

Figure 1

1-

atgtgtgagacotctttctcaattttactcagattaccgagcataattcccgctcgttccgcaaact
atcagccaaacctgtggaatttcgaatttcctgcaatccctggagaacgacctgaaagtggaaaa
gctggaggagaaaagcgaccaaactggaggaagaagttcgctgcatgatcaaccgtgtagacacc
cagccgctgtccctgctggagctgatcgacgatgtgcagcgctgggtctgacotacaaatttg
aaaaagacatcattaaagccctggaaaacatcgtaactgctggacgaaaacaaaaagaacaaatc
tgacctgcacgcaaacctctctgtctttccgtctgctgcgtcagcacggtttcgagggtttctcag
gatgtttttgagcgtttcaaggataaagaaggtgggtttcagcgggtgaactgaaaggtgacgtcc
aaggcctgctgagcctgtatgaagcgtcttacctgggtttcgagggtgagaacctgctggagga
ggcgcgtaccttttccatcacccacctgaagaacaacctgaaagaaggcattaataccaagggtt
gcagaacaagtgagccacgcctggaaactgccatatcaccagcgtctgcacctctggaggcac
gttggttccctggataaatacgaaccgaaagaacccgatcaccagctgctgctggagctggcgaa
gctggatttttaacatggtacagacctgcaccagaaagagctgcaagatctgtcccgctgggtg
accgagatgggcctggctagcaaaactggattttgtacgcgaccgcctgatggaagttttatttct
gggcactgggtatggcgccagaccgcagtttggtgaatgtcgcaaagctgttactaaaatggt
tggtctggtgacgatcatcgatgacgtgtatgacgtttatggcactctggacgaaotgcaactg
ttcacccgatgctgtagagcgtgggacgttaacgctattaacacctgccggactatatgaaac
tgtgtttccctggcactgtacaacaccgttaacgacacgtcctattctattctgaaagagaaagg
tcataacaacctgtcctatctgacgaaaagctggcgtgaactgtgcaaagcctttctgcaagag
gcgaaatgggtccaacaacaaaattatcccggtttctccaagtacctggaaaacgccagcgttt
cctcctccggtgtagcgtgctggcgccgtcttacttttccgtatgccagcagcaggaagacat
ctccgaccacgcgctgcgttccctgaccgacttccatggtctggtgcgttctagctgcgttate
ttccgcctgtgcaacgatctggccacctctgcggcgagctggaacgtggcgagactaccaatt
ctatcattagctacatgcacgaaaacgatggtaccagcgagggaacaggcccgcgaagaactgcg
taaactgatcgacgccgaatggaaaaagatgaatcgtgaacgcgttagcgactccacctgctg
cctaaagcgttcatggaaatcgacgttaacatggcacgtgtttccactgcacctaccagtatg
gcgatgggtctgggtcgcccagactacgcgactgaaaaccgcatcaaactgctgctgattgaccc
tttcccgattaacccagctgatgtatgtc

taactgcag

(SEQ ID NO:1)

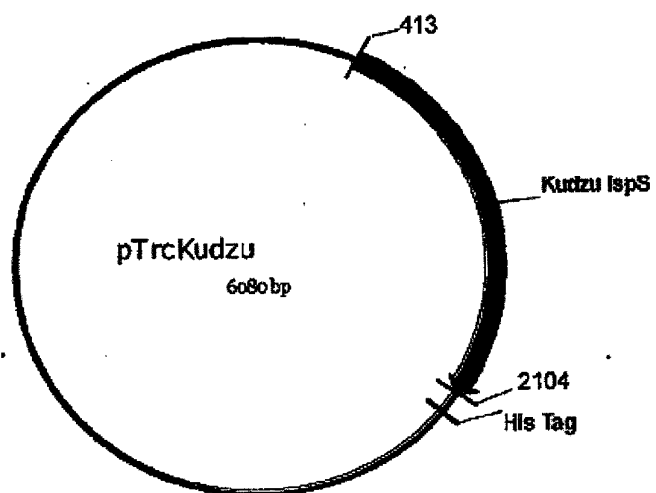
Figure 2

Figure 3A

1-

gtttgacagcttatcatcgactgcacgggtgcaccaatgcttctggcgtcaggcagccatcggaag
gotgtggtatggctgtgcaggtcgtaaatcactgcataattcgtgtcgctcaaggcgcactccc
gttctggataatgttttttgcgcgcacatcataacgggttctggcaaattcttgaaatgagctg
ttgacaattaatcatccggctcgataatgtgtggaattgtgagcggataacaatttcacacag
gaaacagcgcgcgtgagaaaaagcgaagcggcactgctctttaacaatttatcagacaatctgt
gtgggcactcgacccgaattatcgattaactttattattaaaaattaaagagggtatatattaat
gtatcgattaaataaggaggaataaaacc**ATG**gtgcgacctcttctcaatttactcagattacc
gagcataattcccgctcgttccgcaaaactatcagccaaacctgtggaatttcgaattcctgcaat
ccctggagaacgcacctgaaagtggaaaaagctggaggagaaaagcgaccaaactggaggaagaagt
tcgctgcgatgatcaaccgtgtagacaccagccgctgtccctgctggagctgatcgacgatgtg
cagcgcctgggtctgacctacaaatttgaaaaagacatcattaaagccctggaaaacatcgtaac
tgctggacgaaaaacaaaagaacaaatctgacctgcacgcaaccgctctgtcttccgtctgct
gcgtcagcacgggttctcagggtttctcaggatgtttttgagcgtttcaaggataaagaagggtggt
ttcagcgggtgaactgaaagggtgacgtccaaggcctgctgagcctgtatgaagcgtcttacctgg
gttttcgaggggtgagaacctgctggaggaggcgcgtaccttttccatcacccacctgaagaacaa
cctgaaagaaggcatataaccaagggtgcagaacaagtgagccacgccttggaactgccatat
caccagcgtctgcaccgtctggaggcagcttggttcctggataaatacgaaccgaaagaaccgc
atcaccagctgctgctggagctggcgaagctggattttaacatggtacagaccctgcaccagaa
agagctgcaagatctgtcccgctggtggaccgagatgggcctggctagcaaaactggattttgta
cgcgaccgcctgatggaagtttatttctgggcaactgggtatggcgccagaccgcagtttggtg
aatgtcgcaaagctgttactaaaatgtttggtctggtgacgatcatcgatgacgtgtatgacgt
ttatggcactctggacgaactgcaactgttcaccgatgctgtagagcgtgggacgttaacgct
attaacacctgcccgaactatatgaaactgtgtttcctggcactgtacaacacctgtaacgaca
cgctcctattctattctgaaagagaaaagggtcataacaacctgtcctatctgacgaaaagctggcg
tgaactgtgcaaagcctttctgcaagaggcgaaatgggtccaacaacaaaattatcccggtttc
tccaagtacctggaaaacgccagcgtttcctcctccggtgtagecgtgctggcgccgtcttact
tttccgtatgccagcagcaggaagacatctccgaccaacgcgctgcgttccctgaccgactcca
tggtctggtgcgttctagctgcgttatcttccgcctgtgcaacgatctggccacctctgcggcg
gagctggaacgtggcgagactaccaattctatcattagctacatgcacgaaaacgatggtacca
gcgaggaacaggcccgcaagaactgcgtaaactgatcgacgccgaatggaaaaagatgaatcg
tgaacgcgttagcgactccacctgctgcctaaagcgttcattgaaatcgagtttaacatggca
cgtgtttcccaactgcacctaccagtatggcgatgggtctgggtcgccagactacgcgactgaaa
accgcatcaaaactgctgctgattgacctttcccgattaaaccagctgatgtatgtc**TAA**ctgca
gctggtaccatatgggaattcgaagctttctagaacaaaaactcatctcagaagaggatctgaa
tagcgcctgogaccatcatcatcatcattgagtttaaacgggtctcagcttggtgtgtttg
goggatgagagaagattttcagcctgatacagattaaatcagaacgcagaagcggctctgataaa
acagaatttgccctggcggcagtagcgcgggtggtccacctgaccccatgccgaactcagaagtg
aaacgccttagcgcggatggtagtgtgggtctcccatgcgagagtagggaactgccaggcat
caaataaaacgaaaggctcagtcgaaagactgggcctttcgttttatctgttgtttgtcggtga
acgctctcctgagtaggacaaaatccgcggggagcggatttgaaacgttgcaagcaacggcccg

Figure 3B

aggggtggcgggcaggacgcccgcataaaactgccaggcatcaaattaagcagaaggccatcctg
acggatggccctttttgcggtttctacaaactcttttggttatttttctaaatacattoaaatat
gtatccgctcatgagacaataaccctgataaatgottcaataattgaaaaaggaagagtatg
agtattcaacatttcogtgtcgcccttattcccttttttgcggcattttgccttctgtttttg
ctcaccagaaaacgctgggtgaaagtaaaagatgctgaagatcagttgggtgcacgagtggtta
catcgaactggatctcaacagcggtaagatccttgagagttttcgccccgaagaacgttttcca
atgatgagcacttttaagttctgctatgtggcgcggtattatccogtgttgacgcggggcaag
agcaactcggtcgcccatacaactattctcagaatgacttggttgagtactaccaqtacacaga
aaagcatcttacggatggcatgacagtaagagaattatgcagtgtgccataaccatgagtgtat
aacactgcggccaacttacttctgacaacgatcggaggaccgaaggagctaaccgcttttttgc
acaacatgggggatcatgtaactcgcttgatcgttgggaaccggagctgaatgaagccataacc
aaacgacgagcgtgacaccacgatgcctgtagcaatggcaacaacgttgcgcaaaactattaact
ggcgaactacttactctagcttccccggcaacaattaatagactggatggaggcggataaagttg
caggaccacttctgcgctcggcccttcgggtggtggtttattgctgataaatctggagccgg
tgagcgtgggtctcgcggtatcattgcagcactggggccagatggtaagccctcccgatcgtat
gttatctacacgacggggagtcaggcaactatggatgaacgaaatagacagatcgtgagatag
gtgcctcactgattaagcattggtaactgtcagaccaagtttactcatatatacttttagattga
tttaaaacttcatttttaatttaaaaggatctaggtgaagatcctttttgataatctcatgacc
aaaatcccttaacgtgagttttcgttccactgagcgtcagaccccgtagaaaagatcaaaggat
cttcttgagatccttttttctgcgcgttaactctgctgcttgcaacaaaaaaaccacogctacc
agcggtgggtttgtttgcggatcaagagctaccaactctttttccgaaggtaactggcttcagc
agagcgcagataccaaataactgtccttctagtgtagccgtagttaggccaccacttcaagaact
ctgtagcacccgctacatacctcgctctgctaactcgtttaccagtggctgctgccagtggcga
taagtctgtcttaccgggttggaactcaagacgatagttaccggataaaggcgcagcggtcgggc
tgaacgggggggttcgtgcacacagcccagcttgagcgaacgacctacaccgaactgagatacc
tacagcgtgagctatgagaaagcgccacgcttccogaaggagaaaggcggacaggtatccggt
aagcggcagggtcggaacaggagagcgcacgagggagcttccagggggaaacgcctggtatctt
tatagtcctgtcgggtttcgccacctctgacttgagcgtcgattttttgtgatgctcgtcagggg
ggcggagcctatggaaaaacgccagcaacgcggccctttttacgggttccctggccttttgetggcc
ttttgctcacatgttcttctcgttatccctgattctgtggataaccgtattaccgccttt
gagtgtgctgataaccgctcgcgcgagccgaacgacccgagcgcagcagctcagtgtgagcaggaag
cggaagagcgcctgatgcggtattttctccttacgcactctgtgcggtatttcacaccgcatatg
gtgcactctcagtacaactctgctctgatgccgcatagttaagccagtatacactccgctatcgc
tacgtgactgggtcatggctgcgccccgacacccgccaacaccgctgacgcgccttgacgggc
ttgtctgctcccgccatccgcttacagacaagctgtgaccgtctccgggagctgcatgtgtcag
aggttttcaccgctcatcaccgaaacgcgcgaggcagcagatcaattcgcgcgcgaaggcgaagc
ggcatgcattttacgttgacaccatcgaatgggtgcaaaacctttcgcggatggcatgatagcgc
ccggaagagagtoaatcaggggtggtgaatgtgaaaccagtaacgttatacgtgtcgcagagt
atgccggtgtctctlatcagaccgtttcccgcggtggtgaaccaggccagccagcttctgcgaa
aacgcgggaaaaagtggaagcggcgatggcgagctgaattacattcccaaccgcgtggcaca
caactggcgggcaaacagtcgttgctgattggcgttgccacctccagcttgccctgcacgcgc
cgtcgcaattgtcgcggcgattaaatctcgcgcgatcaactgggtgccagcgtgggtggtg
gatggtagaacgaagcggcgtcgaagcctgtaaagcggcggtgcacaatcttctcgcgcaacgc
gtcagtgggctgatcattaactatccgctggatgaccaggatgccattgctgtggaagctgcct

Figure 3C

Gcactaatgttccggcggttatttcttgatgtctctgaccagacacccatcaacagtattatttt
ctcccatgaagacggtacgcgactgggcggtggagcatctggtcgcattgggtcaccagcaaatac
gcgctgttagcgggcccattaagttctgtctcggcggtctgcgtctggctggctggcataaat
atctcactcgcaatcaaattcagccgatagcggaacgggaaggcgactggagtgccatgtccgg
ttttcaacaaaccatgcaaattgctgaatgagggcatcggtccactgcgatgctggttgccaac
gatcagatggcgctgggcgcaatgcgcgccattaccgagtcgggctgcgcgttggtgcgata
tctcggtagtgggatacgacgataccgaagacagctcatgttatatcccgccgtcaaccaccat
caaacaggattttcgctgctggggcaaaccagcggtggaccgcttgctgcaactctctcagggc
caggcgggtgaagggaatcagctgttgcccgctctcactgggtgaaaagaaaaaccacctggcgc
ccaatacgcaaacgcctctccccgcgcgttggcgattcattaatgcagctggcacgacaggt
ttcccgactggaaagcgggcagtgagcgcaacgaattaatgtgagttagcgcgaattgatctg
(SEQ ID NO:2)

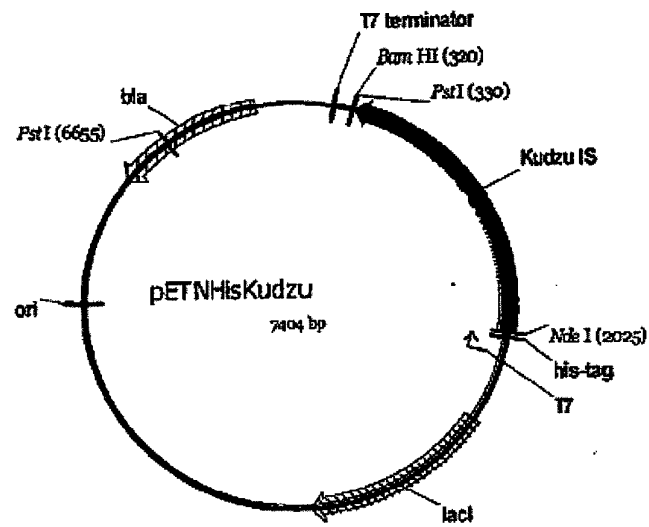
Figure 4

Figure 5A

1-

ttctcatgtttgacagcttatcatcgataagctttaatgcggtagtttatcacagttaaattgca
taacgcagtcaggcaccgtgtatgaaatctaacaatgcgctcatcgatcctcggcaccgtca
ccctggatgctgtaggcataggcttggttatgccggtactgccgggacctcttgcgggatatccg
gatatagttcctcctttcagcaaaaaacccctcaagaccggttagaggccccaagggttatg
ctagttattgctcagcggtggcagcagccaactcagcttcctttcgggctttgtagcagccgg
atcctgcagtttagacatacatcagctgggttaatcgggaaagggtcaatcagcagcagtttgat
gcggttttcagtcgcgtagctctggcgacccagaccatcgccatactggttaggtgcagtgaggaa
acacgtgccatgttaactgcgatttccatgaacgctttaggcagcaggggtggagtcgctaacgc
gttcacgattcatcttttccattcggcgtcgatcagtttacgcagttcttcgcgggacctgttc
ctcgctggtaccatcgttttcgtgcagtagctaatgatagaattggtagtctcgccacgttcc
agctccgcgcagaggtggccagatcggtgcacaggcggaagataacgcagctagaacgcacca
gaccatggaagtcggtcagggaaacgcagcgctggctcggagatgtcttcctgctgctggcatac
ggaaaagtaagacggcgccagcagcgctacaccggaggaggaaacgctggcggtttccagggtac
ttggagaaagccgggataattttgttgggtggaccatttcgctcttcgcagaaaggctttgcaca
gttcacgccagcttttcgtcagataggacaggttggttatgacctttctcttcagaatagaata
ggacgtgtcggttaacggtgttgtagtcgacaggaacacagtttcatatagtcgggcaggggtg
ttaatagcgttaacgtcccagcgctctacagcatcggtgaacagttgcagttcgtccagagtg
cataaacgtcatacacgtcatcgatgatcgtcaccagaccaaacttttagtaacagctttgcg
acattcacaaaactgcgggtctggcgccatacccagtgccagaaataaacttccatcaggcgg
tcgctgacaaaatccagtttgctagccaggcccatctcggtccaccagcgggacagatcttgca
gctctttctggtgcaggggtctgtacctgtttaaactccagcttcgccagctccagcagcagctg
gtgatgcgggttctttcggttcgtatttatccaggaaccaacgtgcctccagacggtgcagacgc
tggtgatattggcagttccaggcggtggctcaacttggttgcaaccttggtattaatgccttct
tcagggtgttcttcagggtgggtgatggaaaaggtaacgcgctcctccagcaggttctcacctc
gaaacccaggtaagacgcttcatacaggctcagcaggccttgagcgtcacctttcagttcacccg
ctgaaaccaccttctttatccttgaaacgctcaaaaacatcctgagaaacctcgaaacggtgct
gacgcagcagacggaaagacagagcggttgctgcaggtcagattttgttctttttgttttcgtc
cagcagtagcatgttttccagggtttaatgatgtcttttcaaatttgtaggtcagacccagg
cgctgcacatcgctgatcagctccagcagggacagcggtgggtgtctacaggttgatcatgc
agcgaacttcttcctccagtttggtcgctttctcctccagcttttccacttccaggtcgttctc
cagggttgaggaattcgaaattccacaggttggtgatagtttgcggaacgacgggaatta
tgctcggtaatctgagtaaattgagaagaggtcgacacatatgaagaccttcgatatggcgc
tgctgtgatgatgatgatgatgatgatggcccatggtatatctccttcttaaagttaa
acaaaattatttctagaggggaattgttatccgctcacaattcccttatagtgagtcgtattaa
tttcgcgggatcgagatctcgatcctctacgcggacgcacgtggcgccatcacccggcgcca
caggtgcggttgctggcgccatatcgccgacatcacccgatggggaagatcgggctcgccactt
cggtctcatgagcgcttggttcggcggtgggtatggtggcaggccccgtggcgggggactgttg
ggcgccatctccttgcatgcaccattccttgcgcgggcggtgctcaacggcctcaacctactac
tggtgctgttctaatgcaggagtcgcataaggagagcgctcgagatcccggaacccatcgaat
ggcgcaaaaccttctcggtatggcatgatagcgccggaagagagtcattcagggtgggtgaa
tgtgaaaccagtaacgttatcagatgtgcagagtatgccggtgtctcttatcagacggttcc
cgcggtggtgaaccaggccagccaggttctgcgaaaacgcgggaaaaagtggaagcggcgatgg
cggagctgaattacattcccaaccgcgtggcacaacaactggcgggcaaacagtcgttgctgat
tgcggttgccacotccagtcctggccctgcacgcgcgtcgcaaatgtcgcgcgagattaaatct

