacgc tggtaaagac aatttcacca gaatgggtga cgaatataag 3180

cacttaatta agtctttgtt ggtctaccct atgtctatct aagatccgct ctaaccgaaa 3240

aggaaggagt cagacaacct gaagtctagg tccctattta ttttttata gttatgttag 3300

tattaagaac gttatttata tttcaaattt ttctttttt tctgtacaga cgcgtgtacg 3360

catgtaacat tatactgaaa accttgcttg agaaggtttt gggacgctcg aagctacctt 3420

tttgttcttt tacttaaaca ttagttagtt cgttttcttt ttctcatttt tttatgtttc 3480

ccccccaaag ttctgatttt ataatatttt atttcacaca attccattta acagaggggg 3540

aatagattct ttagcttaga aaattagtga tcaatatata tttgcctttc ttttcatctt 3600

ttcagtgata ttaatggttt cgagacactg caatggccct agttgtctaa gaggatagat 3660

gttactgtca aagatgatat tttgaatttc aattgacgta attaatgata ctattaataa 3720

tacagagcgt atatgaagta ttgcaaataa catgcacagt tcttttggga tgagaatgat 3780

aatgaaaggc gaaggcgggc gttcagaaaa gcgttgcgga gtaacaagtg attaaatagc 3840

acccaaataa tcttctttga tactaccgat tgcgtgaata gaactcactt gactgataca 3900

accttcaatt ttaactctaa ttctactttt tatggtgatg acatcctcgg aactttggta 3960

tgatggtggg tttgaacccg cattaaaggt taaatcttga ggcatcagat gctttgtcac 4020

aaatactttc attggaccta cttgcacttc gaacccgtgc tgagaacatg aaacgactgt 4080

gccgtccact acttcccctt taaatggttt gaaaactaca gctctatatt tcacgttgaa 4140

<210> 43
<211> 4475
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: ADS_FS.3 donor cassette

<400> 43
attgaagcac ctgtggagta tttaaaaact gcggttacat ggcctacaga tgaaatatgt 60

gctcaactaa tgacacaatt cccaccagga acgccgacca gtgtcctgct gcagactatt 120

tcagatgagc tagagaaaag ttctgacaac ctgttcacgt tatctgattt aaagagcaaa 180

ctgaaagtta ttggcttatt cgagcacatg gaagatatcc cattttcga caagctgaaa 240

ctaagcaatg cgcccgtgaa ggacatgcct atggtcacaa aggcgttcac caaattttgc 300

gaaacaatag caaaaaggca tacaagaggc ctactgtcat accgattacc ttttaaccta 360

ctggactaca attgcatacc gaatgagagt tattcattag aggtttatga gtcattgtac 420

aacatcatta ctctatactt ctggctcagc aacaggtacc caaactactt cattgacatg 480

gaatctgcta aagatttgaa gtatttctgt gagatgatta ttttcgagaa acttgatcga 540

ttaaagaaga atccttacgc acataagccc tttggttcta caagaggtca cctctcatct 600

tcgagaagaa gattgcgtac ataatctacg atatatcctg taaatagaaa cagctacact 660

gcttgaaagc cttaacatga tacatttctg gtatgatgcc attgttgtgc cctgccgggt 720

ttatcgtttc ctaacaggca cgtcacttat aacgaggtgc ctgtcgttta ccgcccaagc 780

cggtttttc gctggagagt acggtactac tagcccacca cacgttcgtg gccaggttga 840

taggccaccg ttgagcaaag ggcagtaaaa tatataaaag aggaacaagc gcttccatta 900

agagcactgc taagcctact cgttttctag ttctctgaaa aaaggtagcc taaaacaagc 960

gccatatcat atatatttat acagattaga cgtactcaaa attcttactt ttttttgga 1020

tggacgcaaa gaagtttaat aatcatatta catggcatta ccaccatata catatccata 1080

tacatatcca tatctaatct tacttatatg ttgtggaaat gtaaagagcc ccattatctt 1140

agcctaaaaa aaccttctct ttggaacttt cagtaatacg cttaactgct cattgcgccg 1200

ccgagcgggt gacagccctc cgaaggaaga ctctcctccg tgcgtcctcg tcttcaccgg 1260

tcgcgttcct gaaacgcaga tgtgcctcgc gccgcactgc tccgaacaat aaagattcta 1320

caatactagc ttttatggtt atgaagagga aaaattggca gtaacctggc cccacaaacc 1380

ttcaaatgaa cgaatcaaat taacaaccat aggatgataa tgcgattagt tttttagcct 1440

tatttctggg gtaattaatc agcgaagcga tgatttttga tctattaaca gatatataaa 1500

tgcaaaaact gcataaccac tttaactaat actttcaaca ttttcggttt gtattacttc 1560

ttattcaaat gtaataaaag tatcaacaaa aaattgttaa tatacctcta tactttaacg 1620

tcaaggagaa aaaactataa tgggtcaata taaattaatt ttgaatggta aaactttgaa 1680

gggtgaaact actaccgaag cagtagatgc agcaacagcc gaaaaggtct ttaagcaata 1740

tgctaatgat aatggtgttg atggtgaatg gacctatgac gatgcaacta aaacatttac 1800

tgtaactgaa ggatccatgg ctttgactga agaaaaacca atcagaccaa ttgctaattt 1860

tccaccttct atctggggtg accaattctt gatctacgaa aagcaagttg agcaaggtgt 1920

tgaacaaatc gttaacgatt tgaagaagga agttagacaa ttgttgaagg aagctttgga 1980

catcccaatg aagcacgcta acttattgaa attaatcgac gaaatccaaa gattaggtat 2040

tccataccat ttcgaaagag aaattgatca cgctttgcaa tgtatttacg aaacttacgg 2100

tgataactgg aacggtgaca gatcttcctt atggttcaga ttaatgagaa agcaaggtta 2160

ctacgttact tgtgacgttt tcaacaacta caaagataag aatggtgctt ttaagcaatc 2220

tttggccaac gatgttgaag gtttgttaga attgtatgaa gccacctcca tgagagttcc 2280

tggtgaaatc atcttggaag acgctttggg ttttactaga tctagattgt ccatcatgac 2340

taaagatgcc ttctctacta acccagcttt gttcactgaa atccaaagag ctttgaaaca 2400

accattgtgg aagcgtttgc caagaatcga agctgctcaa tacatcccat tctaccaaca 2460

acaagactct cacaacaaaa ccttgttgaa attggctaaa ttggaattta acttgttgca 2520

atccttgcac aaggaagaat tgtctcacgt ttgtaagtgg tggaaagcct tcgatattaa 2580

gaagaacgct ccatgtttga gagatagaat tgtcgaatgt tacttctggg gtttgggttc 2640

cggttacgaa ccacaatact ctagagctag agttttcttt actaaggtgg ttgctgttat 2700

taccttgatt gacgacactt acgacgctta cggtacctac gaagaattga agattttcac 2760

tgaagctgtc gaaagatggt ccattacctg tttagatact ttaccagaat acatgaagcc 2820

aatttataag ttgttcatgg acacttacac cgaaatggaa gaattcttgg ctaaggaagg 2880

tcgtaccgac ttgttcaatt gtggtaagga attcgttaag gaattcgttc gtaacttgat 2940

ggttgaagct aaatgggcta acgaaggtca tattccaact actgaagaac acgatccagt 3000
cgttatcatt actggtggtg ctaacttgtt gactactact tgttacttag gtatgtctga 3060
tattttcacc aaggaatctg ttgaatgggc cgtttccgct ccacctttgt tcagatactc 3120
tggtattttg ggtagaagat taaacgattt gatgactcac aaggctgagc aagaaagaaa 3180
gcactcctcc tcttccttag aatcttacat gaaggaatac aacgttaacg aagaatacgc 3240
tcaaactttg atttacaagg aagttgaaga cgtttggaaa gatattaaca gagaatactt 3300
gaccaccaaa aatattccac gtccattgtt aatggctgtt atctatttat gtcaattctt 3360
agaagttcaa tacgctggta aagacaattt caccagaatg ggtgacgaat ataagcactt 3420
aattaagtct ttgttggtct accctatgtc tatctaagat ccgctctaac cgaaaaggaa 3480
ggagttagac aacctgaagt ctaggtccct atttatttttt ttatagttat gttagtatta 3540
agaacgttat ttatatttca aatttttctt ttttttctgt acagacgcgt gtacgcatgt 3600
aacattatac tgaaaacctt gcttgagaag gttttgggac gctcgaagga tacttgcaca 3660
agttccacta attactgaca tttgtggtat taactcgttt gactgctcta caattgtagg 3720
atgttaatca atgtcttggc tgccttcatt ctcttcaggc tctattaatt ttaaccgtta 3780
taagttcctt ttctcccttg gaagcaaaca tcaactgcct taaaatctgg tggcgaggaa 3840
agaggaaatg gcatgtacta atgatggtcc taataaatat cccgaaattg tgagtgttaa 3900
gcacctgttc caacattcgg gatccaagca tgaatttagt gctggtaaac gattttcaaa 3960
atccattggt aaaatattca aacgaaactc tgctttgaaa acttctagaa ctgaaacggc 4020
aaatcataaa atggaattga aaaaaagaga gggtgttacc ttattgccac ctgtcccaga 4080
atcattatta cataaactca attcttggtt ggaaactttt tcttccacca agaacatgaa 4140
aatcgaagaa aacaaaattg ttattaatga aaaagagatt cgggattcag tctcttacta 4200
ccctgataag aatggaggaa gtgctgtatt ttgttacttg cccgaccttg tgctatatta 4260
taagccgcct ataaaagtca caggcaagca atgtccaata aagagaagtc cttgggaatc 4320
gatggaaatc caatatcaaa agtttatgta ccccttagaa aggttggaaa gacagtttga 4380
ggaagttcca tttaggccct ggtattttgc aatgcgatta aaggaacttt acagatgctg 4440
tgaaaggtct tttactaacg cggcaaatag aggaa 4475

<210> 44
<211> 8247
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: 9XFS_URA3_FS.4 donor cassette