Figure 5B

cgcgcgatcaactgggtgccagcgtgggtggtgctgatggtagaacgaagcggcgtcgaagcct
gtaaagcggcggtgcacactcttctcgcgcaacgcgtcagtggggtgatcattaactatccgct
ggatgaccaggatgccattgctgtggaagctgcctgcactaatgttcggcggttatttcttgat
gtctctgaccagacacccatcaacagtattatttctcccatgaagacggtacgcgactgggcg
tggagcatctggctgcattgggtcaccagcaaatacgcgctgttagcgggcccattaaagtctgt
ctcggcgcgctctgcgtctggctggctggcataaatactcactcgcaatcaaattcagccgata
gcggaacgggaaggcgactggagtgccatgtccggttttcaacaaacctatgcaaagtctgaatg
agggcatcggttccactgcgatgctggttgccaacgatcagatggcgctgggcgcaatgcgcgc
cattaccgagtcgggctgcgcgttgggtgcggatatctcggtagtgggatacgacgataccgaa
gacagctcatgttatatcccgccggttaaccaccatcaaacaggattttcgcctgctggggcaaa
ccagcgtggaccgcttgcctgcaactctctcaggggccaggcggtgaagggcaatcagctgttgcc
cgtctcactggtgaaaagaaaaaccacctgggcgccaataacgcaaaccgctctccccgcgcg
ttggcogattcattaatgcagctggcacgacaggtttcccgactggaaagcgggcagtgcgcgc
aacgcaattaatgtaagttagctcactcattaggcacccgggatctcgaccgatgccttgagag
ccttcaaccagtcagctccttccggtgggcgcggggcatgactatcgtegcgcgacttatgac
tgtcttctttatcatgcaactcgtaggacaggtgcgcgcagcgcctctgggtcattttcggcgag
gaccgctttcgcctggagcgcgacgatgatcgccctgtcgcttgcggtattcggaatcttgcaag
ccctcgctcaagccttcgtcactggtcccgccaccaaacgtttcggcgagaagcaggccattat
cgccggcatggcggccgacgcgcgtgggtacgtcttgcctggcgcttcgcgcgcgaggtggatg
gccttccccattatgattcttctcgcttccggcggcacatcggtatgccgcggttgaggccatgc
tgtccaggcaggtagatgacgaccatcagggaacagcttcaaggatcgctcgcgcgtcttaccag
cctaacttcgatcactggaaccgctgatcgtcacggcgatttatgcgcctcggcgagcacatgg
aacgggttggcatggattgtaggcgccgcctataccttgtctgcctccccgcgttgcgctgcgc
gtgcatggagccgggcccacctcgacctgaatggaagccggcggcacctcgotaacggattcacc
actccaagaattggagccaatcaattcttgcggagaaactgtgaatgcgcaaaccaaccttggc
agaacatatccatcgcgctccgcatctccagcagccgcacgcggcgcatctcgggcagcgttgg
gtcctggccacgggtgcgcgatgatcgctcctgtcggttgaggaccgggtaggctggcggggt
tgcccttactggttagcagaatgaatcacggatacgcgcagcgaacgtgaagcgactgctgctgca
aaacgtctgcgacctgagcaacaacatgaatggtcttcggtttccggtgttctgtaaagtctgga
aacgcgggaagtgcgcgcctgcaccattatgttccggatctgcategcaggatgctgctggcta
ccctgtggaacacctacatctgtattaaacgaagcgcgtggcattgacctgagtgattttctct
ggctccgcgcgcatccataccgccagttgtttacctcacaacgttccagtaaacgggcatgttc
atcatcagtaaccgctatcgtagcatcctctctcggttcatcggtatcattacccccatgaac
agaaatcccccttacacggaggcatcagtgaccaaacaggaaaaaacggcccttaacatggccc
gctttatcagaagccagacattaacgcttctggagaaactcaacgagctggacgcggatgaaca
ggcagacatctgtgaatcgcttcacgaccaacgctgatgagctttacgcgagctgcctcgcgcgt
ttcggtgatgacggtgaaaacctctgacacatgcagctcccgagacgggtcacagcttgtctgt
aagcggatgccgggagcagacaagcccgtcagggcgcgtcagcgggtgttgccgggtgtcgggg
cgcagccatgaccagtcacgtagcgatagcggagtgatactggcttaactatgcggcatcag
agcagattgtactgagagtgaccatatatgcgggtgtgaaataccgcacagatgcgtaaggaga
aaataccgcacagcgctcttccgcttctcgctcactgaactcgctgcgcctcggtcggtcggc
tgccgcgagcggatatcagctcactcaaaggcggtataacggttatccacagaatcaggggataa
cgcaggaaagaacatgtgagcaaaaggccagcaaaaggccaggaaaccgtaaaaaggccgcgttg
ctggcggtttttccataggctccgccccctgacgagcatcacaaaaatcgacgctcaagtcaaga

Figure 5C

ggtggcgaaaacccgacaggactataaagataaccaggcggtttccccctggaagctccctcgtgcg
ctctcctgttccgacctgcogettaccggatacctgtccgcctttctcccttcgggaagcgtg
gcgctttctcatagctcacgctgtaggatctcagttcgggtgtaggtcgttcgctccaagctgg
gctgtgtgcacgaaccccccggttcagcccgacgctgccccttatccggtaactatcgtcttga
gtccaacccggttaagacacgacttatcgccactggcagcagccactggtaacaggattagcaga
gcgaggatgtaggcgggtgctacagagttcttgaagtgggtggcctaactacggctacactagaa
ggacagtatattggtatctgcgctctgctgaagccagttaccttcggaaaaagagttggtagctc
ttgatccggcaaaacaaaccccgctggtagcgggtgggttttttgtttgcaagcagcagattacg
cgcagaaaaaaaggatctcaagaagatcctttgatctttctacggggtctgacgctcagtgga
acgaaaaactcacgttaagggttttgggtcatgagattatcaaaaaggatcttcacctagatcct
tttaaatataaaatgaagttttaaatcaatctaaagtatatatgagtaaaacttggtctgacagt
taccaatgcttaatcagtgaggcacctatctcagcgatctgtctatttcggttcacccatagttg
cctgactccccgtcgtgtagataactacgatacgggagggttaccatctggccccagtgctgc
aatgataccgcgagacccacgctcacccggtccagatttatcagcaataaaccagccagccgga
agggccgagcgcagaagtggctcctgcaactttatccgcctccatccagttctattaattgttgcc
gggaagctagagtaagtagttcgccagttaatagtttgcgcaacgttggtgccattgctgcagg
catcgtggtgtcacgctcgtcgtttggtatggcttcattcagctccggttcccaacgatcaagg
cgagttacatgatcccccatggttggtgcaaaaaagcggttagctccttcggtcctccgatcgttg
tcagaagtaagttggccgagtggttatcactcatggttatggcagcactgcataattctcttac
tgtcatgccatccgtaagatgcttttctgtgactggtgagtactcaaccaagtcattctgagaa
tagtgtatgcggcgacccagagttgctcttgcccggtcaacacgggataataccgcgccacata
gcagaactttaaaagtgtcatcattggaaaacggttcttcggggcgaaaactctcaaggatctt
accgctgttgagatccagttcgatgtaacccactcgtgcacccaactgatottcagcatctttt
actttcaccagcgtttctgggtgagcaaaaacaggaaggcaaaatgccgcaaaaaagggaataa
gggcgacacggaaatgttgaaatactcatactcttctttttcaatattattgaagcatttatca
gggttattgtctcatgagcggatacatatttgatgtatttagaaaaataaacaatatagggtt
ccgcgcacatttccccgaaaagtgccacctgacgtctaagaaaccattattatcatgacattaa
cctataaaaaataggcgtatcacgaggccctttcgtcttcaagaa
(SEQ ID NO:5)

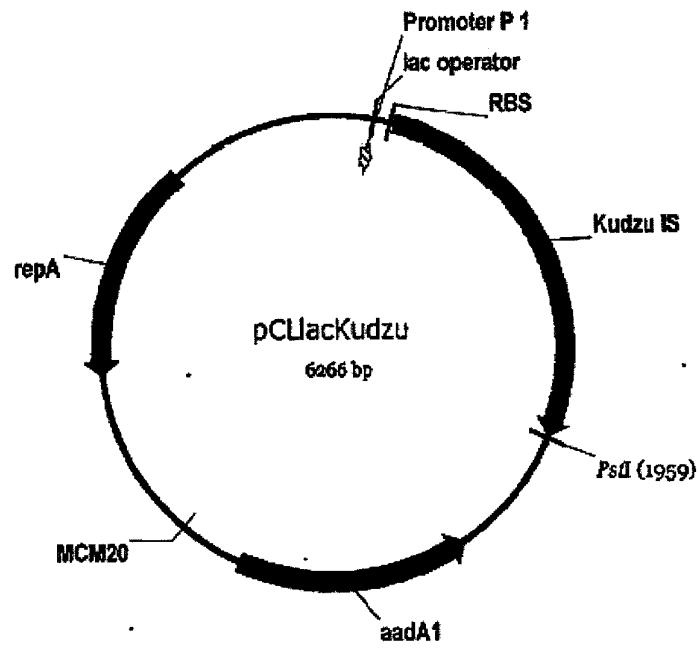
Figure 6

Figure 7A

1-

cccgtcttactgtcggaatttcgcggttgccgattcattaatgcagctggcacgacaggtttcc
cgactggaaagcgggcagtgagcgcaacgcaattaatgtgagttagctcactcattaggcacc
caggctttacactttatgcttccggtcgtatgttggtggaattgtgagcggataacaatttc
acacaggaaacagctatgacctgattacgccaagcttgatcgattaaataaggaggaataaa
ccatgtgtgcgacctcttctcaatttactcagattaccgagcataattcccgtcggtccgcaa
ctatcagccaaacctgtggaatttcgaattcctgcaatccctggagaacgacctgaaagtggaa
aaqctggaggagaaagcgaccaaactggaggaagaaqtttcgctgcattatcaaccgtgtagaca
cccagccgctgtccctgctggagctgatcgacgatgtgcagcgccctgggtctgacctacaaatt
tgaaaaagacatcattaaagccctggaaaacatcgctactgctggacgaaaacaaaaagaacaaa
tctgacctgcacgcaaccgctctgtctttccgtctgctgogtcagcacggtttcgagggttctc
aggatgtttttgagcgtttcaaggataaagaaggtgggttcagcgggtgaactgaaaggtgacgt
ccaaggcctgctgagcctgtatgaagcgtcttacctgggtttcgaggggtgagaacctgctggag
gaggcgctaccttttccatcacccacctgaagaacaacctgaaagaaggcattaataccaagg
ttgcagaacaagtgcgacgacctggaaactgccatatcaccagcgtctgcacctctggaggc
acgttggttccctggataaatacgaaccgaaagaaccgcatcaccagctgctgctggagctggcg
aagctggatttttaacatggtagacacacctgcaccagaaagagctgcaagatctgtcccgctgg
ggaccgagatgggcctggctagcaaaactggattttgtacgacgacctgctggaagtttattt
ctgggcactgggtatggcgccagaccgagctttgggtgaatgtcgaaagctgttactaaaatg
tttggctctggtgacgatcatcgatgacgtgtatgacgtttatggcactctggacgaactgcaac
tggttcacogatgctgtagagcgctgggacgttaacgctattaacacctgcccggactatatgaa
actgtgtttccctggcactgtacaacacctgttaacgacacgtcctattctattctgaaagagaaa
ggtcataacaacctgtcctatctgacgaaaagctggcggtgaactgtgcaaagcctttctgcaag
aggcgaaatgggtccaacaacaaaattatcccggctttctccaagtaacctggaaaacgccagcgt
ttcctcctccggtgtagcgtgctggcgccgtcttacttttccgtatgccagcagcaggaagac
atctccgaccacgcgtgcttccctgaccgacttccatgggtctgggtgcttctagctgcttta
tcttccgctgtgcaacgatctggccacctctgogcgagctggaacgtggcgagactaccaaa
ttctatcattagctacatgcacgaaaacgatggtagcagcaggaacaggcccgcaagaactg
cgtaaaactgatcgacgcccgaatggaaaaagatgaatcgtgaacgcgttagcgactccacctgc
tgccataaagcgttcatggaaatcgagttaacatggcacgtgtttccactgcacctaccagta
tggcgatgggtctgggtcggccagactacgcgactgaaaaccgcatcaaaactgctgattgac
cctttcccgattaaccagctgatgtatgtctaactgcaggtcgactctagaggatccccgggta
ccgagctcgaattcactggcgctggttttacaacgtcgtgactgggaaaacctggcggttacct
aacttaatcgcttgcagcacatccccctttcgccagctggcgtaatagcgaagaggcccgcac
cgatcgcccttcccaacagttgcgcagcctgaatggcgaatggcgccctgatgcggtattttctc
cttacgcatctgtgcggtattttcacaccgcatatggtgcactctcagtacaatctgctctgatg
ccgcatagttaagccagccccgacccccgcaaacccccgctgacgagcttagtaaaagccctcgc
tagatttttaatgoggatgttgcgattacttgcgcaactattgcgataacaagaaaaagccagcc
tttcatgatatactcccaatttgtgtagggttattatgcacgcttaaaaaataaaaagcag
acttgacctgatagtttggctgtgagcaattatgtgcttagtgcatctaacgcttgagtttaagc
cgcgcccgcaagcggcgctgggttgaacgaattgttagacattatttggcgactaccttggtga
tctcgctttcacgtagtggaacaaattcttccaactgatctgcgogcgaggccaagcgatcttc
ttcttgtccaagataagcctgtctagcttcaagtatgacgggtgatactgggcccggcaggcgc
tccattgcccagtcggcagcgacatccttcggcgcgattttgcccgttactgcgctgtacaaa
tgccgggacaacgtaagcactacatttcgctcatcgccagcccagtcggcgggcgagttccatag

Figure 7B

cggttaagggtttcatttagcgccctcaaataagatcctgttcaggaaccggatcaaagagttcctcc
gccgctggacctaccaaggcaacgctatgtttctcttgccttttgtcagcaagatagccagatcaa
tgctgatcgtggctggctcgaagatacctgcaagaatgtcattgcgctgccattctccaaattg
cagttcgcgcttagctggataacgccacggaatgatgtcgtcgtgcacaacaatggtagcttct
acagcgcggagaatctcgtctctctccaggggaagccgaagtttccaaaaggctcgttgatcaaag
ctcgccgctgtgtttcatcaagccttacgggtcacggtaaccagcaaatcaatatcactgtgtgg
cttcaggccgccatccactgcggaagccgtacaaatgtacggccagcaacgtcggttcgagatgg
cgctcgatgaagccaaactacctctgatagttgagtcgatacttcggcgatcacccgttccctca
tgatgttttaactttgttttagggcgactgccctgctgcgtaacatcgttgctgctccataacat
caaacatcgacccaacggcgtaacgcgcttgcgtgcttggtgagccgagcatagactgtacccca
aaaaacagtcataacaagccatgaaaaccgccactgcgcgcttaccacccgctgcgttcgggtca
aggttctggaccagttgcgtgagcgcatacgcctacttgcattacagcttacgaaccgaacaggc
ttatgtccactgggttcgtgccttcatccgtttccacgggtgtgcgtcacccggcaaccttgggc
agcagcgaagtgcaggcatttctgtcctggctggcgaaacgagcgcgaaggtttcgggtctccacgc
atcgtcaggcatttggcgcccttgcgtgttctctacggcaagggtgctgtgcacggatctgccctg
gcttcaggagatcggaagacctcggccgtcgcggcgcttgcgggtggtgctgaccccgatgaa
gtggttcgcacccctcggttttctggaaggcgagcatcgtttgttcgccagcttctgtatggaa
ggggcatgcggatcagtgagggtttgcaactgcgggtcaaggatctggatttcgatcacggcac
gatcatcgtgcgggaggggcaagggtccaaggatcgggccttgatgttacccgagagcttggca
cccagcctgcgcgagcaggggaattaattcccacgggttttgcgtgcccgcaaacgggctgttct
gggtgttgctagttttgttatcagaatcgagatccggcttcagccgggtttgcgggctgaaagcgc
tatttcttccagaattgccatgatttttccccaacgggagggcgtcaactggctcccggtgtgtcg
gcagctttgattcgataagcagcatcgccgttttcaggctgtctatgtgtgactgttgagctgt
aacaagttgtctcagggtgttcaatttcatgttctagttgctttgttttactgggttccactgtt
ctattaggtgttacatgctgttcatctgttacattgtcgatctgttcatggatgaacagcttga
atgcacaaaaaactcgtaaaagctctgatgtatctatcttttttaaccggttttcatctgtgca
tatggacagttttccctttgatatgtaacgggtgaacagttgttctacttttgtttgttagtctt
gatgcttcaactgatagatacaagagccataagaacctcagatccttccgtatttagccagtatg
ttctctagtgtggttcgttgtttttgcgtgagccatgagaacgaaccattgagatcatacttac
tttgcagtgcaactcaaaaattttgcctcaaaaactggtgagctgaatttttgcagttaaagcatc
gtgtagtgtttttcttagtcogttatgtaggttaggaatctgatgtaatggttgttggatattttg
tcaccatttcatttttatctggttgttctcaagttcggttacgagatccatttgtctatctagtt
caacttggaaaatcaacgtatcagtcggggcgccctcgcttatcaaccaccaatttcatattgct
gtaagtgtttaaatctttacttattggtttcaaaaaccattgggttaagccttttaaaactcatgg
tagttattttcaagcattaacatgaacttaaatcatcaaggctaattctctatattttgccttgt
gagttttcttttgtgttagttcttttaataaccactcataaatcctcatagagtatttgttttc
aaaagacttaacatgttccagatttatattttatgaatttttttaactggaaaagataaggcaat
atctcttcaactaaaaactaattctaatttttcgcttgagaacttggcatagtttgtccactgga
aaatctcaaagcctttaaccaaaggattcctgatttccacagttctcgtcatcagctctctggt
tgctttagctaatacaccataagcattttccctactgatgttcatcatctgagcgtattgggtta
taagtgaacgataaccgtccgttctttcccttgtagggttttcaatcggtggggttgagtagtgcca
cacagcataaaattagcttgggtttcatgctccgttaagtcatagcgactaatcgctagttcatt
tgctttgaaaacaactaattcagacatacatctcaattgggtctaggtgattttaactactatac
caattgagatgggctagtcaatgataattactagtccttttcccttgagttgtgggtatctgta

Figure 7C

Aattctgctagaccttttgctggaaaacttgtaaattctgctagaccctctgtaaattccgctag
acctttgtgtgtttttttgtttatattcaagtggttataattttatagaataaagaaagaataa
aaaaagataaaaagaatagatcccagccctgtgtataaactcactacttttagtcagttccgcagt
attacaaaaggatgtcgcaaacgctgtttgctcctctacaaaacagaccttaaaaccctaaagg
cttaagtagcacccctcgcaagctcgggcaaactcgctgaatattccttttgtctccgaccatcag
gcacctgagtcgctgtctttttcgtgacattcagttcgctgcgctcacggctctggcagtgat
gggggtaaatggcactacaggcgcttttatggattcatgcaaggaaactaccataatacaag
aaaagcccgctcacgggcttctcagggcggttttatggcgggtctgctatgtggtgctatctgact
tttctgtgttcagcagttcctgcctctgattttccagctcgaccacttcggattatcccgtga
caggtcattcagactggctaattgcacccagtaaggcagcggtatcatcaacaggctta
(SEQ ID NO:7)