<400> 44

attgctattg agtaagttcg atccgtttgg cgtcttttgg ggtgtaacgc caaacttatt 60

acttttccta tttgaggttg gtattgattg ttgtcaaaga atgaaaatat acacaaacgc 120

cacaatatac gtaccaggtt cacgaaaact gatcgtatgg ttcataccct gacttggcaa 180

acctaatgtg accgtcgctg attagcggat cacgaaaagt gatctcgata caattagagg 240

atccacgaaa atgatgtgaa tgaatacatg aaagattcat gagatctgac aacatggtag 300

acgtgtgtgt ctcatggaaa ttgatgcagt tgaagacatg tgcgtcacga aaaaagaaat 360

caatcctaca cagggcttaa gggcaaatgt attcatgtgt gtcacgaaaa gtgatgtaac 420

taaatacacg attaccatgg aaattaacgt acctttttg tgcgtgtatt gaaatattat 480

gacatattac agaaagggtt cgcaagtcct gtttctatgc ctttctctta gtaattcacg 540

aaataaacct atggtttacg aaatgatcca cgaaaatcat gttattattt acatcaacat 600

atcgcgaaaa ttcatgtcat gtccacatta acatcattgc agagcaacaa ttcattttca 660

tagagaaatt tgctactatc acccactagt actaccattg gtacctacta ctttgaattg 720

tactaccgct gggcgttatt aggtgtgaaa ccacgaaaag ttcaccataa cttcgaataa 780

agtcgcggaa aaaagtaaac agctattgct actcaaatga ggtttgcaga agcttgttga 840

agcatgatga agcgttctaa acgcactatt catcattaaa tatttaaagc tcataaaatt 900

gtattcaatt cctattctaa atggctttta tttctattac aactattagc tctaaatcca 960

tatcctcata agcagcaatc aattctatct atactttaaa agtaaaattc ttgagggaac 1020

tttcaccatt atgggaaatg gttcaagaag gtattgactt aaactccatc aaatggtcag 1080

gtcattgagt gtttttttatt tgttgtattt ttttttttttt agagaaaatc ctccaatatc 1140

aaattaggaa tcgtagtttc atgattttct gttacaccta acttttgtg tggtgccctc 1200

ctccttgtca atattaatgt taaagtgcaa ttctttttcc ttatcacgtt gagccattag 1260

tatcaatttg cttacctgta ttcctttact atcctccttt ttctccttct tgataaatgt 1320

atgtagattg cgtatatagt ttcgtctacc ctatgaacat attccatttt gtaatttcgt 1380

gtcgtttcta ttatgaattt catttataaa gtttatgtac aaatatcata aaaaaagaga 1440

atctttttaa gcaaggattt tcttaacttc ttcggcgaca gcatcaccga cttcggtggt 1500

actgttggaa ccacctaaat caccagttct gatacctgca tccaaaacct ttttaactgc 1560

atcttcaatg gccttacctt cttcaggcaa gttcaatgac aatttcaaca tcattgcagc 1620

agacaagata gtggcgatag ggtcaacctt attctttggc aaatctggag cagaaccgtg 1680

gcatggttcg tacaaaccaa atgcggtgtt cttgtctggc aaagaggcca aggacgcaga 1740

tggcaacaaa cccaaggaac ctgggataac ggaggcttca tcggagatga tatcaccaaa 1800

catgttgctg gtgattataa taccatttag gtgggttggg ttcttaacta ggatcatggc 1860

ggcagaatca atcaattgat gttgaacctt caatgtaggg aattcgttct tgatggtttc 1920

ctccacagtt tttctccata atcttgaaga ggccaaaaca ttagctttat ccaaggacca 1980
aataggcaat ggtggctcat gttgtagggc catgaaagcg gccattcttg tgattctttg 2040
cacttctgga acggtgtatt gttcactatc ccaagcgaca ccatcaccat cgtcttcctt 2100
tctcttacca aagtaaatac ctcccactaa ttctctgaca acaacgaagt cagtaccttt 2160
agcaaattgt ggcttgattg gagataagtc taaaagagag tcggatgcaa agttacatgg 2220
tcttaagttg gcgtacaatt gaagttcttt acggattttt agtaaacctt gttcaggtct 2280
aacactaccg gtaccccatt taggaccacc cacagcacct aacaaaacgg catcaacctt 2340
cttggaggct tccagcgcct catctggaag tgggacacct gtagcatcga tagcagcacc 2400
accaattaaa tgattttcga aatcgaactt gacattggaa cgaacatcag aaatagcttt 2460
aagaacctta atggcttcgg ctgtgatttc ttgaccaacg tggtcacctg gcaaaacgac 2520
gatcttctta ggggcagaca taggggcaga cattagaatg gtatatcctt gaaatatata 2580
tatatattgc tgaaatgtaa aaggtaagaa aagttagaaa gtaagacgat tgctaaccac 2640
ctattggaaa aaacaatagg tccttaaata atattgtcaa cttcaagtat tgtgatgcaa 2700
gcatttagtc atgaacgctt ctctattcta tatgaaaagc cggttccggc ctctcacctt 2760
tccttttttct cccaattttt cagttgaaaa aggtatatgc gtcaggcgac ctctgaaatt 2820
aacaaaaaat ttccagtcat cgaatttgat tctgtgcgat agcgcccctg tgtgttctcg 2880
ttatgttgag gaaaaaaata atggttgcta agagattcga actcttgcat cttacgatac 2940
ctgagtattc ccacagttaa ctgcggtcaa gatatttctt gaatcaggcg ccttagaccg 3000
ctcggccaaa caaccaatta cttgttgaga aatagagtat aattatccta taaatataac 3060
gtttttgaac acacatgaac aaggaagtac aggacaattg attttgaaga gaatgtggat 3120
tttgatgtaa ttgttgggat tccatttttа ataaggcaat aatattaggt atgtggatat 3180
actagaagtt ctcctcgacc gtaataatca tattacatgg cattaccacc atatacatat 3240
ccatatacat atccatatct aatcttactt atatgttgtg gaaatgtaaa gagccccatt 3300
atcttagcct aaaaaaacct tctctttgga actttcagta atacgcttaa ctgctcattg 3360
cgccgccgag cgggtgacag ccctccgaag gaagactctc ctccgtgcgt cctcgtcttc 3420
accggtcgcg ttcctgaaac gcagatgtgc ctcgcgccgc actgctccga acaataaaga 3480
ttctacaata ctagctttta tggttatgaa gaggaaaaat tggcagtaac ctggccccac 3540
aaaccttcaa atgaacgaat caaattaaca accataggat gataatgcga ttagtttttt 3600
agccttattt ctggggtaat taatcagcga agcgatgatt tttgatctat taacagatat 3660
ataaatgcaa aaactgcata accactttaa ctaatacttt caacattttc ggtttgtatt 3720
acttcttatt caaatgtaat aaaagtatca acaaaaaatt gttaatatac ctctatactt 3780

taacgtcaag gagaaaaaac tataatgtcc actttgccta tttcctctgt ttcttcctct 3840

ccatctactt ccccaattgt tgtcgatgat aaggattcta ccaagccaga cgttattaga 3900

cataccgcta acttcaacgc ttccatttgg ggtgatcaat ttttgactta cgatgaacca 3960

gaggacttgg ttatgaagaa gcaattagtc gaagagttaa aggaggaagt taagaaggaa 4020

ttgattacta ttaagggttc taacgaacct atgcaacatg ttaagttgat cgaattaatc 4080

aatgctgttc aacgtttagg tattgcttac cattttgaag aagaaatcga agaagcttta 4140

caacatatcc atgtcactta cggtgaacaa tgggtcgata aggaaaattt acaatctatc 4200

tccttgtggt ttcgtttgtt gcgtcaacaa ggtttcaatg tctcctctgg tgttttcaag 4260

gactttatgg acgaaaaagg taaatttaag gaatctttgt gtaacgacgc tcaaggtatc 4320

ttggccttgt acgaagctgc tttcatgaga gtcgaagatg aaaccatctt ggacaacgct 4380

ttggaattct ctaaggttca cttggacatt attgccaagg atccatcttg tgactcttcc 4440

ttaagaaccc aaatccacca agccttgaag caaccattga gaagaagatt ggccagaatc 4500

gaagctttac actatatgcc aatttaccaa caagaaactt ctcacgacga ggttttgttg 4560

aagttggcta agttagattt ctctgttttg caatccatgc ataagaaaga attgtctcac 4620

atctgcaagt ggtggaaaga tttagacttg caaaacaaat tgccattcgt tcgtgataga 4680

gttgtcgaag gttacttctg gattttgtct atttactatg aaccacaaca tgccagaacc 4740

agaatgttct tgatgaagtc ttgtatgtgg ttggtcgttt tggatgatac cttcgacaac 4800

tacggtacct acgaagaatt ggaaattttc actcaagccg ttgagaagtg gtccatttct 4860

tgtttggaca tgttgccaga atacatgaag ttgatctacc aagaattggt taacttgcac 4920

gttgaaatgg aagaatcttt agaaaaggaa ggtaaggctt atcaaatcca ctacgttaag 4980

gaaatggcta aggaattggt cagaaactac ttggttgaag ccagatggtt gaaagaaggt 5040

tacatgccta ctttggaaga gtacatgtct gtttccatgg ttaccggtac ctacggtttg 5100

atcactgcta gatcttacgt tggtagaggt gacattgtta acgaggacac ttttaaatgg 5160

gtttcttcct acccacctat tgttgaagct tcttgtgtta tcattagatt gatggatgat 5220

attgtctctc ataaagaaga acaagaaaga ggtcatgttg cctcctccat cgaatgttat 5280

tctaaggaat ccggtgcttc tgaagaagaa gcctgtgaat acatctctag aaaagtcgaa 5340

gacgcctgga aggttattaa cagagaatct ttgagaccaa ccgccgttcc attccctttg 5400

ttaatgccag ctatcaactt ggctagaatg tgtgaagttt tatactctgt taacgatggt 5460

ttcactcacg ccgaaggtga catgaaatct tacatgaagt ccttctttgt ccatccaatg 5520

gtcgtttgag cgaatttctt atgatttatg atttttatta ttaaataagt tataaaaaaa 5580

ataagtgtat acaaatttta aagtgactct taggttttaa aacgaaaatt cttattcttg 5640

agtaactctt tcctgtaggt caggttgctt tctcaggtat agcatgaggt cgctcatgcg 5700

tccatcttta cagtcctgtc ttattgttct tgatttgtgc cccgtaaaat actgttactt 5760
ggttctggcg aggtattgga tagttccttt ttataaaggc catgaagctt tttctttcca 5820
attttttttt tttcgtcatt atagaaatca ttacgaccga gattcccggg taataactga 5880
tataattaaa ttgaagctct aatttgtgag tttagtatac atgcatttac ttataataca 5940
gttttttagt tttgctggcc gcatcttctc aaatatgctt cccagcctgc ttttctgtaa 6000
cgttcaccct ctaccttagc atcccttccc tttgcaaata gtcctcttcc aacaataata 6060
atgtcagatc ctgtagagac cacatcatcc acggttctat actgttgacc caatgcgtct 6120
cccttgtcat ctaaacccac accgggtgtc ataatcaacc aatcgtaacc ttcatctctt 6180
ccacccatgt ctctttgagc aataaagccg ataacaaaat ctttgtcact cttcgcaatg 6240
tcaacagtac ccttagtata ttctccagta gatagggagc ccttgcatga caattctgct 6300
aacatcaaaa ggcctctagg ttcctttgtt acttcttctg ccgcctgctt caaaccgcta 6360
acaatacctg ggcccaccac accgtgtgca ttcgtaatgt ctgcccattc tgctattctg 6420
tatacacccg cagagtactg caatttgact gtattaccaa tgtcagcaaa ttttctgtct 6480
tcgaagagta aaaaattgta cttggcggat aatgccttta gcggcttaac tgtgccctcc 6540
atggaaaaat cagtcaagat atccacatgt gtttttagta aacaaatttt gggacctaat 6600
gcttcaacta actccagtaa ttccttggtg gtacgaacat ccaatgaagc acacaagttt 6660
gtttgctttt cgtgcatgat attaaatagc ttggcagcaa caggactagg atgagtagca 6720
gcacgttcct tatatgtagc tttcgacatg atttatcttc gtttcctgca ggtttttgtt 6780
ctgtgcagtt gggttaagaa tactgggcaa tttcatgttt cttcaacacc acatatgcgt 6840
atatatacca atctaagtct gtgctccttc cttcgttctt ccttctgctc ggagattacc 6900
gaatcaaaaa aatttcaaag aaaccggaat caaaaaaaag aacaaaaaaa aaaaagatga 6960
attgaaaagc tttatggacc ctgaaaccac agccacatta accttctttg atggtcaaaa 7020
cttatccttc accataaata tgcctcgcaa aaaaggtaat taacatatat agaattacat 7080
tatttatgaa atatcatcac tatctcttag catctttaat ccttttctac atcagataac 7140
ttcggtttgt tatcatcgtc tgtattgtca tcaattggcg cagtagcctc aatttcaacg 7200
tcgtttgact ctggtgtttg ttcatgtgca gatccatgag atgatgaaat gtgtatatta 7260
gtttaaaaag ttgtatgtaa taaaagtaaa atttaatatt ttggatgaaa aaaaccattt 7320
ttagactttt tcttaactag aatgctggag tagaaatacg ccatctcaag atacaaaaag 7380
cgttaccggc actgatttgt ttcaaccagt atatagatta ttattgggtc ttgatcaact 7440
ttcctcagac atatcagtaa cagttatcaa gctaaatatt tacgcgaaag aaaaacaaat 7500
attttaattg tgatacttgt gaattttatt ttattaagga tacaaagtta agagaaaaca 7560

aaatttatat acaatataag taatattcat atatatgtga tgaatgcagt cttaacgaga 7620

agacatggcc ttggtgacaa ctctcttcaa accaacttca gcctttctca attcatcagc 7680

agatgggtct tcgatttgca aagcagccaa agcatcggac aaagcagctt caatcttgga 7740

cttggaacct ctcttcaatt tagaagacaa gactgggtca gtgacagttt gttcgatgga 7800

ggcaacgtag gattccaatc tttgtctagc ttcgtgcttc ttggcaaaag cttcatcggc 7860

agccttgaac tcttcagctt ggttaaccat cttttcaatt tcttcagaag acaatctacc 7920

aacagcgtta gagatagtga tgttagaaga cttaccggta gacttttcga cggcagtaac 7980

cttcaagata ccgttagcat caacttcgaa gatagcttcc aagactggtt caccagctgg 8040

catcattggg atgttcttca agtcgaattc acccaacaaa gtgttttctt tacagttaac 8100

acgttcacct tggtagactg ggaattgaac ggtggtttgg ttgtcagcac atgtagtaaa 8160

ggttcttctc ttgatggttg gaacagtagt gtttcttgga acaacgatac cgaacatgtc 8220

accttgcata ccaacaccta gagataa 8247

<210> 45
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Recognition sequence for FS-specific TALEN

<400> 45
tagtggagga attaaaagag gaagttaaga aggaattgat aactatcaa 49

<210> 46
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Primer HJ272

<400> 46
ataacaatat tataaaaagc gcttaa 26

<210> 47
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Primer ART45

<400> 47
tactgcttcg gtagtagttt caccccttca 29

<210> 48
<211> 22

<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Primer HJ643

<400> 48
aaaatcctta tattattggc cc 22

<210> 49
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Primer HJ799

<400> 49
gtagcctaaa acaagcgcc 19

<210> 50
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: Homing endonuclease family conserved motif

<400> 50

Leu Ala Gly Leu Ile Asp Ala Asp Gly
1 5

<210> 51
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: Homing endonuclease family conserved motif

<400> 51

Gly Ile Tyr Tyr Ile Gly
1 5

<210> 52
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Recognition sequence for I-SceI

<400> 52
tagggataac agggtaat 18

<210> 53

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

<220>
<223> Synthetic: Recognition sequence for VDE (PI-SceI)

<400> 53
tatgtcgggt gcggagaaag aggtaatgaa a 31

<210> 54
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Recognition sequence for F-CphI

<400> 54
gatgcacgag cgcaacgctc acaa 24

<210> 55
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Recognition sequence for PI-MgaI

<400> 55
gcgtagctgc ccagtatgag tcag 24

<210> 56
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Recognition sequence for PI-MtuII

<400> 56
acgtgcacta cgtagagggt cgcaccgcac cgatctacaa 40

<210> 57
<211> 4300
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: ADE2_SFC1 donor cassette