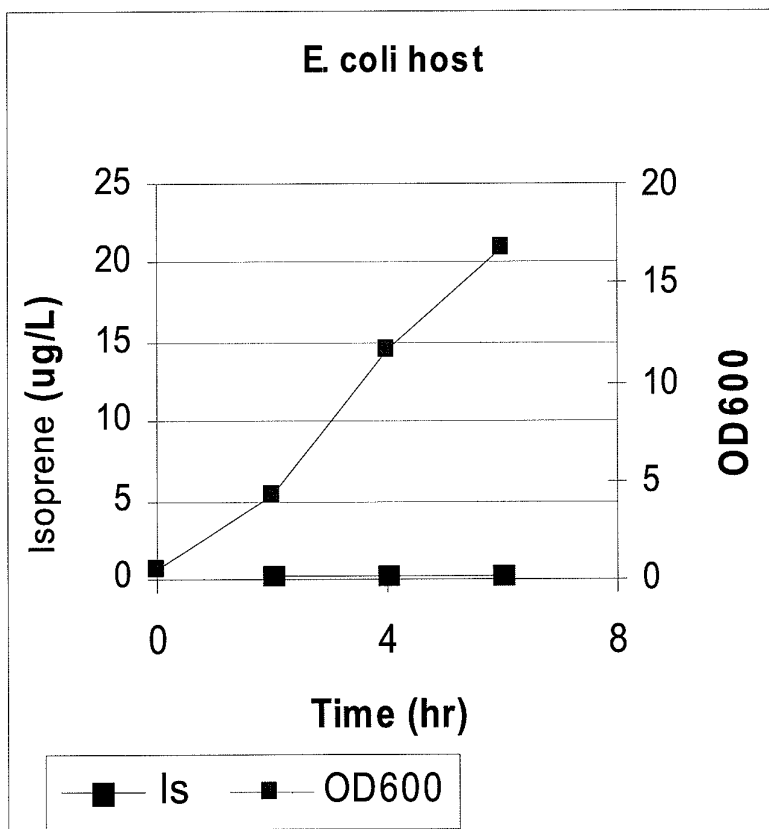
Figure 8A

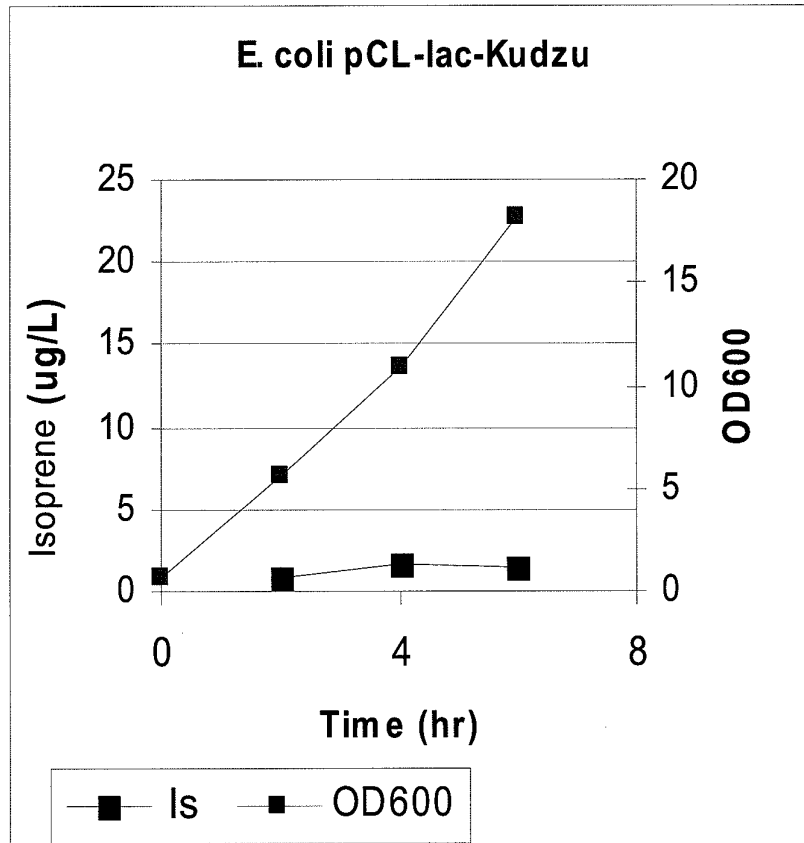
Figure 8B

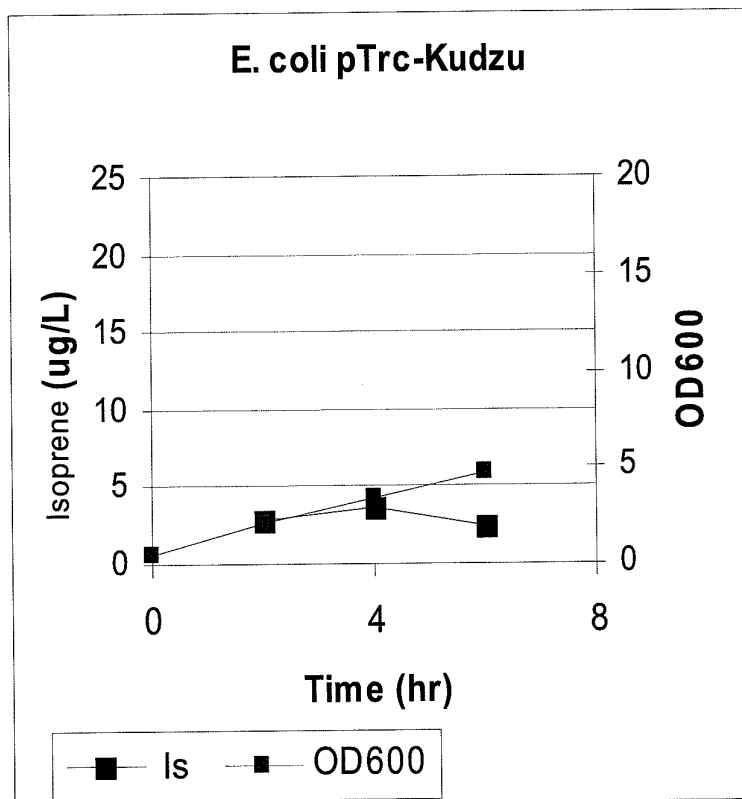
Figure 8C

Figure 8D

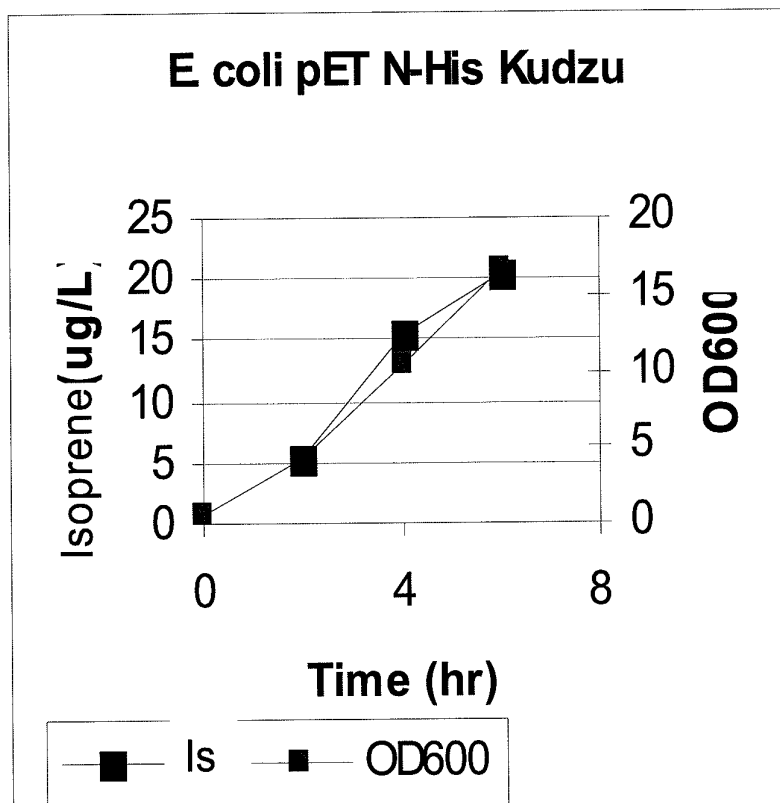


Figure 9A

A.

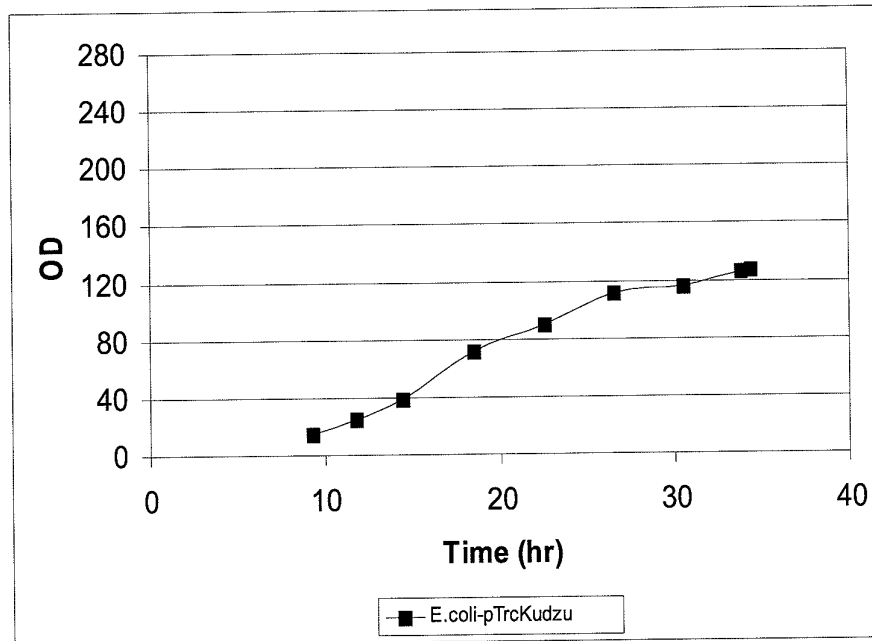


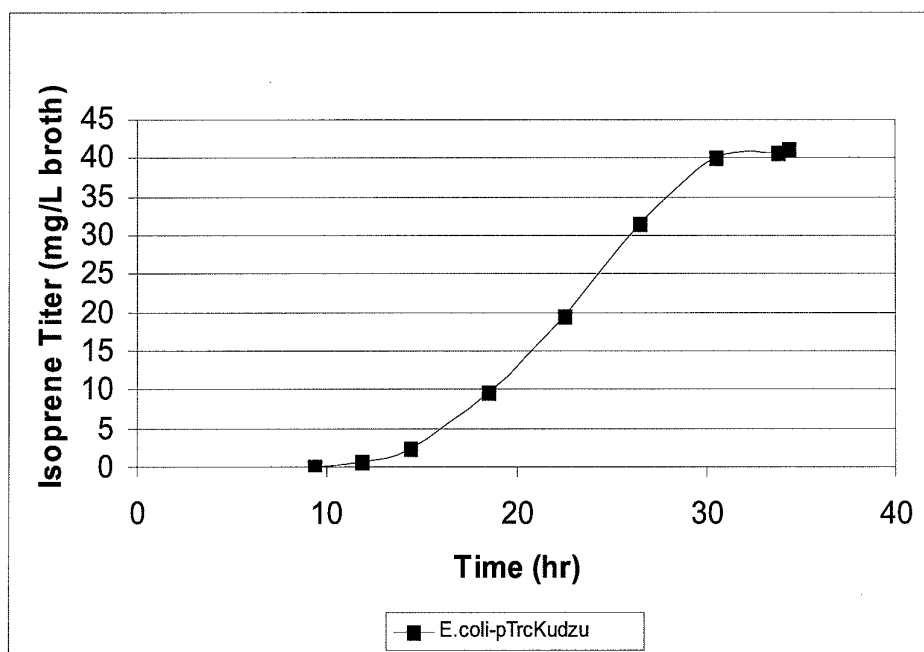
Figure 9B

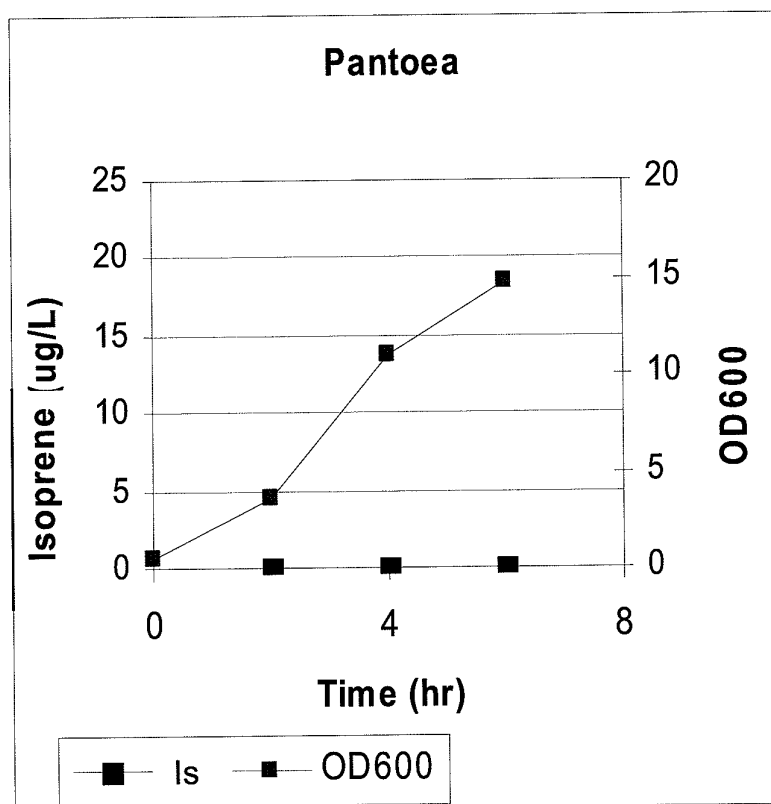
Figure 10A

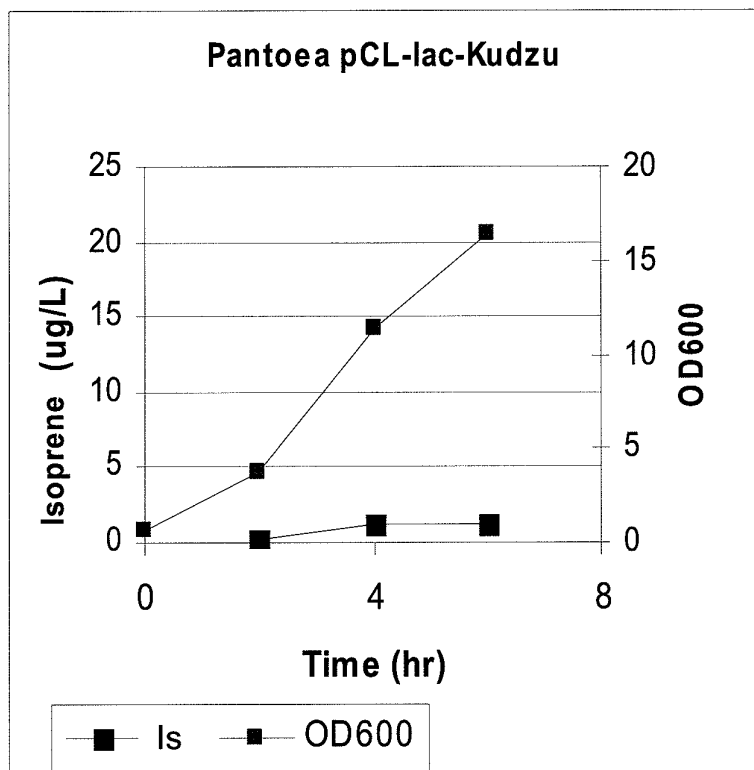
Figure 10B

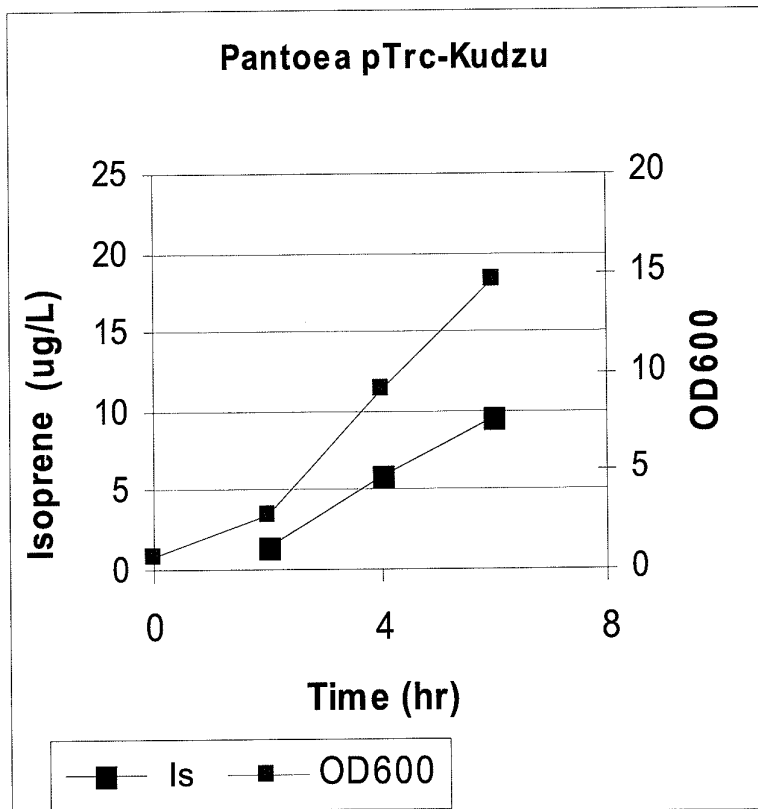
Figure 10C

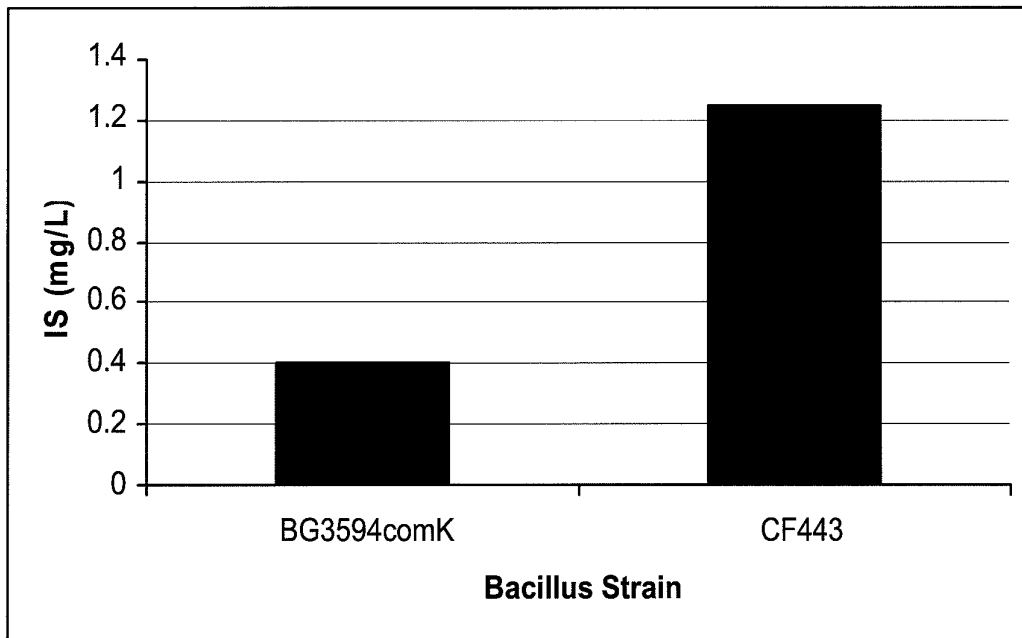
Figure 11

Figure 12A

1-

gaattgtccattttcttctgctatcaaaataacagactcgtgattttccaaacgagctttcaa
aaaagcctctgccccttgcaaatecgatgcctgtctataaaattcccgatattgggttaaacagc
ggcgcaatggcgccgcgcacatctgatgtctttgcttggcgaatgttcacatcttattttcttccct
ctcaataattttttcattctatcccttttctgtaaagtttatttttcagaatacttttatcatc
atgctttgaaaaaatatcacgataatatccattgttctcacggaagcacacgcagggtcatttga
acgaattttttcgacaggaatttgccgggactcaggagcatttaacctaaaaaagcatgacatt
tcagcataatgaacatttactcatgtctattttcgttcttttctgtatgaaaatagttatttcg
agtctctacggaaatagcgagagatgatataacctaaatagagataaaatcatctcaaaaaaatg
gggtctactaaaatattattccatctattacaataaattcacagaatagtcttttaagtaagtct
actctgaatttttttaaaaggagagggttaaagagtgtgtgcgacctcttctcaatttactcaga
ttaccgagcataattcccgctcgttccgcaaaactatcagccaaacctgtggaatttcgaattcct
gcaatccctggagaacgacctgaaagtggaaaagctggaggagaaagcgaccaaactggaggaa
gaagttcgtctgatgatcaacctgttagacacccagccgtgtccctgctggagctgatcgacg
atgtgcagcgccctgggtctgacctacaaatttgaaaaagacatcattaaagccctggaaaacat
cgtactgctggacgaaaaacaaaaagaacaaatctgacctgcacgcaacccgtctgtctttccgt
ctgctgcgtcagcacgggtttcgagggtttctcaggatgttttgagcgtttcaaggataaagaag
gtgggtttcagcgggtgaactgaaagggtgacgtccaaggccctgctgagcctgtatgaagcgtctta
cctgggtttcgagggtgagaacctgctggaggaggcgctaccttttccatcaccacctgaag
aacaacctgaaagaaggcattataaccaagggtgcagaacaagtgagccacgacctggaactgc
catatcaccagcgtctgcacctgctggaggcacgttggttccctggataaatacgaaccgaaaga
accgcatcaccagctgctgctggagctggcgaagctggattttaacatggtagacacctgcac
cagaaagagctgcaagatctgtcccgctgggtggacccgagatgggcctggctagcaaaactggatt
ttgtacgcgaccgctgatggaagtttatttctgggcactgggtatggcgccagaccgcagtt
tggtgaatgtcgcaaaagctgttactaaaatggttggtctggtgacgatcatcgatgacgtgtat
gacgtttatggcactctggacgaactgcaactgttcaccgatgctgttagagcgtgggaactta
acgtatttaacacctgcccgaactatagaaactgtgttccctggcactgtacaacacctgtaa
cgacacgtcctattctattctgaaagagaaagggtcataacaacctgtcctatctgacgaaaagc
tggcgtgaaactgtgcaaaagcctttctgcaagaggcgaaatgggtccaacaacaaaattatcccg
ctttctccaagtacctggaaaacgccagcgtttcctcctccggtgtagcgtgctggcgccgtc
ttacttttccgtatgccagcagcaggaagacatctccgaccacgcgctgcgttccctgaccgac
ttccatggtctggtgcgttctagctgcgttatcttccgctgtgcaacgatctggccacctctg
cggcggagctggaacgtggcgagactaccaattctatcattagctacatgcacgaaaacgatgg
taccagcgagggaacaggcccgcaagaactgcgtaaactgatcgacgccgaatggaaaaagatg
aatcgtgaacgcgttagcgactccacctgctgcctaaagcgttcattggaatcgacagttaaca
tggcacgtgtttccactgcacctaccagtatggcgatggtctgggtcgcccagactacgcgac
tgaaaacccgcatcaaactgctgctgattgacctttcccgattaaaccagctgatgtatgtctaa
aaaaaacccgcttggcccccgcgggtttttattatttttcttccctccgcatgttcaatccgct
ccataatcgacggatggctccctctgaaaaatttaacgagaaaacggcggggttgacccggctcag
tcccgtaacggccaagtccctgaaacgtctcaatcgccgcttcccgggtttccgggtcagctcaatg
ccgtaaacggctcgccggcggttttccctgataccggggagacggcattcgtaatcggaacctctagag
tcgacctgcaggcatgcaagctttgcctcgcgcggtttccggtgatgacgggtgaaaacctctgaca
catgcagctcccggagacggtcacagcttgtctgtaagcggatgcggggagcagacaagccgct
caggggcgctcagcgggtgttggcgggtgtcggggcgacccatgacccagtcacgtagcgata