<400> 57
ccggtggtgc ttatactgtt tctactgcag ctgccgctac tgttagatct accatcagaa 60

gattaagaga aatggttgaa gcttaaactt ctttcattca ttttctcttg gctttcacta 120

ggtatatcta ttccataacg actatgtttt gtatttgtta atttacataa aaccatatca 180

gtacatcaac gaactgtaaa aaagaaactt tagcataatt attgcggata tttaaactca 240

cttgcaggta agagcaaaag gcgattgatt tccagtccgc ctcttgtcac gtgatttagt 300
aagaaatttt gacagcaccc tcggtttaat ggaaaagagg ggcgtttttc gatgaacccg 360
aggggagact agagaatcat ctcggttgaa tggagcatta ttttttttagt agcgcccgcc 420
cggagaaatg gacgttggcg aatgagccat gaattattaa ccgcccatgt ctaccagata 480
gacggcacgg ccacgcgttt aaaccgcccc acatcgtatg acagtaccag cctagtcccg 540
gtaaaccgca aacggacctt aattgtgacg aagggcccaa atttgatggg tcggtgttaa 600
tgattagtcc tcattgtcat aataaagtgt gatgatggag gcaatgatga tatacggtag 660
tactactgct cgaggtgcta tcttttaacc aatcctttga gattcttgtc gccacggagt 720
tactaccttt tacaaaccgt aatgtcacat tttgcatata tcttatgtat aaatatatag 780
ttcacttact acttgttctc gttttgttaa ctttcttgtt gtagttcttc ttgttcttgg 840
cgtttccccc tttgttttct atctgcttca taagtaaagt gcaaagcatt ttggaagata 900
ttatcaattg agtcattgaa agaaacttgg catcttccct attactaaaa ctaagaatac 960
ttgattcaag aaagaagttt atattagttt tagccgtaag ataacataac aaagaagaag 1020
aaagaaaatt cttgaataat acataacttt tcttaaaaga atcaaagaca gataaaattt 1080
aagagatatt aaatattagt gagaagccga gaattttgta acaccaacat aacactgaca 1140
tctttaacaa cttttaatta tgatacattt cttacgtcat gattgattat tacagctatg 1200
ctgacaaatg actcttgttg catggctacg aaccgggtaa tactaagtga ttgactcttg 1260
ctgacctttt attaagaact aaatggacaa tattatggag catttcatgt ataaattggt 1320
gcgtaaaatc gttggatctc tcttctaagt acatcctact ataacaatca agaaaaacaa 1380
gaaaatcgga caaaacaatc aagtatggat tctagaacag ttggtatatt aggaggggga 1440
caattgggac gtatgattgt tgaggcagca aacaggctca acattaagac ggtaatacta 1500
gatgctgaaa attctcctgc caaacaaata agcaactcca atgaccacgt taatggctcc 1560
ttttccaatc ctcttgatat cgaaaaacta gctgaaaaat gtgatgtgct aacgattgag 1620
attgagcatg ttgatgttcc tacactaaag aatcttcaag taaaacatcc caaattaaaa 1680
atttaccctt ctccagaaac aatcagattg atacaagaca aatatattca aaaagagcat 1740
ttaatcaaaa atggtatagc agttacccaa agtgttcctg tggaacaagc cagtgagacg 1800
tccctattga atgttggaag agatttgggt tttccattcg tcttgaagtc gaggactttg 1860
gcatacgatg gaagaggtaa cttcgttgta aagaataagg aaatgattcc ggaagctttg 1920
gaagtactga aggatcgtcc tttgtacgcc gaaaaatggg caccatttac taaagaatta 1980
gcagtcatga ttgtgaggtc tgttaacggt ttagtgtttt cttacccaat tgtagagact 2040
atccacaagg acaatatttg tgacttatgt tatgcgcctg ctagagttcc ggactccgtt 2100

caacttaagg cgaagttgtt ggcagaaaat gcaatcaaat cttttcccgg ttgtggtata 2160

tttggtgtgg aaatgttcta tttagaaaca ggggaattgc ttattaacga aattgcccca 2220

aggcctcaca actctggaca ttataccatt gatgcttgcg tcacttctca atttgaagct 2280

catttgagat caatattgga tttgccaatg ccaaagaatt tcacatcttt ctccaccatt 2340

acaacgaacg ccattatgct aaatgttctt ggagacaaac atacaaaaga taaagagcta 2400

gaaacttgcg aaagagcatt ggcgactcca ggttcctcag tgtacttata tggaaaagag 2460

tctagaccta acagaaaagt aggtcacata aatattattg cctccagtat ggcggaatgt 2520

gaacaaaggc tgaactacat tacaggtaga actgatattc caatcaaaat ctctgtcgct 2580

caaaagttgg acttggaagc aatggtcaaa ccattggttg gaatcatcat gggatcagac 2640

tctgacttgc cggtaatgtc tgccgcatgt gcggttttaa aagattttgg cgttccattt 2700

gaagtgacaa tagtctctgc tcatagaact ccacatagga tgtcagcata tgctatttcc 2760

gcaagcaagc gtggaattaa aacaattatc gctggagctg gtggggctgc tcacttgcca 2820

ggtatggtgg ctgcaatgac accacttcct gtcatcggtg tgcccgtaaa aggttcttgt 2880

ctagatggag tagattcttt acattcaatt gtgcaaatgc ctagaggtgt tccagtagct 2940

accgtcgcta ttaataatag tacgaacgct gcgctgttgg ctgtcagact gcttggcgct 3000

tatgattcaa gttatacaac gaaaatggaa cagtttttat taaagcaaga agaagaagtt 3060

cttgtcaaag cacaaaagtt agaaactgtc ggttacgaag cttatctaga aaacaagtaa 3120

tatataagtt tattgatata cttgtacagc aaataattat aaaatgatat acctatttt 3180

taggctttgt tatgattaca tcaaatgtgg acttcataca tagaaatcaa cgcttacagg 3240

tgtccttttt taagaatttc atacataaga tcatgatgaa caatgggact acaaaatgaa 3300

ataaagaaaa aatagaaata gaatagaaga tcaattatta atcgccctat tcttccttat 3360

tacctacaca aaataaagca gcaacataag aaacaaaaac aaaatgaaaa caaaccaaat 3420

aaatctatgt aagcatactc atttcaattt gatattcatt acttgacttt tttgtcctta 3480

tttgaggctc cataagcgcg ccattttccc ctactccctt ttttcgtaaa tagtaataat 3540

gtgctgaaaa gaacaatgaa gtagttatca tacatattcc gtcgtgtcga tatgagggga 3600

ggtgtctctt tctttcatcc cttgtcgcaa cctccaatat ataagagcat aagcaactga 3660

tcttacttta gtaattaact tagcatacct ggcccgaagg aagaaaaaaa attcacctca 3720

acaacatggt tcctaagttt tacaaacttt caaacggctt caaaatccca agcattgctt 3780

tgggaaccta ccggtgttta aaccccagcg cctggcgggg atattccaag atcgcaaaca 3840

gccgaaattg tgtatgaagg tgtcaagtgc ggctaccgtc atttcgatac tgctgttctt 3900

tatggtaatg agaaggaagt tggcgatggt atcattaaat ggttgaacga agatccaggg 3960

aaccataaac gtgaggaaat cttctacact actaaattat ggaattcgca aaacggatat 4020

aaaagagcta aagctgccat tcagcaatgt ttgaatgaag tctcgggctt gcaatacatc 4080

gatcttcttt tgattcattc gccactggaa ggttctaaat taaggttgga aacttggcgc 4140

gccatgcaag aagcggttga tgaaggattg gttaagtcta taggggtttc caactatggg 4200

aaaaagcaca ttgatgaact tttgaactgg ccagaactga agcacaagcc agtggtcaac 4260

caaatcgaga tatcaccttg gattatgaga caagaattag 4300

<210> 58
<211> 3586
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: GFP_SFC1 donor cassette

<400> 58
ccggtggtgc ttatactgtt tctactgcag ctgccgctac tgttagatct accatcagaa 60

gattaagaga aatggttgaa gcttaaactt ctttcattca ttttctcttg gctttcacta 120

ggtatatcta ttccataacg actatgtttt gtatttgtta atttacataa aaccatatca 180

gtacatcaac gaactgtaaa aaagaaactt tagcataatt attgcggata tttaaactca 240

cttgcaggta agagcaaaag gcgattgatt tccagtccgc ctcttgtcac gtgatttagt 300

aagaaatttt gacagcaccc tcggtttaat ggaaaagagg ggcgtttttc gatgaacccg 360

aggggagact agagaatcat ctcggttgaa tggagcatta ttttttttagt agcgcccgcc 420

cggagaaatg gacgttggcg aatgagccat gaattattaa ccgcccatgt ctaccagata 480

gacggcacgg ccacgcgttt aaaccgcccc acatcgtatg acagtaccag cctagtcccg 540

gtaaaccgca aacggacctt aattgtgacg aagggcccaa atttgatggg tcggtgttaa 600

tgattagtcc tcattgtcat aataaagtgt gatgatggag gcaatgatga tatacggtag 660

tactactgct cgaggtgcta tcttttaacc aatcctttga gattcttgtc gccacggagt 720

tactaccttt tacaaaccgt aatgtcacat tttgcatata tcttatgtat aaatatatag 780

ttcacttact acttgttctc gttttgttaa ctttcttgtt gtagttcttc ttgttcttgg 840

cgtttccccc tttgttttct atctgcttca taagtaaagt gcaaagcatt ttggaagata 900

ttatcaattg agtcattgaa agaaacttgg catcttccct attactaaaa ctaagaatac 960

ttgattcaag aaagaagttt atattagttt tagccgtaag ataacataac aaagaagaag 1020

aaagaaaaac acaattacag taacaataac aagaggacag atactaccaa aatgtgtggg 1080

gaagcgggta agctgccaca gcaattaatg cacaacattt aacctacatt cttccttatc 1140

ggatcctcaa aacccttaaa aacatatgcc tcaccctaac atattttcca attaaccctc 1200

aatatttctc tgtcacccgg cctctatttt ccattttctt ctttacccgc cacgcgtttt 1260

tttctttcaa attttttttct tctttcttct ttttcttcca cgtcctcttg cataaataaa 1320

taaaccgttt tgaaaccaaa ctcgcctctc tctctccttt ttgaaatatt tttgggtttg 1380

tttgatcctt tccttcccaa tctctcttgt ttaatatata ttcatttata tcacgctctc 1440

tttttatctt cctttttttc ctctctcttg tattcttcct tccccttttct actcaaacca 1500

agaagaaaaa gaaaaggtca atctttgtta aagaatagga tcttctacta catcagcttt 1560

tagatttttc acgcttactg ctttttttctt cccaagatcg aaaatttact gaattaacaa 1620

tggtgagcaa gggcgaggag ctgttcaccg gggtggtgcc catcctggtc gagctggacg 1680

gcgacgtaaa cggccacaag ttcagcgtgt ccggcgaggg cgagggcgat gccacctacg 1740

gcaagctgac cctgaagttc atctgcacca ccggcaagct gcccgtgccc tggcccaccc 1800

tcgtgaccac cttgacctac ggcgtgcagt gcttcgcccg ctaccccgac cacatgaagc 1860

agcacgactt cttcaagtcc gccatgcccg aaggctacgt ccaggagcgc accatcttct 1920

tcaaggacga cggcaactac aagacccgcg ccgaggtgaa gttcgagggc gacaccctgg 1980

tgaaccgcat cgagctgaag ggcatcgact tcaaggagga cggcaacatc ctggggcaca 2040

agctggagta caactacaac agccacaagg tctatatcac cgccgacaag cagaagaacg 2100

gcatcaaggt gaacttcaag acccgccaca acatcgagga cggcagcgtg cagctcgccg 2160

accactacca gcagaacacc cccatcggcg acggccccgt gctgctgccc gacaaccact 2220

acctgagcac ccagtccgcc ctgagcaaag accccaacga gaagcgcgat cacatggtcc 2280

tgctggagtt cgtgaccgcc gccgggatca ctctcggcat ggacgagctg tacaagtaac 2340

tcgagaagct tgatccggct gcgaatttct tatgatttat gatttttatt attaaataag 2400

ttataaaaaa aataagtgta tacaaatttt aaagtgactc ttaggtttta aaacgaaaat 2460

tcttattctt gagtaactct ttcctgtagg tcaggttgct ttctcaggta tagcatgagg 2520

tcgctcttat tgaccacacc tctaccggca tgccgagcat gatgaacaat gggactacaa 2580

aatgaaataa agaaaaaata gaaatagaat agaagatcaa ttattaatcg ccctattctt 2640

ccttattacc tacacaaaat aaagcagcaa cataagaaac aaaaacaaaa tgaaaacaaa 2700

ccaaataaat ctatgtaagc atactcattt caatttgata ttcattactt gacttttttg 2760

tccttatttg aggctccata agcgcgccat tttcccctac tccctttttt cgtaaatagt 2820

aataatgtgc tgaaaagaac aatgaagtag ttatcataca tattccgtcg tgtcgatatg 2880

aggggaggtg tctctttctt tcatcccttg tcgcaacctc caatatataa gagcataagc 2940

aactgatctt actttagtaa ttaacttagc atacctggcc cgaaggaaga aaaaaaattc 3000

acctcaacaa catggttcct aagttttaca aactttcaaa cggcttcaaa atcccaagca 3060

ttgctttggg aacctaccgg tgtttaaacc ccagcgcctg gcggggatat tccaagatcg 3120

caaacagccg aaattgtgta tgaaggtgtc aagtgcggct accgtcattt cgatactgct 3180

gttctttatg gtaatgagaa ggaagttggc gatggtatca ttaaatggtt gaacgaagat 3240

ccagggaacc ataaacgtga ggaaatcttc tacactacta aattatggaa ttcgcaaaac 3300

ggatataaaa gagctaaagc tgccattcag caatgtttga atgaagtctc gggcttgcaa 3360

tacatcgatc ttcttttgat tcattcgcca ctggaaggtt ctaaattaag gttggaaact 3420

tggcgcgcca tgcaagaagc ggttgatgaa ggattggtta agtctatagg ggtttccaac 3480

tatgggaaaa agcacattga tgaacttttg aactggccag aactgaagca caagccagtg 3540

gtcaaccaaa tcgagatatc accttggatt atgagacaag aattag 3586

<210> 59
<211> 4300
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: ADE2_YJR030C donor cassette