g c g g a g t g t a c t g g c t t a a c t a t g c g g c a t c a g a g c a g a t t g t a c t g a g a g t g c a c c a t a t g
c g g t g t g a a t a c c g c a c a g a t g c g t a a g g a g a a a t a c c g c a t c a g g c g c t c t t c c g t t c c t
c g t c a c t g a c t c g t c g c t c g g t c g t t c g g t c g g c g a g c g g t a t c a g c t c a c t c a a a g g c
g g t a a t a c g g t t a t c c a c a g a a t c a g g g g a t a a c g c a g g a a g a a c a t g t g a g c a a a a g g c c a g
c a a a a g g c c a g g a a c c g t a a a a a g g c c g c g t t g c t g g c g t t t t c c a t a g g c t c c g c c c c c t g
a c g a g c a t c a c a a a a t c g a c g c t c a a g t c a g a g g t g g c g a a a c c g a c a g g a c t a t a a a g a t a
c c a g g c g t t t c c c c c t g g a a g c t c c c t c g t g c g c t c t c c t g t t c c g a c c c t g c c g t t a c c g g a
t a c c t g t c c g c c t t t c t c c c t t c g g a a g c g t g g c g c t t t c t c a a t g c t c a c g c t g t a g g t a t c
t c a g t t c g g t g t a g g t c g t t c g c t c c a a g c t g g g c t g t g t g c a c g a a c c c c c c g t t c a g c c o g a
c c g c t g c g c c t t a t c c g g t a a c t a t c g t c t t g a g t c c a a c c c g g t a a g a c a c g a c t t a t c g c c a
c t g g c a g c a g c c a c t g g t a a c a g g a t t a g c a g a g c g a g g t a t g t a g g c g g t g c t a c a g a g t t c t
t g a a g t g g t g g c c t a a c t a c g g c t a c a c t a g a a g g a c a g t a t t t g g t a t c t g c g c t c t g c t g a a
g c c a g t t a c c t t c g g a a a a g a g t t g g t a g c t c t t g a t c c g g c a a a c a a a c c a c c g c t g g t a g c
g g t g g t t t t t t g t t t f g c a a g c a g c a g a t t a c g c g c a g a a a a a a g g a t c t c a a g a a g a t c c t t
t g a t c t t t t c t a c g g g t c t g a c g c t c a g t g g a a c g a a a a c t c a c g t t a a g g g a t t t t g g t c a t
g a g a t t a t c a a a a a g g a t c g a a g t c g g t t c a g a a a a a g a a g g a t a t g g a t c t g g a g c t g t a a t a
t a a a a a c c t t c t t c a a c t a a c g g g c a g g t t a g t g a c a t t a g a a a a c c g a c t g t a a a a a g t a c a
g t c g g c a t t a t c t c a t a t t a t a a a a g c c a g t c a t t a g g c c t a t c t g a c a a t t c c t g a a t a g a g t
t c a t a a a c a a t c c t g c a t g a t a a c c a t c a c a a c a g a a t g a t g t a c c t g t a a g a t a g c g g t a a
a t a t a t t g a a t t a c c t t t a t t a a t g a a t t t c o t g c t g t a a t a a t g g g t a g a a g g t a a t t a c t a
t t a t t a t t g a t a t t t a a g t t a a a c c c a g t a a a t g a a g t c c a t g g a a t a a t a g a a g a g a a a a g
c a t t t t c a g g t a t a g g t g t t t t g g g a a c a a t t t a a a a g a a c c a t t a t a t t t c t c a c a t c a g a
a a g g t a t a a a t c a t a a a a c t c t t t g a a g t c a t t c t t t a c a g g a g t c c a a a t a c c a g a g a a t g t t
t t a g a t a c a c c a t c a a a a a t t g t a t a a a g t g g c t c t a a c t t a t c c c a a t a a c c t a a c t c t c c g t
c g c t a t t g t a a c c a g t t c t a a a a g c t g t a t t t g a g t t t a t c a c c c t t g t c a c t a a g a a a a t a a a
t g c a g g g t a a a a t t t a t a t c c t t c t t g t t t t a t g t t t c g g t a t a a a a c a c t a a t a t c a a t t t c t
g t g g t t a t a c t a a a a g t c g t t t g t t g g t t c a a a t a a t g a t t a a a t a t c t c t t t t c t c t t c c a a t
t g t c t a a a t c a a t t t t a t t a a g t t c a t t t g a t a t g c c t c c t a a a t t t t t a t c t a a a g t g a a t t
t a g g a g g c t t a c t t g t c t g c t t t c t t c a t t a g a a t c a a t c c t t t t t t a a a g t c a a t a t t a c t g t
a a c a t a a a t a t a t a t t t t a a a a a t a t c c c a c t t t a t c c a a t t t t c g t t t g t t g a a c t a a t g g g t
g c t t t a g t t g a a g a a t a a a g a c c a c a t t a a a a a t g t g g t c t t t t g t g t t t t t t a a a g g a t t t
g a g c g t a c g c g a a a a a t c c t t t t c t t t c t t t a t c t t g a t a a t a a g g g t a a c t a t t g c c g g t
t g t c c a t t c a t g g c t g a a c t c t g c t t c c t c t g t t g a c a t g a c a c a c a t c a t c t c a a t a t c c g a a
t a g g g c c c a t c a g t c t g a c g a c c a a g a g a g c c a t a a a c a c c a a t a g c c t t a a c a t c a t c c c c a t
a t t t a t c c a a t a t t c g t t c c t t a a t t t c a t g a a c a a t c t t c a t t c t t t c t t c t c t a g t c a t t a t
t a t t g g t c c a t t c a c t a t t t c t c a t t c c c t t t t c a g a t a a t t t t a g a t t t g c t t t t c t a a a t a a g
a a t a t t t g g a g a g c a c c g t t c t t a t t c a g c t a t t a a t a a c t c g t c t t c c t a a g c a t c c t t c a a t
c c t t t t a a t a a c a a t t a t a g c a t c t a a t c t t c a a c a a a c t g g c c c g t t t g t t g a a c t a c t c t t t
a a t a a a a a a a t t t t t c c g t t c c c a a t t c c a c a t t g c a a t a a t a g a a a a t c c a t c t t c a t c g g c t
t t t t c g t c a t c a t c t g t a t g a a t c a a a t c g c c t t c t t c t g t g t c a t c a a g g t t t a a t t t t t a t
g t a t t t c t t t t a a c a a a c c a c c a t a g g a g a t t a a c c t t t t a c g g t g t a a a c c t t c c t c c a a a t
a g a c a a a c g t t t c a a a t t c t t t t c t t c a t c a t c g g t c a t a a a a t c c g t a t c c t t t a c a g g a t a t
t t t g c a g t t t c g t c a a t t g c g a t t g t a t a t c c g a t t t a t a t t t a t t t t t c g g t c g a a t c a t t t
g a a c t t t t a c a t t t g g a t c a t a g t c t a a t t t c a t t g c c t t t t t c c a a a a t t g a a t c c a t t g t t t

Figure 12C

ttgattcacgtagttttctgttattctaaaaataagttgggtccacacataccattacatgcatg
tgctgattataagaattatctttattttattgtcacatccgttgacgcataaaaccaacaa
gatttttattaatttttttatattgcatcattcggcgaaatccttgagccatatctgtcaaact
cttatttaattcttcgccatcataaacatttttaactgttaatgtgagaaacaaccaacgaact
gttggcttttgtttaataacttcagcaacaaccttttgtgactgaatgcoatgtttcattgctc
tcctccagttgcacattggacaaagcctggatttgcaaaaccacactcgataccactttctttc
gcctgtttcacgattttgtttatactctaataatttcagcacaatcttttactctttcagccttt
ttaaattcaagaatatgcagaagttcaaagtaatcaacattagcgattttcttttctctccatg
gtctcacttttccactttttgtcttgccactaaaacccttgatttttcatctgaataaatgct
actattaggacacataatattaaaagaaacccccatctatttagttatttgttttagtcacttat
aactttaacagatgggggtttttctgtgcaaccaattttaagggttttcaatactttaaaacaca
tacataccaacacttcaacgcacctttcagcaactaaaataaaaaatgacgttattttctatatgt
atcaagataagaaagaacaagttcaaaaccatcaaaaaaagacaccttttcagggtgctttttt
attttataaactcattccctgatctcgacttcgttctttttttacctctcgggttatgagttagt
tcaaattcgttcttttttaggttctaaatcgtgtttttcttgggaattgtgctgttttatccttta
ccttgtctacaaaccccttaaaaaacgtttttaaggcttttaagccgtctgtacgttccttaag

(SEQ ID NO:57)

Figure 13

ATGTGTGCAACCTCCTCCCAGTTTACTCAGATTACCGAGCATAATTCTCGACGATCTGCTAACT
ACCAGCCGAACCTTTGGAACCTTGAGTTTCTCCAGTCTCTCGAAAATGACCTGAAGGTGGAAAA
GCTCGAGGAGAAGGCGACCAAACCTCGAGGAGGAGGTGCGATGTATGATCAACAGAGTTGACACC
CAACCCCTGTCTTTGCTGGAGCTGATCGACGATGTGCAGCGGTGGGGTTGACTTATAAATTCTG
AGAAGGACATTATCAAGGCACTGGAGAACATTGTGCTCCTCGACGAGAACAAGAAGAACAAGTC
TGATCTTCACGCTACCGCTCTCTCTTTCCGACTTCTTCGACAACACGGCTTCGAGGTGTGCGAG
GACGTCTTCGAGAGATTTAAGGACAAGGAGGGAGGATTTAGCGGCGAGCTGAAGGGAGACGTTT
ACGGTCTTCTCTCCTTGCTACGAGGCGTCTACCTGGGATTTCGAGGGAGAGAACCCTCCTGGAGGA
AGCTCGTACATTTTCCATCACTCACCTTAAGAATAACCTTAAGGAGGGAATTAACACCAAGGTG
GCCGAGCAGGTTTCTCACGCCCTGGAGCTCCCCACCACCAACGGCTCCATAGACTGGAGGCTC
GTTGGTTTCTGGACAAATATGAGCCAAAGGAGCCTCATCATCAGTTGCTGTTGGAGTTGGCCAA
GCTGGACTTCAATATGGTTTCAGACGCTGCACCAAAAGGAGTTGCAGGACCTGTCTCGATGGTGG
ACCGAGATGGGATTGGCCTCGAAGCTGGATTTTGTCCGTGACCGACTTATGGAGGTCTATTTTT
GGGCCCTTGGAATGGCGCCTGACCCCCAGTTCGGAGAGTGCCGGAAGGCGGTGACGAAGATGTT
CGGTCTTGTGACTATCATCGACGACGTCTACGATGTCTACGGCACACTCGACGAGTTGCAGCTG
TTCACTGACGCCGTGAGCGATGGGATGTGAACGCCAFTTAATACTCTCCCTGACTATATGAAGC
TGTGCTTCTGGCTCTGTACAACACTGTCAACGATACCTCGTACTCTATCCTCAAGGAGAAGGG
ACACAACAATCTCTCCTACTTGACCAAATCCTGGCGAGAAGTGTGCAAGGCTTTTCTGCAGGAG
GCTAAATGGTCCAATAACAAGATCATTCCTGCTTTTTCTAAATACCTGGAAAATGCCTCGGTGT
CGAGCTCTGGCGTCGCCCTTCTGGCCCCCTTCTACTTCTCCGTCTGCCAGCAGCAGGAGGATAT
TTCCGATCATGCTCTTAGATCGCTGACCGATTTTCACGGCCTCGTGCGATCTTCTGCGTGATT
TTTCGGTTGTGTAATGACCTTGCGACCTCTGCTGCTGAGCTGGAACGAGGCGAGACTACAAATT
CCATTATTTCTTACATGCACGAAACGATGGAACATCTGAAGAACAGGCTAGAGAGGAACTGCG
AAAGTTGATCGACGCCGAGTGGAAGAAGATGAACAGAGAGCGGGTGTCCGACTCTACCCCTGCTT
CCCAAGGCCTTCATGGAGATCGCCGTGAACATGGCTCGAGTTTCCCATTTGTACTTACCAGTACG
GTGACGGCCTGGGTGCTCCGGACTACGCTACAGAGAACCGAATCAAGCTGCTGCTCATCGACCC
CTTCCCTATCAACCAATTGATGTACGTGTAA

(SEQ ID NO:8)

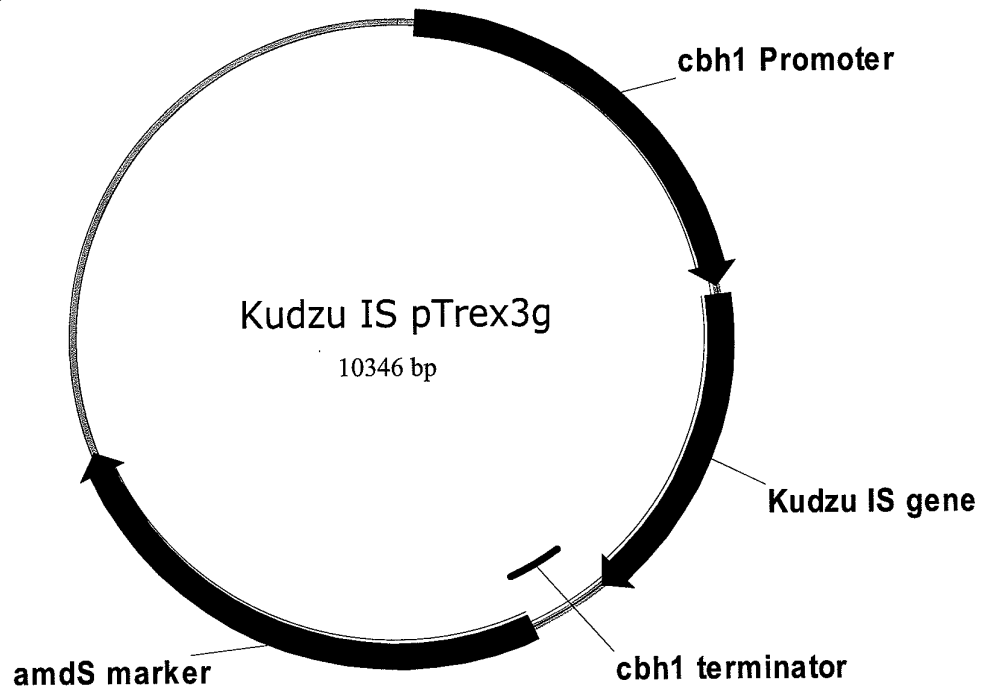
Figure 14

Figure 15A

```

1   TCGACCGGTG AGAAGAACAG CATCGGGACA AGGGAAGGAA GAACAAAGAC AAAGAAAACA
61  AAAGAAAGCA ATTGAAAACA AAACAAAACA ATTTTCATTC CTTCTCTTAT CATTCCCTTT
121 CTTTCTTTTT CTCTCATTC ACGCACTCCA TCGTATCCGT ATTCCCTCTTA TTTTCTCTCT
181 TTCTCTATAT CCATTTCTTT CTCTCTAGGT GTGTCTCTC TCTCTCTTCA ATTTCTCTAC
241 TCCGCATTCC AACGCATCC TCCCCAACC TCCCATTTC TCCCTACGGC CCGATAGCGA
301 TCGTCTTTCC CTGCTATCA CTCGCTACCG GCCCTCCTC TGCACCGTAA CCTCCTACGT
361 ATTTACCATA TCATAAAGTT TTTTCCGACG CTTATCGCTG ACCCCCTGTC GCCCTCCTAT
421 TGGCTTCCGG ATTATCTTCT TGTCATAAG GTGATCCATG CTTCTGGAAG ATTCCCGAAA
481 TGTGTCCACT TTGGCGGGGA ATCATTCCAT CCACCTCTTT CTCTCTCGCT TTCCTCATTC
541 GCGCTCCTCC TTCCGCGTCT CATTTGGTCTT CCGCTCCGTT TTTGCTTTGC CGATGTTACT
601 TGGGAGAGAG TCGATAATC CTTTCGCAAA AACTCGGTTT GACGCTCCTC ATGGTATATA
661 TAGTGGGTGG TGGACAGGTG CCTTCGCTTT TCTTTAAGCA AGAGAATCCC ATTGCTTGA
721 CTATCACGAA TTCACATACA TTATGAAGAT CACCGCTGTC ATTGCCCTTT TATTCTCACT
781 TGCTGCTGCC TCACCTATTC CAGTTGCCGA TCCTGGTGTG GTTTCAGTTA GCAAGTCATA
841 TGCTGATTTT CTTCTGTGTT ACCAAAGTTG GAACACTTTT GCTAATCCTG ATAGACCCAA
901 CCTTAAGAAG AGAATGATA CACCTGCAAG TGGATATCAA GTTGAAAAAG TCGTAATTTT
961 GTCACGTCAC GGTGTTAGGG CCCCTACAAA AATGACTCAA ACCATGCGTG ATGCTACTCC
1021 TAATACATGG CCAGAATGGC CCGTTAAATT AGGATATATT ACACCAAGAG GTGAACACTT
1081 GATATCACTT ATGGGCGGTT TTTACCGTCA AAAATTCCAG CAACAAGGAA TCCTTTCTCA
1141 GGGCTCCTGT OCTACTCCTA ACTCCATATA TGTCTGGGCT GAOCTGATC AGCGTACTTT
1201 AAAAAGTGGT GAAGCATTCC TTGCTGGTTT GGCACCACAA TGTGGCTTGA CAATTCAATCA
1261 CCAACAAAT CTGAGAAAG CTGATCCTCT TTTTCATCCC GTTAAAGCTG GAACCTGCTC
1321 TATGATAAAA ACTCAAGTTC AACAACTGTG TGAAGAAGAG GCACAACTC CTATAGATAA
1381 TTTGAATCAA CATTACATCC CCTTTTACG TTTAATGAAT ACAACATTAA ATTTTAGTAC
1441 TTCTGCTTGG TGCCAAAAC ACTCTGCTGA TAAATCCTGT GACCTAGGTT TATCCATGCC
1501 TTCTAAATG TCCATAAAG ATAATGGTAA CAAGGTCGCA TTGGATGGAG CTATTGGTCT
1561 ATCCTCTACT TTGGCCGAGA TTTTCTTCT TGAATATGCT CAAGGCATGC CTCAGCTGC
1621 TTGGGGTAAC ATCCACTCAG AGCAAGAGTG GGCTTCCTTG CTAAAGTTGC ATAATGTTCA
1681 ATTCGATTTG ATGGCCCGAA CACCTTATAT TGCTCGACAT AACGGTACTC CTTTATTGCA
1741 AGCTATATCA AATCCCTTAA ATCCCAACGC CACTGAATCA AAACCTCCAG ATATTTACCC
1801 TGATAACAAA ATATTGTTCA TTGCGAGTCA TGACACAAAT ATTGCTAATA TAGCCGGCAT
1861 GTTAAATATG CGTTGGACAT TACCAGGTCA ACCAGATAAT ACTCCTCCAG GTGGTCCCCT
1921 AGTATTTGAA CGTCTTGCTG ATAAAAGTGG AAAACAATAT GTTCTGTAT CTATGGTTTA
1981 TCAACACTTA GAACAACTTC GATCACAGAC TCCCCTTTCT CTAAATCAGC CTGCCGGATC
2041 TGTTCAACTT AAAATTCCAG GTTGCATGTA TCAACAGCC GAGGGTTACT GTCTCTTTT
2101 CACTTTTACA AGAGTTGTTT CCCAATCTGT TGAACCTGGA TGCCAACTTC AATAATGAGG
2161 ATCCAAGTAA GGAATGAGA ATGTGATCCA CTTTAAATTC CTAATGAATA CATGCCATA
2221 GTTCTTTTCT TTTGTTCTTT ATGTCGTTTT TCGATGGTAC GGCCGTTGTC AATCTCAGTT
2281 TGTGTGCTTG GTTGACGCTT GGTTCAAAT CTGTTTCTCT CATGAATCTT TTACCATTTT
2341 ACCACACGTT TATACCATT CTTCTATGAA TCTTCATCAA ACCATCTCGG GGTAGAGTG
2401 GAAAGAAAGT CTTGTTCTTT TATTTCTCTT TTTCCATCTT CAAGGCTTTT CTTTCTTCC
2461 TCCTCCTCTG TCATCTTGAG GTTTGACGTG TCTGTTTAGA ATTTTGAGCT GTTGCAGCAT
2521 CTTATTTTTT GTTTTGCAG AAACGAAGCGC TTTACTCTCT TCATCAGTTG GACGATTGTA
2581 CCTTTGAAAA CCAACTACTT TTGCATGTTT TGTATAGAAA TCAATGATAT TAGAATCCCA
2641 TCCTTTAATT TCTTTCAAG TAGTTGAGCT ATAGTTAAGT GTAAGGGCCC TACTGCGAAA
2701 GCATTTGCCA AGGATGTTTT CATTAATCAA GAACGAAAGT TAGGGGATCG AAGACGATCA
2761 GATACCGTCG TAGTCTTAAC CATAAACTAT GCCGACTAGG GATCGGGCAA TGTTCATTT
2821 ATCGACTTGC TCGGCACCTT ACGAGAAATC AAAGTCTTTG GGTTCGGGGG GGAGTATGGT
2881 CGCAAGGCTG AAACCTAAAG GAATTGACGG AAGGGCACCA CAATGGAGTG GAGCCTGCGG
2941 CTTAATTTGA CTCACACGG GGAACCTCAC CAGGTCGAGA CATAGTAAGG ATTGACAGAT
3001 TGAGAGCTCT TTCTTGATT C TATGGGTGGT GGTGCATGGC CGTCTTAGT TGGTGGAGTG
3061 ATTTGTCTGC TTAATTGCGA TAACGAACGA GACCTTAACC TGCTAAATAG CTGGATCAGC
3121 CATTTTGGCT GATCATTAGC TTCTTAGAGG GACTATTGGC ATAAAGCCAA TGGAGTTTG
3181 AGGCAATAAC AGGTCTGTGA TGCCCTTAGA TGTCTGGGC CGCACGCGCG CTACACTGAC
3241 GGAGCCAACG AGTTGAAAAA AATCTTTTGA TTTTATATCC TTGGCCGGAA GGTCTGGGTA
3301 ATCTTGTTAA ACTCGTCTG GCTGGGGATA GAGCATTGCA ATTATTGCGG CCGCTCCTCA
3361 ATTCGATGTT GCAGATTTTA CAAGTTTTTA AAATGTATTT CATTATTACT TTTTATATGC
3421 CTAAATAAAA AGCCATAGTT TAATCTATAG ATAACCTTTT TTCCAGTGCA CTAACGGACG

```

Figure 15B

```

3481 TTACATTCCC ATACAAAAC TCGTAGTTAA AGCTAAGGAA AAGTTAATAT CATGTTAATT
3541 AAATACGCTA TTTACAATAA GACATTGAAC TCATTATATAT CGTTGAATAT GAATAACCAA
3601 TTTTCAGCGAA TTTTAAACAA ACATCGTTCA CCTCGTTTAA GGATATCTTG TGTATGGGGT
3661 GTTGACTTGC TTTATCGAAT AATTACCGTA CCTGTAATTG GCTTGCTGGA TATAGCGGTA
3721 GTCTAATATC TAGCAAAAAT CTTTTGGGTG AAAAGGCTTG CAATTCACG ACACCGAAGT
3781 ATTTGTCATT TTTAATAAAG GAAGTTTCC ATAAATTCCT GTAATTCTCG GTTGATCTAA
3841 TTGAAAAGAG TAGTTTTGCA TCACGATGAG GAGGGCTTTT GTAGAAAGAA ATACGAACGA
3901 AACGAAAATC AGCGTTGCCA TCGCTTGGGA CAAAGCTCCC TTACCTGAAG AGTCGAATTT
3961 TATTGATGAA CTTATAACTT CCAAGCATGC AAACCAAAG GGAGAACAAG TAATCCAAGT
4021 AGACACGGGA ATTGGATTCT TGGATCACAT GTATCATGCA CTGGCTAAAC ATGCAGGCTG
4081 GAGCTTACGA CTTTACTCAA GAGGTGATTT AATCATCGAT GATCATCACA CTGCAGAGAA
4141 TACTGCTATT GCACTTGGTA TTGCATTCAA GCAGGCTATG GGTAACTTTG CCGGCGTTAA
4201 AAGATTGGGA CATGCTTATT GTCCACTTGA CGAAGCTCTT TCTAGAAGCG TAGTTGACTT
4261 GTCGGGACGG CCCTATGCTG TTATCGATTT GGGATTAAAG CGTGAAAAGG TTGGGGAAAT
4321 GTCCTGTGAA ATGATCCCTC ACTTACTATA TTCCTTTTCG GTAGCAGCTG GAATTACTTT
4381 GCATGTTACC TGCTTATATG GTAGTAATGA CCATCATCGT GCTGAAAGCG CTTTAAATC
4441 TCTGGCTGTT GCCATGCGCG CGGCTACTAG TCTTACTGGA AGTCTGAAG TCCCAAGCAC
4501 GAAGGGAGTG TTGTAAAGAT GAATTGGATT ATGTCAGGAA AAGAAGGACA ATTTTGCATC
4561 CAAATTGTCT AAATTTTAGA GTTGCTTGAA AACAAAGAA CCTTACTTGC TTTATAATTA
4621 CGTTAATTAG AAGCGTTATC TCGTAAGGA ATATAGTACG TAGCCGTATA AATTGAATTG
4681 AATGTTTACG TTATAGAATA GAGACACTTT GCTGTTCAAT GCGTCGTAC TTACCATACT
4741 CACTTTAATA TACGACTTTA AGTATAAACT CCGCGGTTAT GGTAAATTA ATGATGCACA
4801 AACGTCGGAT TCCATATGGG TACACTACAA TTAATACTT TTAAGCTGAT CCCCCACACA
4861 CCAATAGCTT AAAATGTTTC TACTCCTTTT TTAATCTTCC AGATTTTCTC GGACTCCGCG
4921 CATCGCCGTA CCACTTCAAA ACACCCAAGC ACAGCATACT AAATTTTCCC TCTTTCTTCC
4981 TCTAGGGTGT CGTTAATTAC CCGTACTAAA GGTTTGGAAA AGAAAAAGA GACCGCCTCG
5041 TTTCTTTTTC TTCGTCGAAA AAGGCAATAA AAATTTTAT CACGTTTCTT TTTCTTGAAA
5101 TTTTTTTTTT TAGTTTTTTT CTCTTTCAGT GACCTCCATT GATATTTAAG TTAATAAAGC
5161 GTCTTCAATT TCTCAAGTTT CAGTTCATT TTTCTTGTTT TATTACAACT TTTTTTACTT
5221 CTTGTTTCAAT AGAAGAAAG CATAGCAATC TAATCTAAGG GCGGTGTGA CAATTAATCA
5281 TCGGCATAGT ATATCGGCAT AGTATAATAC GACAAGGTGA GGAACATAAC CATGGCCAAAG
5341 TTGACCAAGT CCGTTCCGGT GCTCACCGCG CGCGACGTCG CCGGAGCGGT CGAGTTCTGG
5401 ACCGACCGGC TCGGTTCTC CCGGACTTTC GTGGAGGACG ACTTCGCGCG TGTGGTCCGG
5461 GACGACGTGA CCCTGTTTCT CAGCGCGGTC CAGSACCAGG TGGTGCCGGA CAACACCCCTG
5521 GCCTGGGTGT GGGTGCGCGG CCTGGACGAG CTGTACGCCG AGTGGTGCGA GGTGCTGTCC
5581 ACGAACTTCC GGGACGCTTC CGGCGCGGCC ATGACCGAGA TCGGCGAGCA GCGGTGGGGC
5641 CCGGAGTTCC CCCTGCGCGA CCGGCGCGGC AACTGCGTGC ACTTCGTGGC CGAGGAGCAG
5701 GACTGACACG TCCGACGGCG GCCACCGGGT CCCAGGCTC GGAGATCCGT CCCCCTTTTC
5761 CTTTGTGAT ATCATGTAAT TAGTTATGTC ACGCTTACAT TCACGCCCTC CCCCCACATC
5821 CGCTCTAACC GAAAAGGAAG GAGTTAGACA ACCTGAAGTC TAGGTCCCTA TTTATTTTTT
5881 TATAGTTATG TTAGTATTAA GAACGTTATT TATATTTCAA ATTTTCTTTT TTTTCTGTA
5941 CAGACGCGAG CTTCCAGTA AATGTGCCAT CTCGTAGGCA GAAAACGCTT CCCCCTAGG
6001 GTCTCTCTCT TGGCCTCCTT TCTAGGTCGG GCTGATTGCT CTTGAAGCTC TCTAGGGGGG
6061 CTCACACCAT AGGCAGATAA CGTTCCCCAC CGGCTCGCCT CGTAAGCGCA CAAGGACTGC
6121 TCCCAAAGAT CTTAGGCGGG ATTTTGCCGA TTTGCGCTA AAGGAACCGG AACACGTAGA
6181 AAGCCAGTCC GCAGAAACGG TGCTGACCCC GGATGAATGT CAGCTACTGG GCTATCTGGA
6241 CAAGGGAAAA CGCAAGCGCA AAGAGAAAGC AGGTAGCTTG CAGTGGGCTT ACATGGCGAT
6301 AGCTAGACTG GCGGTTTTTA TGGACAGCAA CGCAACCGGA ATTGCCAGCT GGGGCGCCCT
6361 CTGGTAAGGT TGGGAAGCCC TGCAAAGTAA ACTGGATGGC TTTCTTGCCG CCAAGGATCT
6421 GATGGCGCAG GGGATCAAGA TCTGATCAAG AGACAGGATG AGGATCGTT CGCATGATTG
6481 AACAAGATGG ATTGCACGCA GGTTCCTCCG CCGCTTGGGT GGAGAGGCTA TTCGGCTATG
6541 ACTGGGCAAC ACAGACAATC GGCTGCTCTG ATGCCGCGGT GTCCCGGCTG TCAGCGCAGG
6601 GGGCGCCGGT TCTTTTGTG AAGACCGACC TGTCCGGTGC CCTGAATGAA CTGCAGGACG
6661 AGGCAGCGCG GCTATCGTGG CTGGCCACGA CGGGCGTTC TCGCGACGCT GTGCTCGACG
6721 TTGTCACTGA AGCGGGAAGG GACTGGCTGC TATTGGGCGA AGTGCCGGGG CAGGATCTCC
6781 TGTCATCTCG CCTTGTCTCT GCCGAGAAAG TATCCATCAT GGCTGATGCA ATGCGGCGGC
6841 TGCAATACGCT TGATCCGGCT ACCTGCCCAT TCGACCACCA AGCGAAACAT CGCATCGAGC
6901 GAGCACGTAC TCGGATGGAA GCCGCTCTTG TCGATCAGGA TGATCTGGAC GAAGAGCATC
6961 AGGGGCTCGC GCCAGCCGAA CTGTTGCCA GGCTCAAGGC GCGCATGCCC GACGGCGAGG

```

Figure 15C

```

7021 ATCTCGTGGT GATCCATGGC GATGCCTGCT TGCCGAATAT CATGGTGGAA AATGGCCGCT
7081 TTTCTGGATT CAACGACTGT GGCCGGCTGG GTGTGGCGGA CCGCTATCAG GACATAGCGT
7141 TGGATACCCG TGATATTGCT GAAGAGCTTG GCGGCGAATG GGCTGACCGC TTCCTCGTGC
7201 TTTACGGTAT CGCCGCTCCC GATTGCGAGC GCATCGCCTT CTATCGCCTT CTTGACGAGT
7261 TCTTCTGAAT TGAAAAGGT ACCAAGTTTA CTCATATATA CTTTAGATTG ATTTAAACT
7321 TCATTTTTAA TTTAAAAGGA TCTAGGTGAA GATCCTTTTT GATAATCTCA TGACCAAAT
7381 CCCTTAACGT GAGTTTTCGT TCCACTGAGC GTCAGACCCC GTAGAAAAGA TCAAAGGATC
7441 TTCTTGAGAT CCTTTTTTTC TGCGCGTAAT CTGCTGCTTG CAAACAAAAA AACCACCGCT
7501 ACCAGCCGGT GTTTGTTTTC CGGATCAAGA GCTACCAACT CTTTTTCCGA AGGTAACCTGG
7561 CTTCAAGCAG GCGCAGATAC CAAATACTGT CCTTCTAGTG TAGCCCTAGT TAGGCCACCA
7621 CTTCAAGAAC TCTGTAGCAC CGCCTACATA CCTCGCTCTG CTATCCTGT TACCAGTGGC
7681 TGCTGCCAGT GCGGATAAGT CGTGCTTAC CGGGTTGGAC TCAAGACGAT AGTTACCGGA
7741 TAAGGCGCAG CGGTCGGGCT GAACGGGGGG TTCGTGCACA CAGCCAGCT TGGAGCGAAC
7801 GACCTACACC GAACCTGAGT ACCTACAGCG TGAGCATTGA GAAAGCGCCA CGCTTCCCGA
7861 AGGGAGAAAG GCGGACAGGT ATCCGGTAAG CGGCAGGGTC GGAACAGGAG AGCGCACGAG
7921 GGAGCTTCCA GGGGGAACG CCTGGTATCT TTATAGTCCT GTCGGGTTTC GCCACCTCTG
7981 ACTTGAGCGT CGATTTTGT GATGCTCGTC AGGGGGGCGG AGCCTATGGA AAAACGCCAG
8041 CAACGCGGCC TTTTACGGT TCCTGGCCTT TTGCTGGCCT TTTGCTCACA TGTTCTTTCC
8101 TCGGTTATCC CCTGATTCTG TGGATAACCG TATTACCGCC TTTGAGTGAG CTGATACCGC
8161 TCGCCGACG CGAACGACCG AGCGCAGCGA G

```

(SEQ ID NO:11)

Figure 16

```

1 GAATTCAAAA CAAAATGTGT GCAACCTCCT CCCAGTTTAC TCAGATTACC GAGCATAATT
61 CTCGACGATC TGCTAACTAC CAGCCGAACC TTTGGAACCT TGAGTTTCTC CAGTCTCTCG
121 AAAATGACCT GAAGGTGGAA AAGCTCGAGG AGAAGGCGAC CAAACTCGAG GAGGAGGTGC
181 GATGTATGAT CAACAGAGTT GACACCCAAC CCTGTCTTFT GCTGGAGCTG ATCGACGATG
241 TGCAGCGGTT GGGTTTGA CTATAAATTCG AGAAGGACAT TATCAAGGCA CTGGAGAACA
301 TTGTGCTCCT CGACGAGAAC AAGAAGAACA AGTCTGATCT TCACGCTACC GCTCTCTCTT
361 TCGACTTCT TCGACACAC GGCTTCGAGG TGTGCGAGGA CGTCTTCGAG AGATTTAAGG
421 ACAAGGAGGG AGGATTTAGC GCGGAGCTGA AGGAGACGT TCAGGGTCTT CTCTCCTTGT
481 ACGAGGCGTC CTACCTGGGA TTCGAGGGAG AGAACCTCCT GGAGGAAGCT CGTACATTTT
541 CCATCACTCA CCTTAAGAAT AACCTTAAGG AGGGAATTAA CACCAAGGTG GCCGAGCAGG
601 TTTCTCACGC CCTGGAGCTC CCCTACCACC AACGGCTCCA TAGACTGGAG GCTCGTTGGT
661 TCCTGGACAA ATATGAGCCA AAGGAGCCTC ATCATCAGTT GCTGTTGGAG TTGGCCAAGC
721 TGGACTTCAA TATGGTTCAG ACGCTGCACC AAAAGGAGTT GCAGGACCTG TCTCGATGGT
781 GGACCGAGAT GGGATTGGCC TCGAAGCTGG ATTTTGTCCG TGACCGACTT ATGGAGGTCT
841 ATTTTGGGC CCTTGGAAAT GCGCCTGACC CCCAGTTCCG AGAGTGCCGG AAGGCGGTGA
901 CGAAGATGTT CGGTCTTGTG ACTATCATCG ACGACGTCTA CGATGTCTAC GGCACACTCG
961 ACGAGTTGCA GCTGTTCACT GACGCGCTCG AGCGATGGGA TGTGAAGGCC ATTAATACTC
1021 TCCCTGACTA TATGAAGCTG TGCTTCCTGG CTCTGTACAA CACTGTCAAC GATACCTCGT
1081 ACTCTATCCT CAAGGAGAAG GGACACAACA ATCTCTCCTA CTTGACCAAA TCCTGGCGAG
1141 AACTGTGCAA GGCTTTTCTG CAGGAGGCTA AATGGTCCAA TAACAAGATC ATTCCTGCTT
1201 TTTCTAAATA CCTGGAAAAT GCCTCGSTGT CGAGCTCTGG CGTCGCCCTT CTGGCCCCCT
1261 CCTACTTCTC CGTCTGCCAG CAGCAGGAGG ATATTTCOGA TCATGCTCTT AGATCGCTGA
1321 CCGATTTTCA CGGCCTCGTG CGATCTTCCT GCGTGATTTT TCGGTTGTGT AATGACCTTG
1381 CGACCTCTGC TGCTGAGCTG GAACGAGGCG AGACTACAAA TTCCATFATT TCTTACATGC
1441 ACGAAAACGA TGGAAACATCT GAAGAACAGC CTAGAGAGGA ACTGCGAAAG TTGATCGACG
1501 CCGAGTGGAA GAAGATGAAC AGAGAGCGGG TGTCOGACTC TACCCTGCTT CCCAAGGCCT
1561 TCATGGAGAT CGCCGTGAAC ATGGCTCGAG TTTCOCATTG TACTTACCAG TACGGTGACG
1621 GCCTGGGTG TCCGACTAC GCTACAGAGA ACCGAATCAA GCTGCTGCTC ATCGACCCCT
1681 TCCCTATCAA CCAATTGATG TACGTGTAAT AGTCTAGAGG ATCC

```

(SEQ ID NO:12)

Figure 17

```

1  GAATTCAACA AAAATGTGCT CTGTTTCCAC TGAGAACGTG TCCTTTACTG AGACTGAGAC
61  TGAAGCACGT AGAAGCGCCA ACTACGAACC CAACTCCTGG GATTATGACT TTCTGCTGTC
121 TTCTGACACC GACGAGTCGA TCGAGGTTTA TAAGGATAAG GCCAAGAAAC TTGAGGCCGA
181 GGTGAGACGA GAGATTAACA ACGAGAAGGC CGAGTTCCTG ACCCTTCTTG AGCTGATCGA
241 CAACGTTCAA CGACTTGGTC TTGGTTACCG TTTCGAATCC GATATCCGAC GTGCATTGGA
301 TCGATTTGTC TCGTCCGGAG GTTTCGATGG TGTGACTAAG ACGTCGCTGC ACGCCACAGC
361 TCTTTCCTTC AGACTGTTGC GGCAGCATGG ATTTGAGGTT TCCCAGGAAG CCTTTTCTGG
421 TTTCAAGGAT CAGAACGGAA ACTTTTGGGA GAATCTCAAG GAGGACACCA AGGCCATCCT
481 GTCGTTGTAT GAGGCCTCGT TCCTGGCTCT TGAGGGCGAG AATATTCTGG ATGAGGCTCG
541 GGTTTTCGCT ATTTTCGCACC TGAAGGAGTT GTCGGAGGAA AAGATCGGAA AGGAACTGGC
601 CGAGCAGGTC AACCATGCAC TTGAACTTCC CCTGCATCGA CGTACCCAGC GACTGGAGGC
661 CGTGTGGAGC ATCGAGGCGT ACAGAAAAAA GGAGGATGCT AATCAGGTTC TGCTCGAACT
721 CGCTATCCTC GACTATAACA TGATTGAGAG CGTGTAACAG CGTGACTTGC GAGAGACAAG
781 CCGGTGGTGG CGACGGGTGG GACTGGCCAC GAAGCTCCAC TTTGCTAAAG ATCGATTGAT
841 TGAGTCGTTT TACTGGGCAG TGGGTGTGGC CTTTGAGCCT CAGTACTCCG ACTGCCGAAA
901 CTCGTTTGCA AAGATGTTTT CTTTGTGCAC TATCATCGAC GACATCTACG ATGTTTACGG
961 CACTCTCGAT GAACTCGAAC TCCTCACGGA CGCTGTCGAG CGATGGGATG TGAATGCCAT
1021 TAATGATCTG CCAGATTATA TGAAGTTGTG TTTCTTGGCG CTCTACAACA CAATTAATGA
1081 AATTGCCTAC GACAACCTCA AGGACAAGGG AGAGAACATT CTGCCCTACC TTACTAAAGC
1141 CTGGGCCGAC CTGTGTAACG CCTTTTGGCA GGAAGCCAAG TGGCTCTATA ACAAATCTAC
1201 TCCTACATTT GATGACTACT TCGGCAACGC TTGGAAGTCT TCCAGCGGCC CTCTCCAGTT
1261 GATCTTCGCT TACTTTGCAG TGGTCCAGAA CATCAAGAAA GAGGAGATTG AGAACCTCCA
1321 GAAGTATCAC GACATCATCT CCCGACCTTC GCACATCTTT CGACTGTGCA ATGACCTTGC
1381 CTCCGCATCC GCTGAGATTG CCCGAGGAGA AACAGCCAAT TCTGTGTCGT GTTACATGCG
1441 TACAAAGGGC ATCTCCGAGG AGCTGGCTAC CGAGTCTGTG ATGAACCTGA TCGATGAAAC
1501 CTGTAAGAAG ATGAACAAAG AGAAACTGGG CGGTTCTCTG TTCGCCAAAC CATTTGTTGA
1561 AACC CGATC AATCTGGCTC GTCAGTCTCA TTGTACTTAC CATAACGGTG ACGCGCACAC
1621 TTCGCCGAC GAATTGACCC GTAAGCGTGT GCTTTCGGTG ATTACCGAGC CGATCCTGCC
1681 GTTCGAAAGA TAATAGGATC C