<400> 59
ggaactttat gaacatatta agtctgcttg atgaaatgtc atgtgcaggt gccgttggca 60

caaaatggga acaaaattat gaaaattcag tcgaggatgg gtgtgaagca cctgaatcca 120

atccataccg ttctattatt gatctttcta gtcgttccat taatataact gcagacctac 180

tttcgactgt tgggaggagt aattcagcac tcaacaagaa tgagattata gctgctattc 240

aaggtctcgc ccatcaatgc ctcaatccct gtgacgaact aggtatgcaa gcattgcaag 300

cattagagaa cattctgtta tctcgagcaa gtcaactacg tacggaaaaa gttgcggtgg 360

ataacctact agagacagga ttattaccga tttttgagtt ggatgaaatc caagatgtca 420

agatgaaacg aattactagc attttatccg ttctttctaa aatgacggca cggccacgcg 480

tttaaaccgc ccttcttggg tcaacttgtg gaaggcgtaa caagtaacga aacttttttg 540

agagtgctta acgtatttaa caagtatgta gatgatccta cggtggaaag gcagttgcaa 600

gagttgatta tttctaagag ggaaatcgag aaggagtaga ccaacgataa tgtaactata 660

ccaagaaact tagtatgatg gaatttttttc aaggagtcgt aaattagatt ttcgcaggta 720

ataatgcgat atataagcaa tctcatttaa atatcgacgg tggcatttat accatcattt 780

actgttatat ttatctaacg cgtcgcgacg cgttagataa aatacaacaa gatttttttt 840

tcgtgtcacc aatggcatga aagcttcgag aataatttga aggaaatttc acttaatggg 900

aaaaataaaa atgtaccctt atcgagatta ctcttttacc ctcagttcaa ttaaaattca 960

tcatgaacca agtaaaagtt cctctaatta cgaacgagca agcaaattag tattgtgtgg 1020

gagacgggtt cttgaataat acataacttt tcttaaaaga atcaaagaca gataaaattt 1080

aagagatatt aaatattagt gagaagccga gaattttgta acaccaacat aacactgaca 1140

tctttaacaa cttttaatta tgatacattt cttacgtcat gattgattat tacagctatg 1200

ctgacaaatg actcttgttg catggctacg aaccgggtaa tactaagtga ttgactcttg 1260

ctgacctttt attaagaact aaatggacaa tattatggag catttcatgt ataaattggt 1320

gcgtaaaatc gttggatctc tcttctaagt acatcctact ataacaatca agaaaaacaa 1380

gaaaatcgga caaaacaatc aagtatggat tctagaacag ttggtatatt aggaggggga 1440

caattgggac gtatgattgt tgaggcagca aacaggctca acattaagac ggtaatacta 1500

gatgctgaaa attctcctgc caaacaaata agcaactcca atgaccacgt taatggctcc 1560

ttttccaatc ctcttgatat cgaaaaacta gctgaaaaat gtgatgtgct aacgattgag 1620

attgagcatg ttgatgttcc tacactaaag aatcttcaag taaaacatcc caaattaaaa 1680

atttaccctt ctccagaaac aatcagattg atacaagaca aatatattca aaaagagcat 1740

ttaatcaaaa atggtatagc agttacccaa agtgttcctg tggaacaagc cagtgagacg 1800

tccctattga atgttggaag agatttgggt tttccattcg tcttgaagtc gaggactttg 1860

gcatacgatg gaagaggtaa cttcgttgta aagaataagg aaatgattcc ggaagctttg 1920

gaagtactga aggatcgtcc tttgtacgcc gaaaaatggg caccatttac taaagaatta 1980

gcagtcatga ttgtgaggtc tgttaacggt ttagtgtttt cttacccaat tgtagagact 2040

atccacaagg acaatatttg tgacttatgt tatgcgcctg ctagagttcc ggactccgtt 2100

caacttaagg cgaagttgtt ggcagaaaat gcaatcaaat cttttcccgg ttgtggtata 2160

tttggtgtgg aaatgttcta tttagaaaca ggggaattgc ttattaacga aattgcccca 2220

aggcctcaca actctggaca ttataccatt gatgcttgcg tcacttctca atttgaagct 2280

catttgagat caatattgga tttgccaatg ccaaagaatt tcacatcttt ctccaccatt 2340

acaacgaacg ccattatgct aaatgttctt ggagacaaac atacaaaaga taaagagcta 2400

gaaacttgcg aaagagcatt ggcgactcca ggttcctcag tgtacttata tggaaaagag 2460

tctagaccta acagaaaagt aggtcacata aatattattg cctccagtat ggcggaatgt 2520

gaacaaaggc tgaactacat tacaggtaga actgatattc caatcaaaat ctctgtcgct 2580

caaaagttgg acttggaagc aatggtcaaa ccattggttg gaatcatcat gggatcagac 2640

tctgacttgc cggtaatgtc tgccgcatgt gcggttttaa aagattttgg cgttccattt 2700

gaagtgacaa tagtctctgc tcatagaact ccacatagga tgtcagcata tgctatttcc 2760

gcaagcaagc gtggaattaa aacaattatc gctggagctg gtggggctgc tcacttgcca 2820

ggtatggtgg ctgcaatgac accacttcct gtcatcggtg tgcccgtaaa aggttcttgt 2880

ctagatggag tagattcttt acattcaatt gtgcaaatgc ctagaggtgt tccagtagct 2940

accgtcgcta ttaataatag tacgaacgct gcgctgttgg ctgtcagact gcttggcgct 3000

tatgattcaa gttatacaac gaaaatggaa cagtttttat taaagcaaga agaagaagtt 3060

cttgtcaaag cacaaaagtt agaaactgtc ggttacgaag cttatctaga aaacaagtaa 3120

tatataagtt tattgatata cttgtacagc aaataattat aaaatgatat acctatttt 3180

taggctttgt tatgattaca tcaaatgtgg acttcataca tagaaatcaa cgcttacagg 3240

tgtccttttt taagaatttc atacataaga tcatgttgag ataattgttg ggattccatt 3300

gttgataaag gctataatat taggtataca gaatatacta gaagttctcc tcgaggatat 3360

aggaatcctc aaaatggaat ctatatttct acatactaat attacgatta ttcctcattc 3420

cgttttatat gtttatattc attgatccta ttacattatc aatccttgcg tttcagcttc 3480

ctctaacttc gatgacagct tctcataact tatgtcatca tcttaacacc gtatatgata 3540

atatattgat aatataacta ttagttgata gacgatagtg gatttttatt ccaacatacc 3600

acccataatg taatagatct aatgaatcca tttgtttgtt aatagtttga atgtttttat 3660

cggaagaggt ttggtcatta cgtctgcaat attctttttg gtttcgatat agcatacgtg 3720

cagatgattt cctgatactt catctctcaa tctcattgct ttagtaccaa aaaatctgtt 3780

cctaaatttc cggtgtttaa accccagcgc ctggcgggtc ttcattattg gatataatta 3840

tactgattgt agatttactg tcggttagta atcctttggt aattggtttc ttgtcaagtt 3900

cttgtatcag gtaacttaga ttatttaata atgggacaga ttcacttatc gcgtgtattt 3960

ctgcttccgt agttgaagta catgttaatg aagccttggt ggactttcct ccaattacct 4020

ttccattaag taaatatatg ttgccaattt gtgatttata atacggttgg ttgccatacg 4080

aggcatcgct tataacaact aatttatttg ttggcttaac aggtttgctt ttgtgccata 4140

ttaattgctt atctctcgta ttccatatga actgtatcaa ttcatatgtc atatctaaca 4200

cttgcttgga cggaaatagt atatgttgtg caagtgtgtt gatgtagtat aataggtcaa 4260

atctaaattt atatccaaca tatgatgcta gacctatcag 4300

<210> 60
<211> 3586
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: GFP_YJR030C donor cassette