```

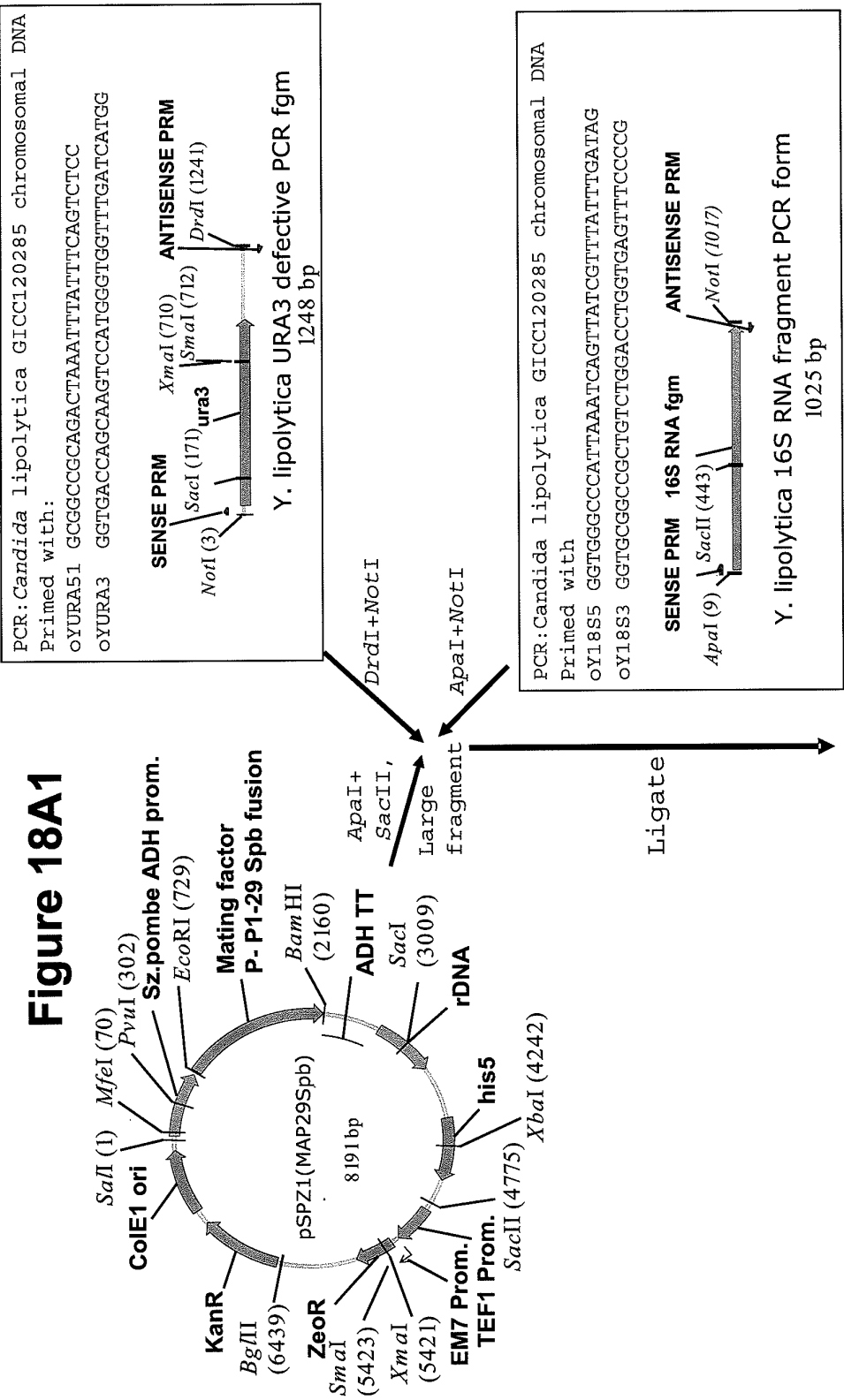
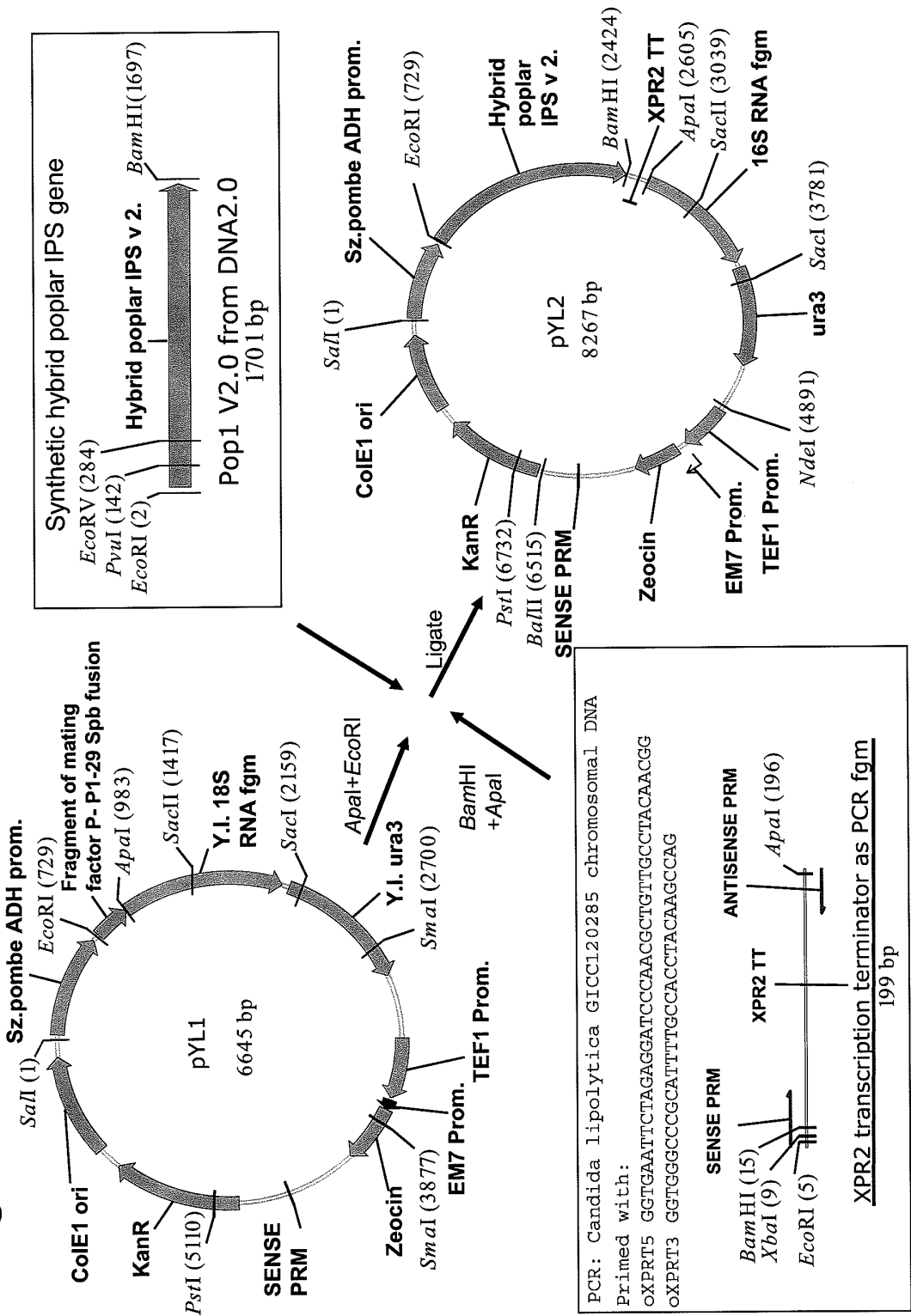


Figure 18A2



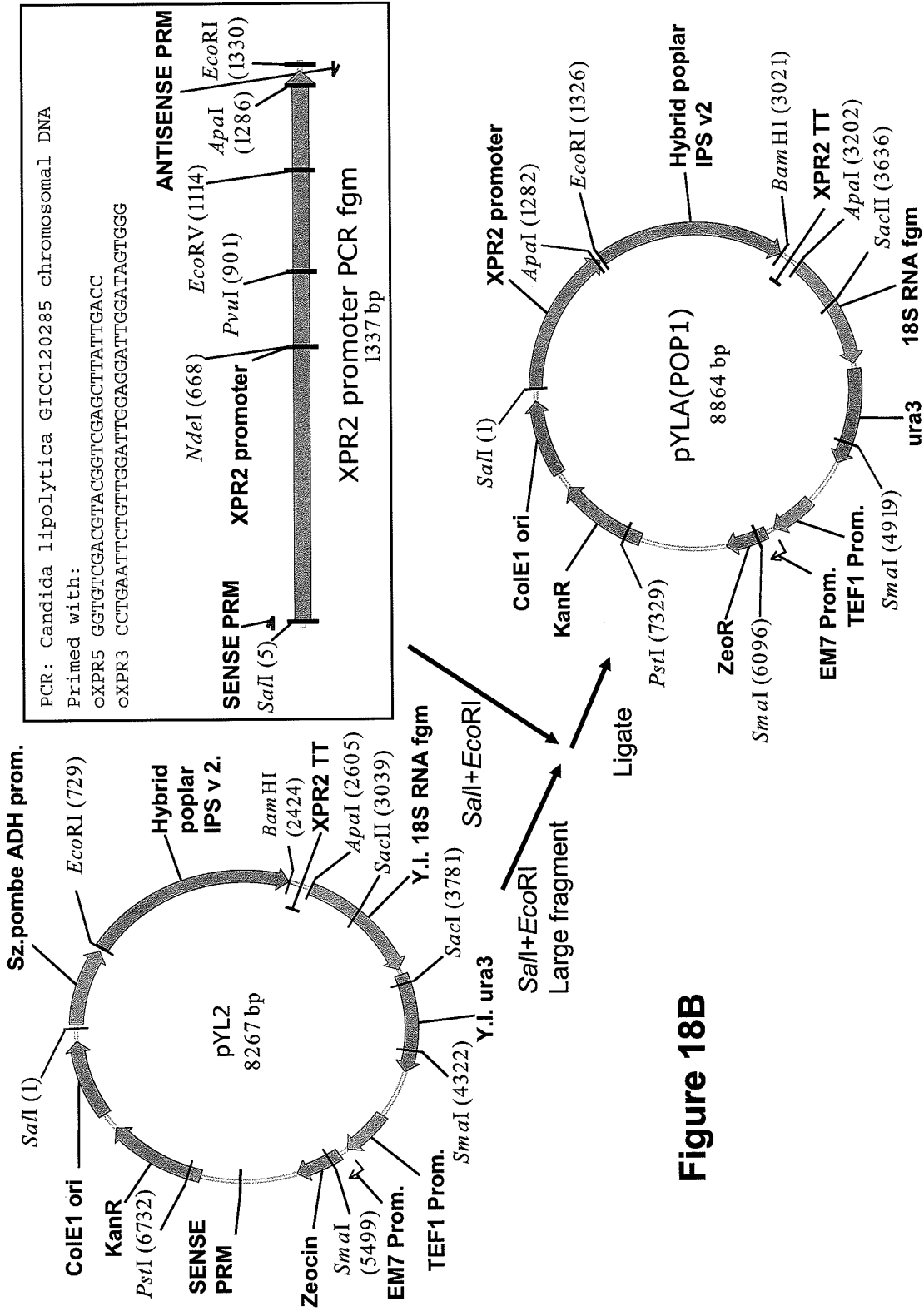


Figure 18B

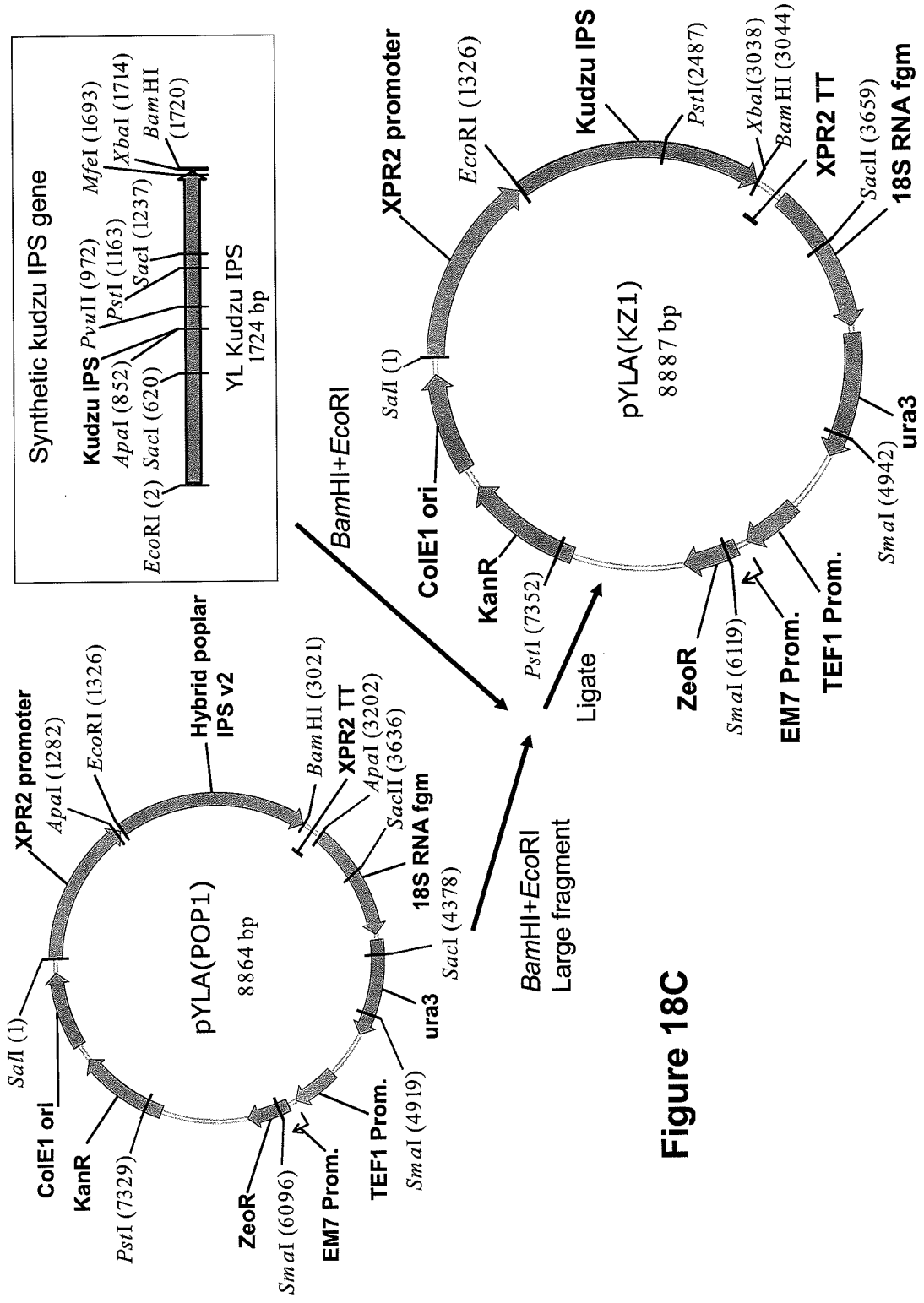
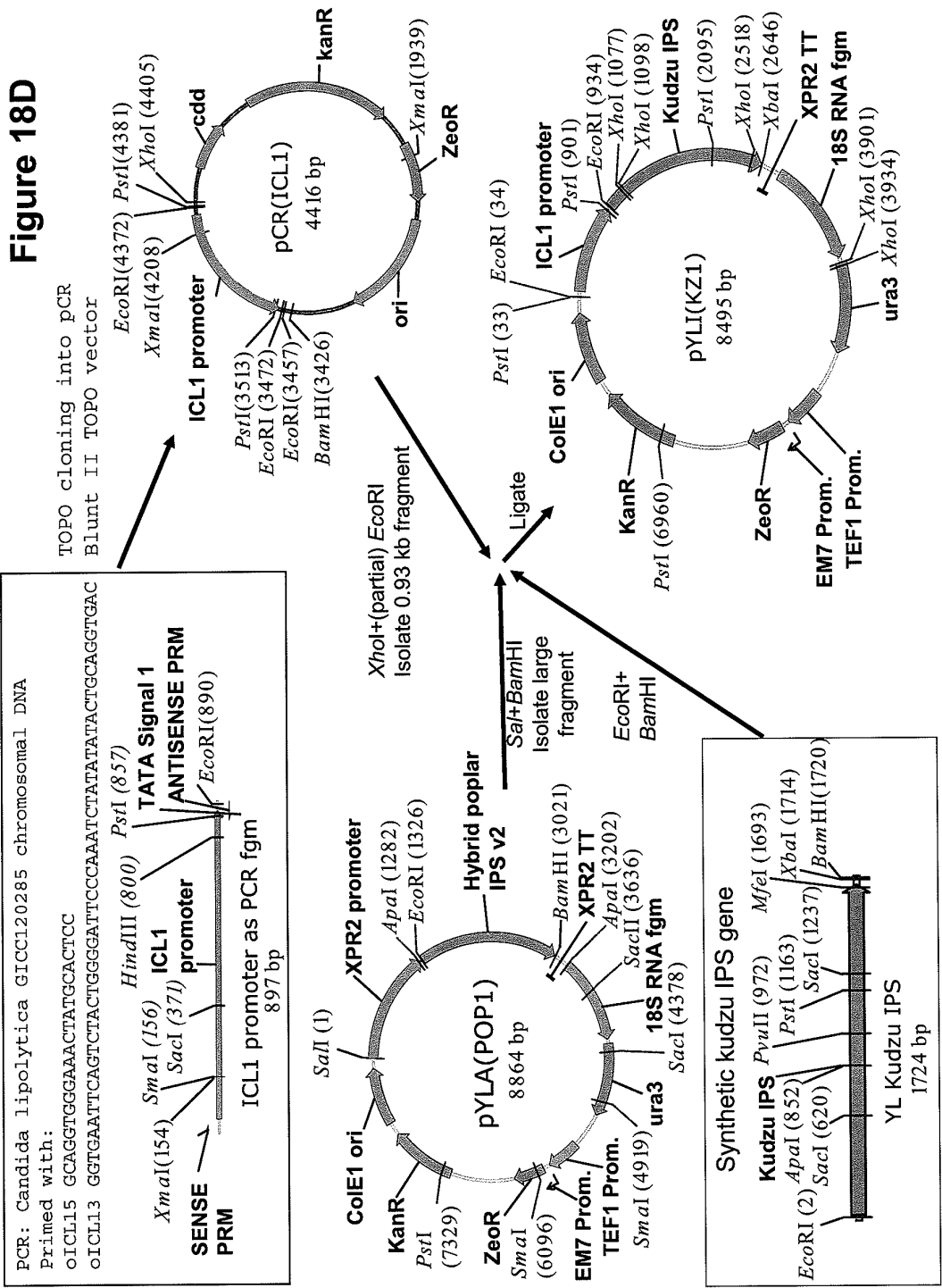
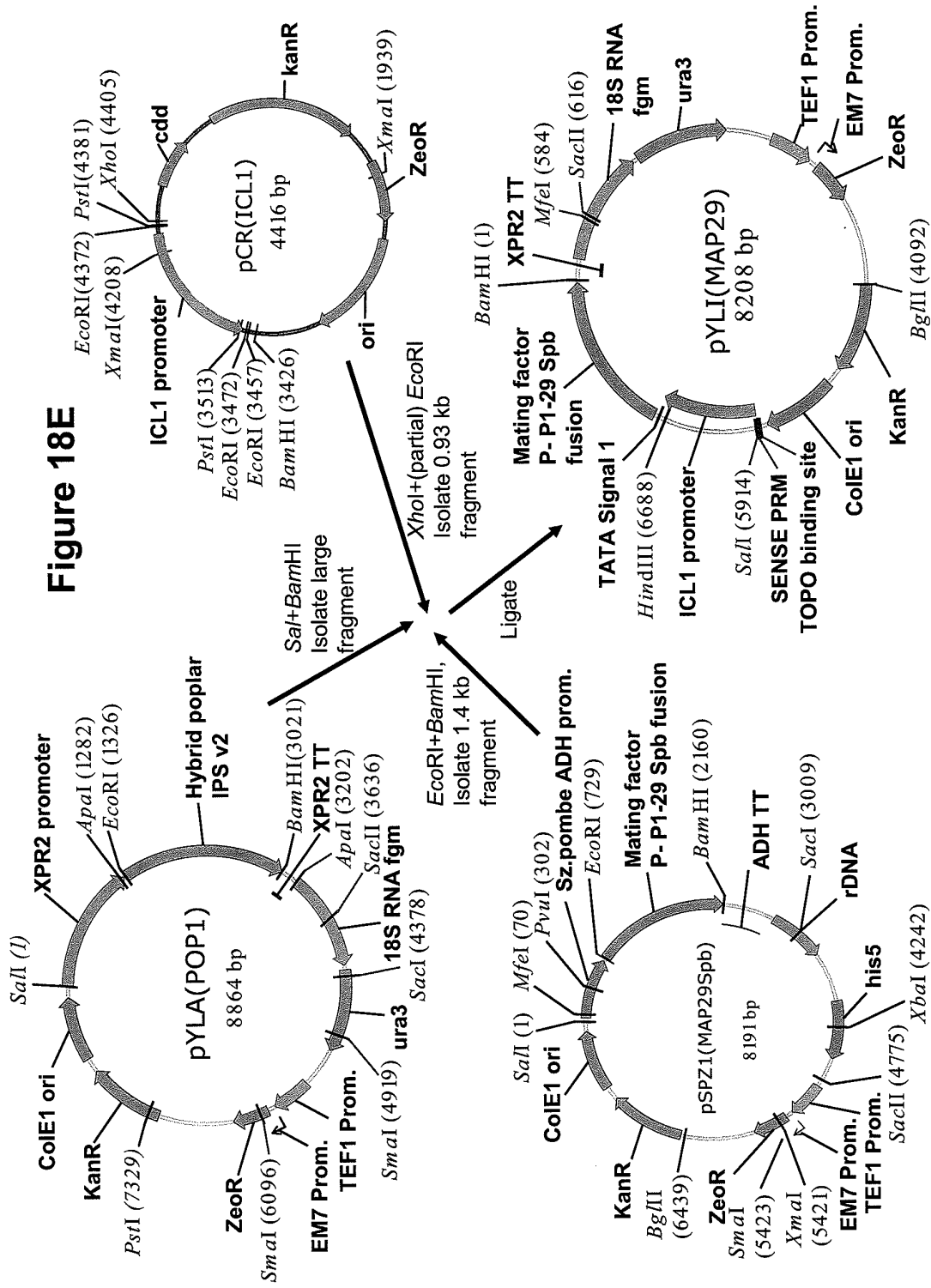