<400> 60
ggaactttat gaacatatta agtctgcttg atgaaatgtc atgtgcaggt gccgttggca 60

caaaatggga acaaaattat gaaaattcag tcgaggatgg gtgtgaagca cctgaatcca 120

atccataccg ttctattatt gatctttcta gtcgttccat taatataact gcagacctac 180

tttcgactgt tgggaggagt aattcagcac tcaacaagaa tgagattata gctgctattc 240

aaggtctcgc ccatcaatgc ctcaatccct gtgacgaact aggtatgcaa gcattgcaag 300

cattagagaa cattctgtta tctcgagcaa gtcaactacg tacggaaaaa gttgcggtgg 360

ataacctact agagacagga ttattaccga tttttgagtt ggatgaaatc caagatgtca 420

agatgaaacg aattactagc attttatccg ttctttctaa aatgacggca cggccacgcg 480

tttaaaccgc ccttcttggg tcaacttgtg gaaggcgtaa caagtaacga aacttttttg 540

agagtgctta acgtatttaa caagtatgta gatgatccta cggtggaaag gcagttgcaa 600

gagttgatta tttctaagag ggaaatcgag aaggagtaga ccaacgataa tgtaactata 660

ccaagaaact tagtatgatg gaatttttc aaggagtcgt aaattagatt ttcgcaggta 720

ataatgcgat atataagcaa tctcatttaa atatcgacgg tggcatttat accatcattt 780

actgttatat ttatctaacg cgtcgcgacg cgttagataa aatacaacaa gatttttttt 840

tcgtgtcacc aatggcatga aagcttcgag aataatttga aggaaatttc acttaatggg 900

aaaaataaaa atgtaccctt atcgagatta ctcttttacc ctcagttcaa ttaaaattca 960

tcatgaacca agtaaaagtt cctctaatta cgaacgagca agcaaattag tattgtgtgg 1020

gagacgggac acaattacag taacaataac aagaggacag atactaccaa aatgtgtggg 1080

gaagcgggta agctgccaca gcaattaatg cacaacattt aacctacatt cttccttatc 1140

ggatcctcaa aacccttaaa aacatatgcc tcaccctaac atattttcca attaaccctc 1200

aatatttctc tgtcacccgg cctctatttt ccattttctt ctttacccgc cacgcgtttt 1260

tttctttcaa attttttttct tctttcttct ttttcttcca cgtcctcttg cataaataaa 1320

taaaccgttt tgaaaccaaa ctcgcctctc tctctccttt ttgaaatatt tttgggtttg 1380

tttgatcctt tccttcccaa tctctcttgt ttaatatata ttcatttata tcacgctctc 1440

tttttatctt cctttttttc ctctctcttg tattcttcct tccccttttct actcaaacca 1500

agaagaaaaa gaaaaggtca atctttgtta aagaatagga tcttctacta catcagcttt 1560

tagatttttc acgcttactg ctttttttctt cccaagatcg aaaatttact gaattaacaa 1620

tggtgagcaa gggcgaggag ctgttcaccg gggtggtgcc catcctggtc gagctggacg 1680

gcgacgtaaa cggccacaag ttcagcgtgt ccggcgaggg cgagggcgat gccacctacg 1740

gcaagctgac cctgaagttc atctgcacca ccggcaagct gcccgtgccc tggcccaccc 1800

tcgtgaccac cttgacctac ggcgtgcagt gcttcgcccg ctaccccgac cacatgaagc 1860

agcacgactt cttcaagtcc gccatgcccg aaggctacgt ccaggagcgc accatcttct 1920

tcaaggacga cggcaactac aagacccgcg ccgaggtgaa gttcgagggc gacaccctgg 1980

tgaaccgcat cgagctgaag ggcatcgact tcaaggagga cggcaacatc ctggggcaca 2040

agctggagta caactacaac agccacaagg tctatatcac cgccgacaag cagaagaacg 2100

gcatcaaggt gaacttcaag acccgccaca acatcgagga cggcagcgtg cagctcgccg 2160

accactacca gcagaacacc cccatcggcg acggccccgt gctgctgccc gacaaccact 2220

acctgagcac ccagtccgcc ctgagcaaag accccaacga gaagcgcgat cacatggtcc 2280

tgctggagtt cgtgaccgcc gccgggatca ctctcggcat ggacgagctg tacaagtaac 2340

tcgagaagct tgatccggct gcgaatttct tatgatttat gatttttatt attaaataag 2400

ttataaaaaa aataagtgta tacaaatttt aaagtgactc ttaggtttta aaacgaaaat 2460

tcttattctt gagtaactct ttcctgtagg tcaggttgct ttctcaggta tagcatgagg 2520

tcgctcttat tgaccacacc tctaccggca tgccgagcat gttgagataa ttgttgggat 2580

tccattgttg ataaaggcta taatattagg tatacagaat atactagaag ttctcctcga 2640

ggatatagga atcctcaaaa tggaatctat atttctacat actaatatta cgattattcc 2700

tcattccgtt ttatatgttt atattcattg atcctattac attatcaatc cttgcgtttc 2760

agcttcctct aacttcgatg acagcttctc ataacttatg tcatcatctt aacaccgtat 2820

atgataatat attgataata taactattag ttgatagacg atagtggatt tttattccaa 2880

cataccaccc ataatgtaat agatctaatg aatccatttg tttgttaata gtttgaatgt 2940

ttttatcgga agaggtttgg tcattacgtc tgcaatattc tttttggttt cgatatagca 3000

tacgtgcaga tgatttcctg atacttcatc tctcaatctc attgctttag taccaaaaaa 3060

tctgttccta aatttccggt gtttaaaccc cagcgcctgg cgggtcttca ttattggata 3120

taattatact gattgtagat ttactgtcgg ttagtaatcc tttggtaatt ggtttcttgt 3180

caagttcttg tatcaggtaa cttagattat ttaataatgg gacagattca cttatcgcgt 3240

gtatttctgc ttccgtagtt gaagtacatg ttaatgaagc cttggtggac tttcctccaa 3300

ttacctttcc attaagtaaa tatatgttgc caatttgtga tttataatac ggttggttgc 3360

catacgaggc atcgcttata acaactaatt tatttgttgg cttaacaggt ttgcttttgt 3420

gccatattaa ttgcttatct ctcgtattcc atatgaactg tatcaattca tatgtcatat 3480

ctaacacttg cttggacgga aatagtatat gttgtgcaag tgtgttgatg tagtataata 3540

ggtcaaatct aaatttatat ccaacatatg atgctagacc tatcag 3586

<210> 61
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Recognition sequence for ZFN.YJR030C

<400> 61
cccggtatca gcaacccccc atgacgataa cgttgatgaa acg 43

<210> 62
<211> 40
<212> DNA

<213> Artificial Sequence

<220>
<223> Synthetic: Recognition sequence for ZFN.SFC1

<400> 62
caccttacc gtttatgaat atgtaaggga gcatttagaa 40

<210> 63
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Primer CUT351

<400> 63
gcgaatgagc catgaattat taaccgc 27

<210> 64
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Primer CUT350

<400> 64
agatgaaacg aattactagc attttatccg ttc 33

<210> 65
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Primer CUT371

<400> 65
taactaccat tactcagtgt acttgattgt tttgtccgat tttcttg 47

<210> 66
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Primer HJ788

<400> 66
gccgggtgac agagaaatat tg 22