Figure 18C

Figure 18D





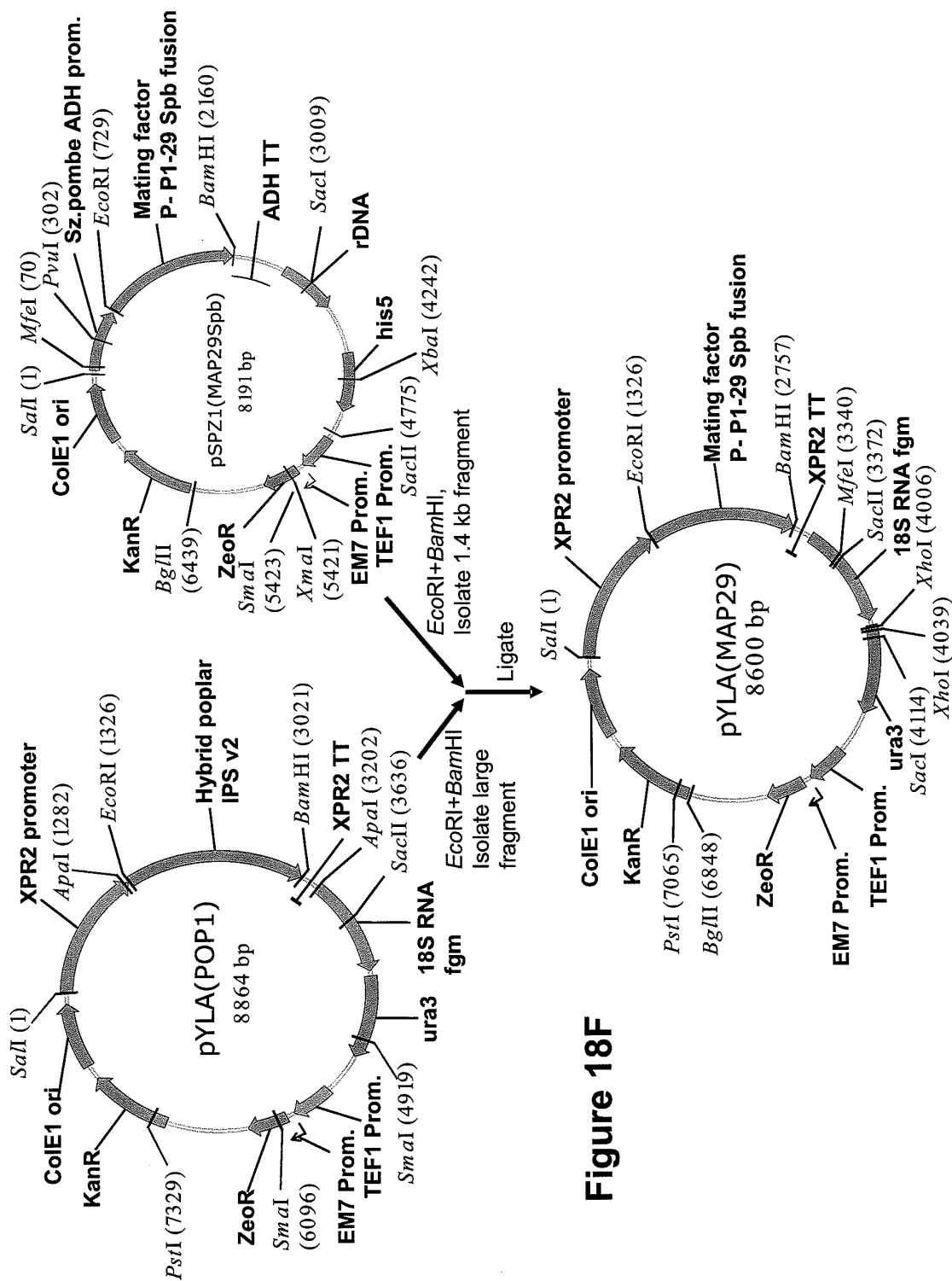


Figure 18F

Figure 19A

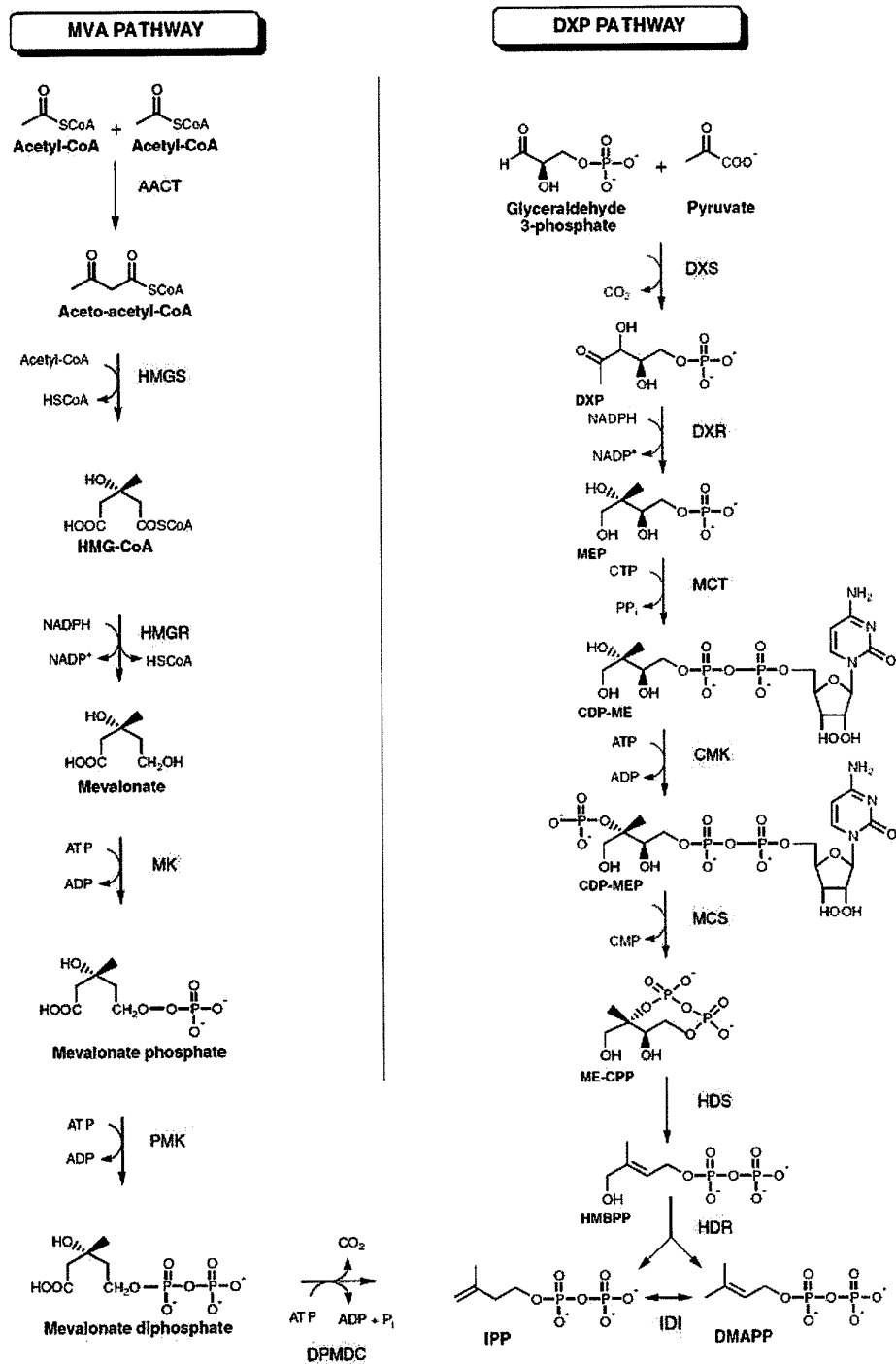


Figure 19B

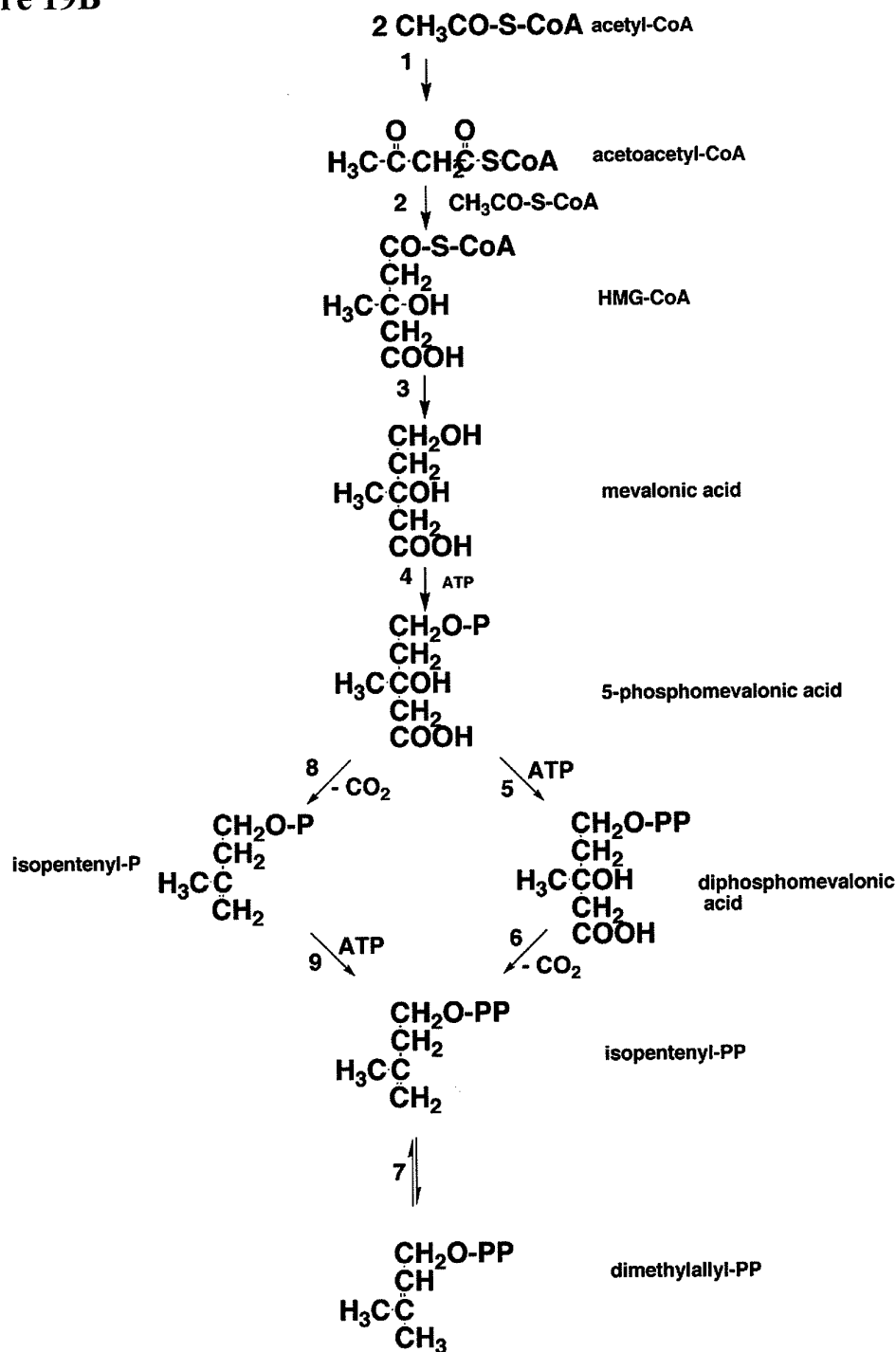


Figure 20A

***Y. lipolytica* CLIB122:: pYLA(MAP29)**

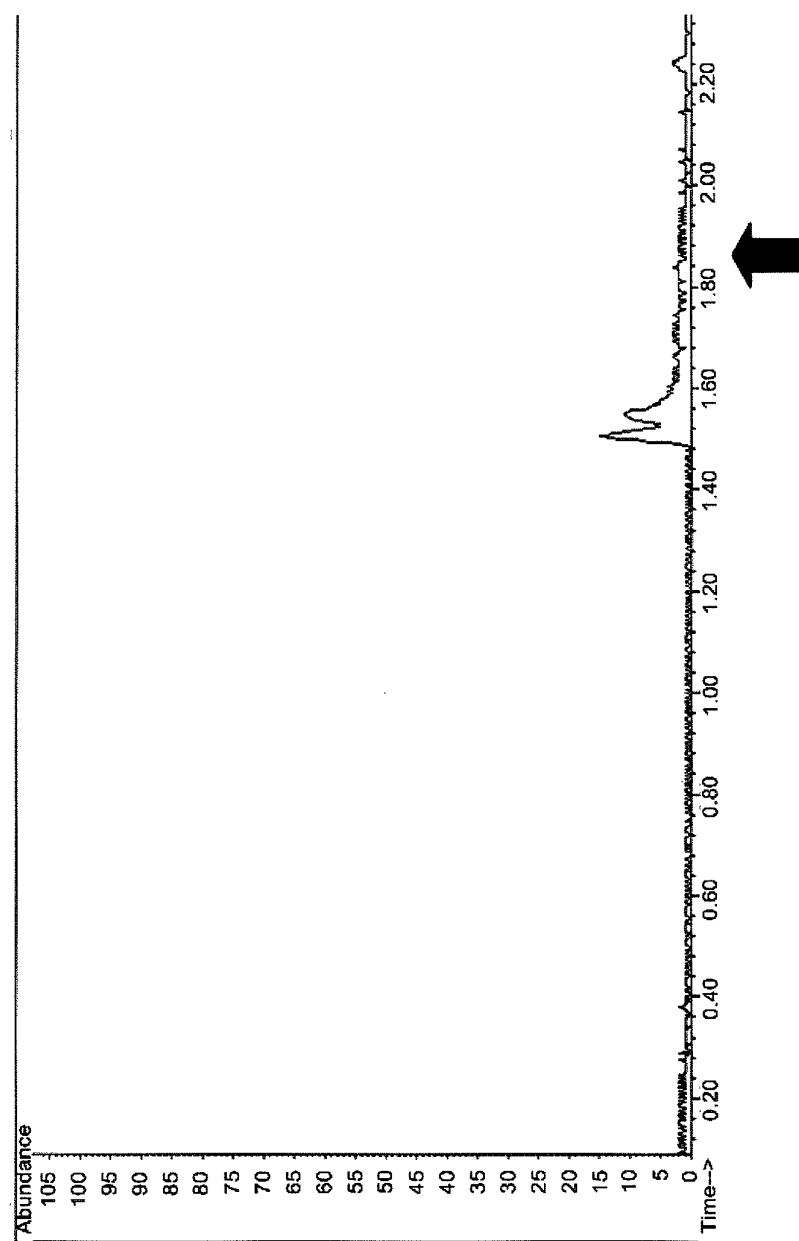


Figure 20B

Y. lipolytica CLIB122:: pYLA(KZ1)

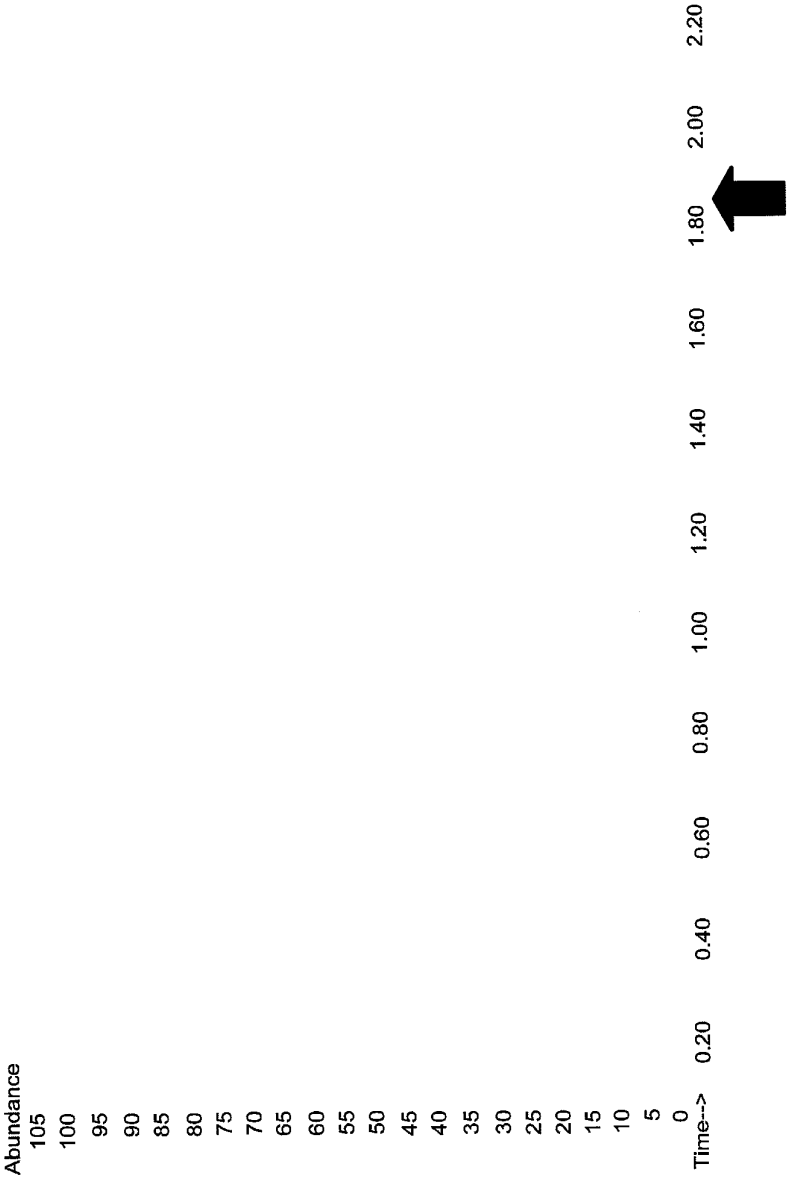


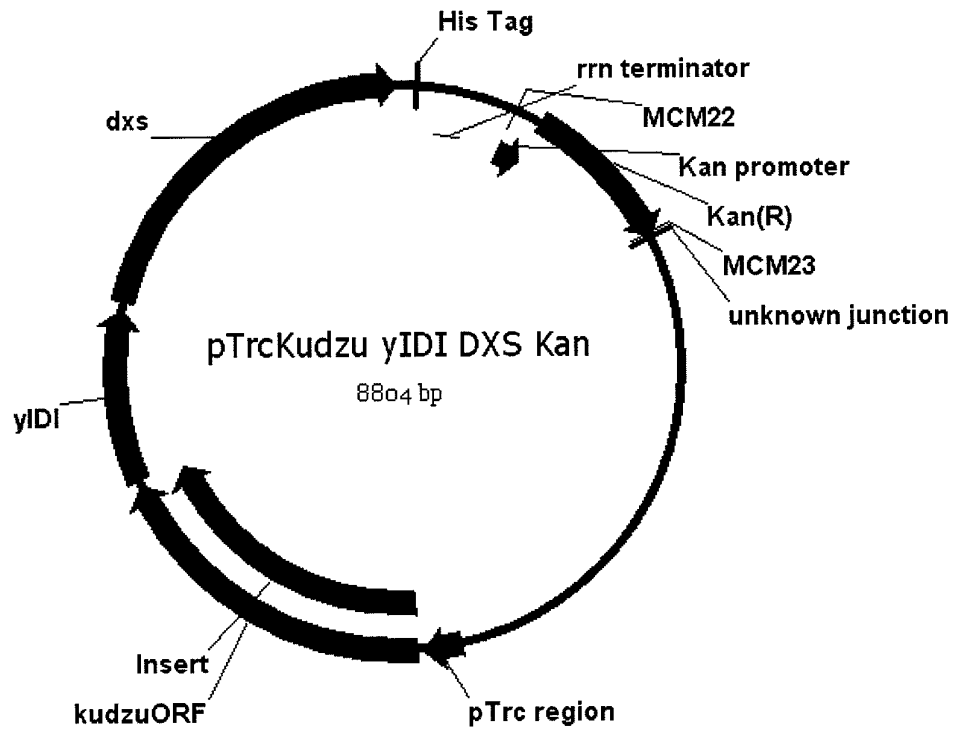
Figure 21

Figure 22A

1-

gctgggtaccatatgggaattcgaagctttctagaacaaaaactcatctcagaagaggatctgaa
tagcgccgtcgaccatcatcatcatcattgagtttaaacgggtctccagcttggctgttttg
gcggtatgagagaagattttccagcctgatacagattaaatcagaacgcagaagcggctctgataaa
acagaatttgcctggcggcagtagcgcggtgtccacctgaccccatgccgaactcagaagtg
aaacgcggtagcgccgatggtagtggtgtgggtctcccatgagagagtagggaactgccaggcat
caaataaaaacgaaaggctcagtcgaaagactgggcctttcgttttatctgttgttgcggtga
acgctctcctgagtaggacaaaatccgcggggagcggatttgaacgttgccaagcaacggcccg
agggtggcgggcaggacgcccgcataaaactgccaggcatcaaattaagcagaaggccatcctg
acggatggcctttttgcgtttctacaaaactcttttgtttatttttctaaatacattcaaatat
gtatccgcttaaccggaattgccagctggggcgccctctggttaagggttggaagccctgcaaag
taaaactggatggctttctcgccgccaaggatctgatggcgaggggatcaagctctgatcaaga
gacaggatgaggatcggttgcgatgattgaacaagatggattgcacgcagggttctccggccgct
tgggtggagaggctattcggctatgactgggcacacagacaatcggctgctctgatgcgcgct
tggtccggctgtcagcgccaggggcgcccggttcttttgtcaagaccgacctgtccggtgcct
gaatgaactgcaagacgaggcagcgcggtatcggtggctggccacgacggcggttctctgcgca
gctgtgctcgacgttgtcactgaagcgggaagggaactggctgctattgggcgaagtgcggggc
aggatctcctgtcatctcaccttgctcctgccgagaaaagtatccatcatggctgatgcaatgcg
gcggtgcatacgttgatccggctacctgcccatcgcaccaccaagcgaaacatcgcatcgag
cgagcacgtactcggtggaagccggctctgtcgatcaggatgatctggacgaagagcatcagg
ggctcgcgccagccgaactgttcgccagggtcaaggcgagcatgcccgacggcgaggatctcgt
cgtgaoccatggcgatgctgtcttgcgaatatcatgggtggaatatggccgcttttctggattc
atcgactgtggccggctgggtgtggcggaaccgctatcaggacatagcgttggctaccggtgata
ttgctgaagagcttggcggcgaatgggtgacogcttctcgtgctttacgggtatcgccgctcc
cgattcgcagcgcatcgcttctatcgcttcttgacgagttcttctgacatgacaaaaatccc
ttaacgtgagttttcgttccaactgagcgtcagaccccgtagaaaagatcaaaggatcttcttga
gaccttttttctgcgcgtaactctgctgcttgcaacaaaaaaaccaccgctaccagcgggtgg
tttgtttgccggatcaagagctaccaactctttttccgaaggtaactggcttcagcagagcgca
gataccaaatactgtccttctagtgtagccgtagttaggccaccacttcaagaactctgtagca
ccgcctacatacctcgctctgctaactcctgttaccagtggctgctgccagtggcgataagtctg
gtcttaccgggttggaactcaagacgatagttaccggataaggcgcaagcggctcgggtgaacggg
gggttcgtgcacacagcccagcttgagcgcaacgacctacaccgaactgagatacctacagcgt
gagctatgagaaagcgccacgcttcccgaaaggagaaaggcggaacaggtatccggtaagcggca
gggtcggaaacaggagagcgacgagggagcttccagggggaacgcctggatctttatagtcc
tgtcgggtttcgccacctctgacttgagcgtcgatttttgtgatgctcgtcagggggcgagc
ctatggaaaaacgccagcaacgcggccttttacggttcctggccttttgcgtggccttttgcctc
acatgttctttcctgcgttatcccctgattctgtggataaccgtattaccgcctttgagtgagc
tgataccgctcgccgcagccgaacgacgcagcgagtcagtgagcgaggaagcgggaagag
cgcctgatgcggtattttctccttacgcattctgtgcggtatttccacccgcatatgggtgcactc
tcagtacaatctgctctgatgcgcgatagtttaagccagtatacaactccgctatcgctacgtgac
tgggtcatggctgcgccccgacaccgcgaacacccgctgacgcgccctgacgggcttgcctgc
tcccgcatccgcttacagacaagctgtgaccgtctccgggagctgcatgtgtcagagggtttc
accgtcatcaccgaaacgcgcgagggcagcagatcaattcgcgcggaaggcggaagcggcatgca
tttacggtgacaccatcgaatgggtgcaaacctttcgcggtatggcatgatagcccggaaga

Figure 22B

gagtcattcaggggtggtgaatgtgaaaccagtaacggttatacgatgtgcagagtatgccggt
gtctcttatcagaccgtttcccggtggtgaaccaggccagccacgtttctgcgaaaacgcggg
aaaaagtgaagcggcgatggcgagctgaattacattcccaaccgcgtggcacaacaactggc
gggcaaacagtcgttgctgattggcggtgccacctccagtcctggccctgcacgcgcctgcgaa
attgtcgcggcgattaaatctcgcgccgatcaactgggtgccagcgtgggtggtgctgatggtag
aacgaagcggcgctgaagcctgtaaagcggcggtgcacaatcttctcgcgcaacgcgtcagtg
gctgatcattaactatccgctggatgaccaggatgccattgctgtggaagctgcctgcactaat
gttccggcggttatttcttgatgtctctgaccagacacccatcaacagtattatttctcccatg
aagacggtagcgcactggcggtggagcatctggctgcattgggtcaccagcaaatcgcgctgtt
agcgggcccattaagtctgtctcggcgctctgcgtctggctggctggcataaatatctcact
cgcaatcaaattcagccgatagcggaaacgggaaggcgaactggagtccatgtccgggtttcaac
aaaccatgcaaatgctgaatgagggcatcggtcccactgcgatgctgggtgccaacgatcagat
ggcgctgggcgcaatgcgcgccattaccgagtcggggctgcgcgttggtgcggtatctcggta
gtgggatacgaagataccgaagacagctcatgttatatcccgccgtcaaccaccatcaaacagg
atttctgcctgctggggcaaacacagcgtggaccgcttgctgcaactctctcagggccaggcgt
gaagggaatcagctgttgccgctctcactgggtgaaaagaaaaaccacctggcgcccaatac
caaaccgcctctcccgcgcggttgccgattcattaatgcagctggcacgacagggttcccgac
tggaagcgggcagtgagcgcaacgcaattaatgtgagttagcgcgaattgatctgggttgaca
gcttatcatcgaactgcacgggtgcaccaatgcttctggcgctcaggcagccatcggaagctgtggt
atggctgtgcaggtcgtaaatcactgcataattcgtgtcgtcgaaggcgactccggttctgga
taatgttttttgcgcgcgacatcataacggttctggcaaatattctgaaatgagctgttgacaat
taatcatccggctcgtataatgtgtggaattgtgagcggataacaatttcacacaggaaacagc
gccgctgagaaaaagcgaagcggcactgctctttaacaatttatcagacaatctgtgtgggcac
tcgaccggaattatcgattaactttattattaaaaattaaagaggtatattaatgtatcgat
taaataaggaggaataaaccatgtgtgcgacctcttctcaatttactcagattaccgagcataa
ttcccgctcgttccgcaaacatcagccaaacctgtggaatttcgaattcctgcaatccctggag
aacgacctgaaagtggaaaagctggaggagaaagcgaccaaactggaggaagaagttcgctgca
tgatcaaccgtgtagacaccagccgctgtccctgctggagctgatcgacgatgtgcagcgct
gggtctgacctacaaatttgaaaaagacatcattaaagccctggaaaacatcgtactgctggac
gaaaacaaaaagaacaaatctgacctgcacgcaaccgctctgtcttccgctctgctgcgtcagc
acggtttccaggtttctcaggatgtttttgagcgtttcaaggataaagaaggtgggttccagcg
tgaactgaaagggtgacgtccaaggcctgctgagcctgtatgaagcgtcttacctgggttccag
gggtgagaacctgctggaggaggcgcgtacctttccatcaccacccctgaagaacaacctgaaag
aaggcattaataccaaggttgcaagaacaagtgaaccacgccttggaactgccatatcaccagcg
ctgcacccgtctggaggcacgttggttccctggataaaatacgaaccgaaagaaccgcatcaccag
ctgctgctggagctggcgaagctggattttaacatggtacagacctgcaccagaaagagctgc
aagatctgtcccgtggtggaccgagatgggcctggctagcaaacctggattttgtacgcgaccg
cctgatggaagtttatttctgggcactgggtatggcgccagaccgcagtttggtgaatgtcgc
aaagctgttactaaaatgtttggtctggtgacgatcatcgatgacgtgtatgacgtttatggca
ctctggacgaactgcaactgttcaccgatgctgtagagcgtgggacgttaacgctattaacac
cctgcccgaactatatgaaactgtgttccctggcactgtacaacaccgttaacgacacgtcctat
ctatttctgaaagagaaaggtcataacaacctgtcctatctgacgaaaagctggcgtgaaactgt
gcaagcccttctgcaagaggcgaaatggtccaacaacaaaattatcccggtttctccaagta
cctggaaaacgccagcgtttcctcctccggtgtagcgtgctggcgccgtcttactttccgta

Figure 22C

tgccagcagcaggaagacatctccgaccacgcgctgcggttcctgaccgacttccatgggtctgg
tgcggttctagctgcggttatcttccgcctgtgcaacgatctggccacctctgcggcgagctgga
acgtggcgagactaccaattctatcattagctacatgcacgaaaacgatggtaaccagcgaggaa
caggcccggaagaactgcgtaaactgatcgacgcgcaatggaaaaagatgaatcgtaacgcg
ttagcgactccacctgctgcctaaagcggttcattggaaatcgacagttaacatggcacgtgttcc
ccactgcacctaccagtatggcgatgggtctgggtcgcccagactacgcgactgaaaaccgcac
aaactgctgctgattgaccctttcccgattaaaccagctgatgtatgtctaaactgcacgcctt
aggaggtaaaaaaaatgactgccgacaacaatagtatgccccatgggtgcagtatctagttagc
ccaaatttagtgcaaaaccaaaccctgaagacattttggaagagtttctgaaattattccatt
acaacaaagacctaatacccgatctagtgcacgtcaaatgacgaaagcggagaaacatgtttt
tctgggtcatgatgaggagcaaatgaagttaatgaatgaaaattgtattgttttggattgggacg
ataatgctattgggtgcgggtaccaagaaagtttgcatttaattgaaaaatattgaaaagggtt
actacatcggtgcattctcogtctttattttcaatgaacaagggtgaattacttttacaacaaga
gccactgaaaaaataactttccctgatctttggactaacacatgctgctctcatccactatgta
ttgatgacgaattagggtttgaagggtgaagctagacgataagattaaggcgctattactgcggc
ggtgagaaaactagatcatgaattagggtattccagaagatgaaactaagacaaggggttaagtt
cactttttaaacagaatccattacatggcaccaagcaatgaaccatgggggtgaacatgaaattg
attacatcctattttataagatcaacgcataaagaaaacttgactgtcaacccaaacgtcaatga
agttagagacttcaaatgggtttcaccaatgatttgaaaactatgtttgctgacccaagtta
aagtttacgccttggtttaagattatttgcgagaattacttattcaactgggtgggagcaattag
atgacctttctgaagtggaaaatgacaggcaaatcatagaatgctataacaacgcgctcctgca
ttcgcccttaggaggtaaaaaaacatgagttttgatattgcaaaataccgcacctggcactgg
tcgactccacccaggagttacgaactgttgccgaaagagagtttaccgaaactctgcgacgaact
gcgcccgtattttactcgacagcgtgagccgttccagcgggcacttcgcctccggggtgggcacg
gtcgaactgaccgtggcgctgcactatgtctacaacaccccgtttgaccaattgatttgggatg
tggggcatcaggcttatccgcataaaattttgaccggacgcgcgacaaaatcggcaccatccg
tcagaaaggcggtctgcacccgttcccggtggcgcgcgaaagcgaatatgacgtattaagcgtc
gggcattcatcaacctccatcagtgccggaattgggtattgcggttgcgtccgaaaaagaaggca
aaaatcgccgcacccgtctgtgtcattggcgatggcgcgattaccgcaggcatggcggttgaagc
gatgaatcacgcgggcgatatccgtcctgatatgctgggtgattctcaacgacaatgaaatgtcg
atttccgaaaatgtcggcgcgctcaacaaccatctggcacagctgctttccggtaagctttact
cttcaactgcgcgaaggcgggaaaaaagttttctctggcggtgccgccaattaaagagctgctcaa
acgcaccgaagaacatattaaaggcatggtagtgctggcacgttgtttgaagagctgggcttt
aactacatcgcccggtggaoggtcacgatgtgctggggcttatcaccacgctaaagaacatgc
gcgacctgaaaggcccgagttcctgcataatcatgacaaaaaagggtcgtgggttatgaaccggc
agaaaaagaccgatcactttccacgcgctgcctaaatttgatccctccagcggttgtttgccg
aaaagtagcggcggtttgccgagctattcaaaaatctttggcgactgggtgtgcgaaacggcag
cgaaagacaacaagctgatggcgattactccggcgatgcgtgaagggttcgggcattggctgagtt
ttcacgtaaatcccggtacgctacttcgacgtggcaattgccgagcaacacgcgggtgaccttt
gctgcgggtctggcgattgggtgggtacaaacccattgtcgcgatttactccactttcctgcaac
gcgcctatgatcagggtgctgcacgtggcgattcaaaaagcttcgggtcctgttcgccatcga
ccgcgcgggcattgttgggtgctgacggtcaaaacccatcagggtgcttttgatctctcttacctg
cgctgcataccggaaatggtcattatgaccccgagcgatgaaaacgaatgtcgccagatgctct
ataccggctatcactataacgatggcccgtcagcggtgcgctacccgcgtggcaacgcgggtcgg

Figure 22D

cgtggaactgacgccgctggaaaaactaccaattggcaaaggcattgtgaagcgtcgtggcgag
aaactggcgatccttaactttggtacgctgatgccagaagcggcgaaagtcgccgaatcgctga
acgccacgctggtcgatatgogttttgtgaaacgcttgatgaagcgtaattctggaaatggc
cgccagccatgaagcgtggtcaccgtagaagaaaaagccattatgggcggcgagcagcggc
gtgaacgaagtgcctgatggcccatcgtaaaccagtaccogtgcctgaacattggcctgccggact
tctttattccgcaagggaactcaggaagaaatgcgcgcggaactcggcctcgatgccgctggtat
ggaagccaaaatcaaggcctggctggcataactgca
(SEQ ID NO:20)

Figure 23A

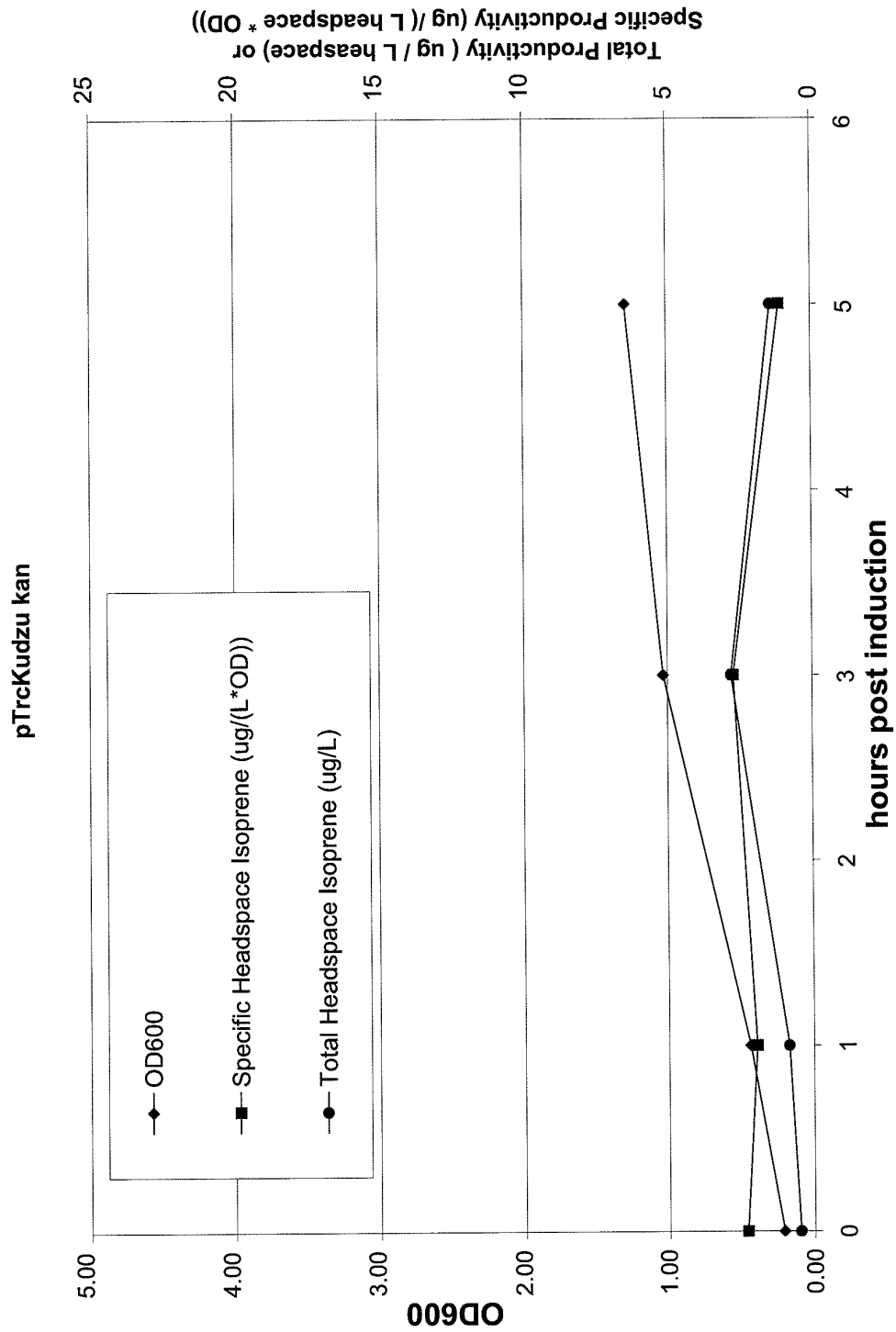


Figure 23B

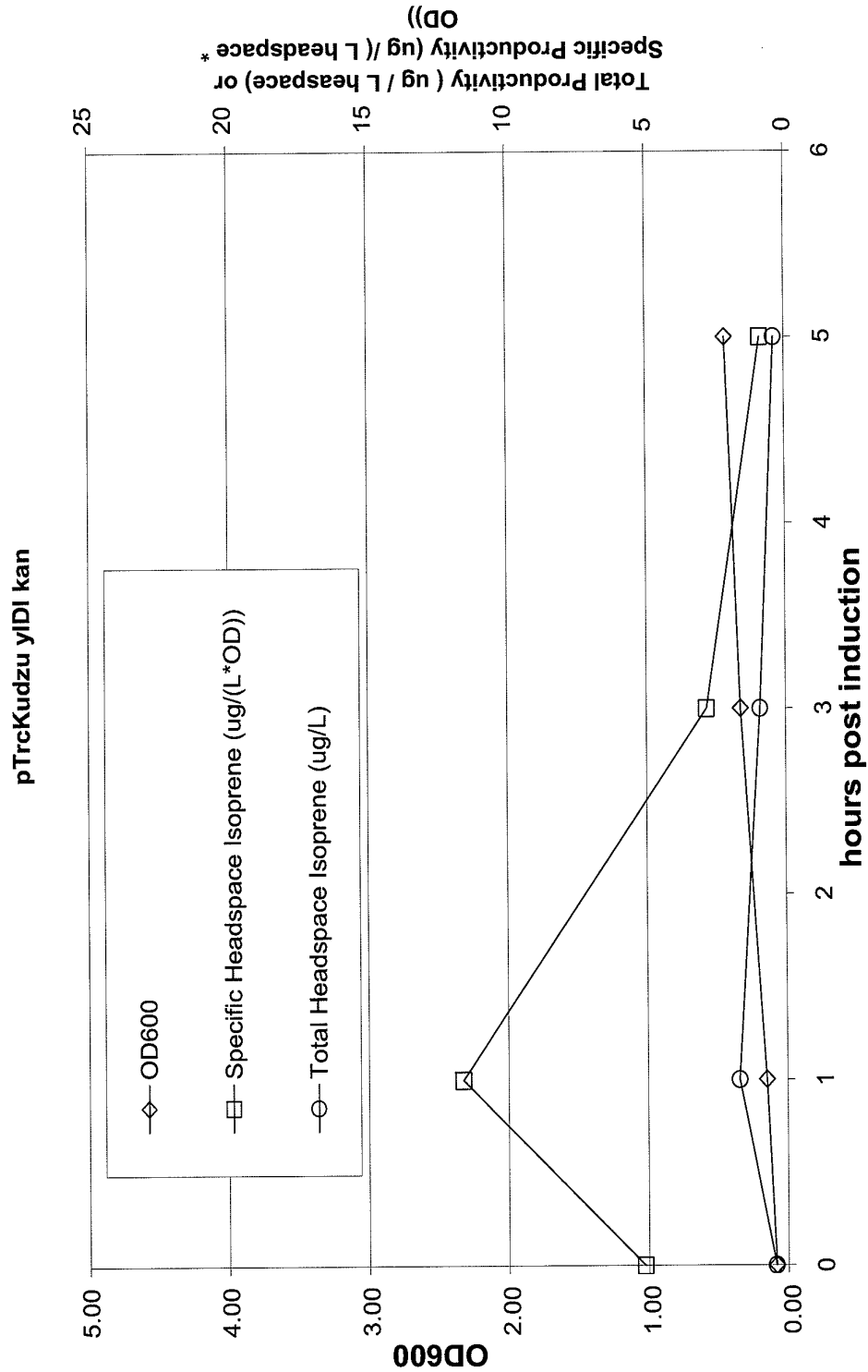


Figure 23C

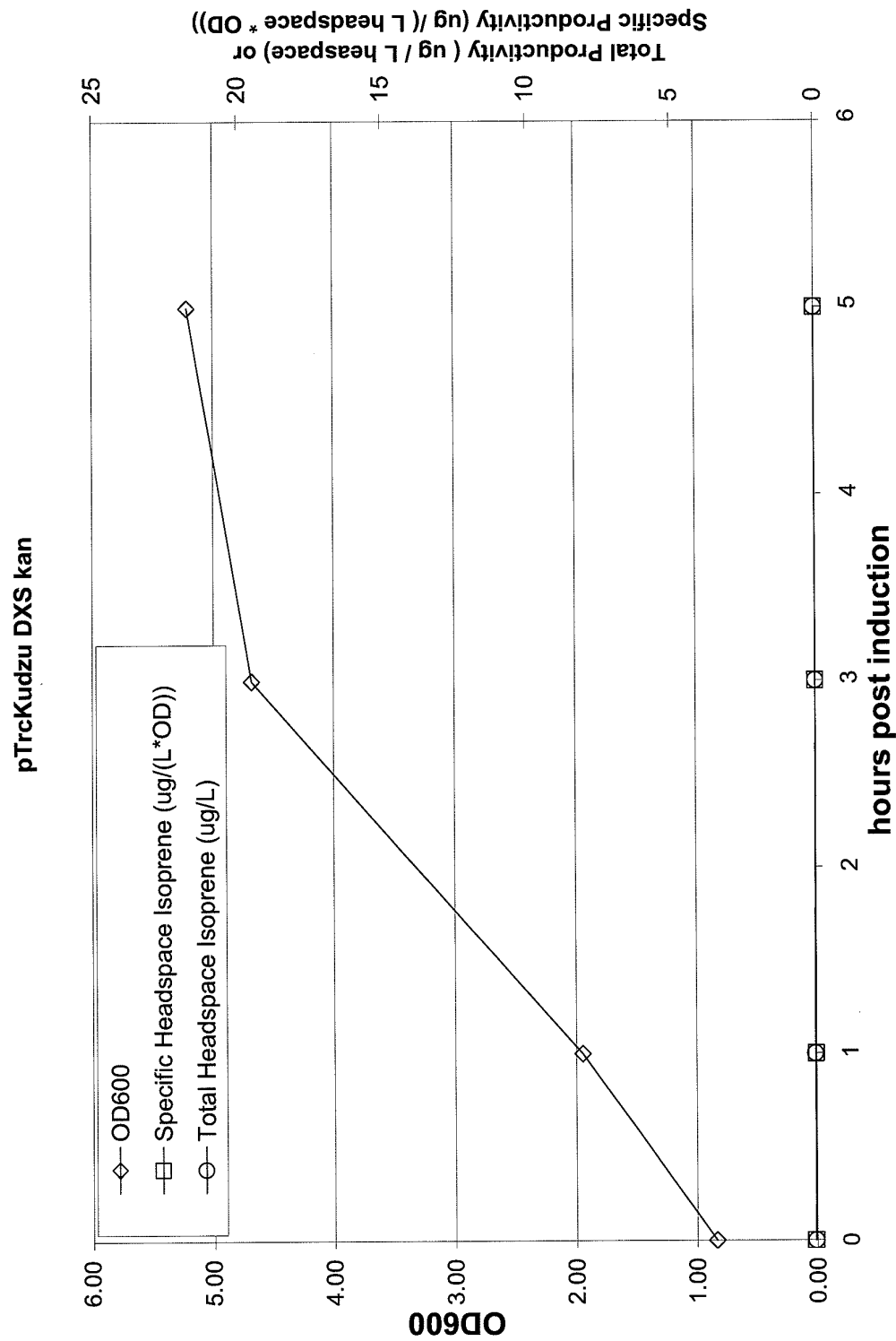


Figure 23D

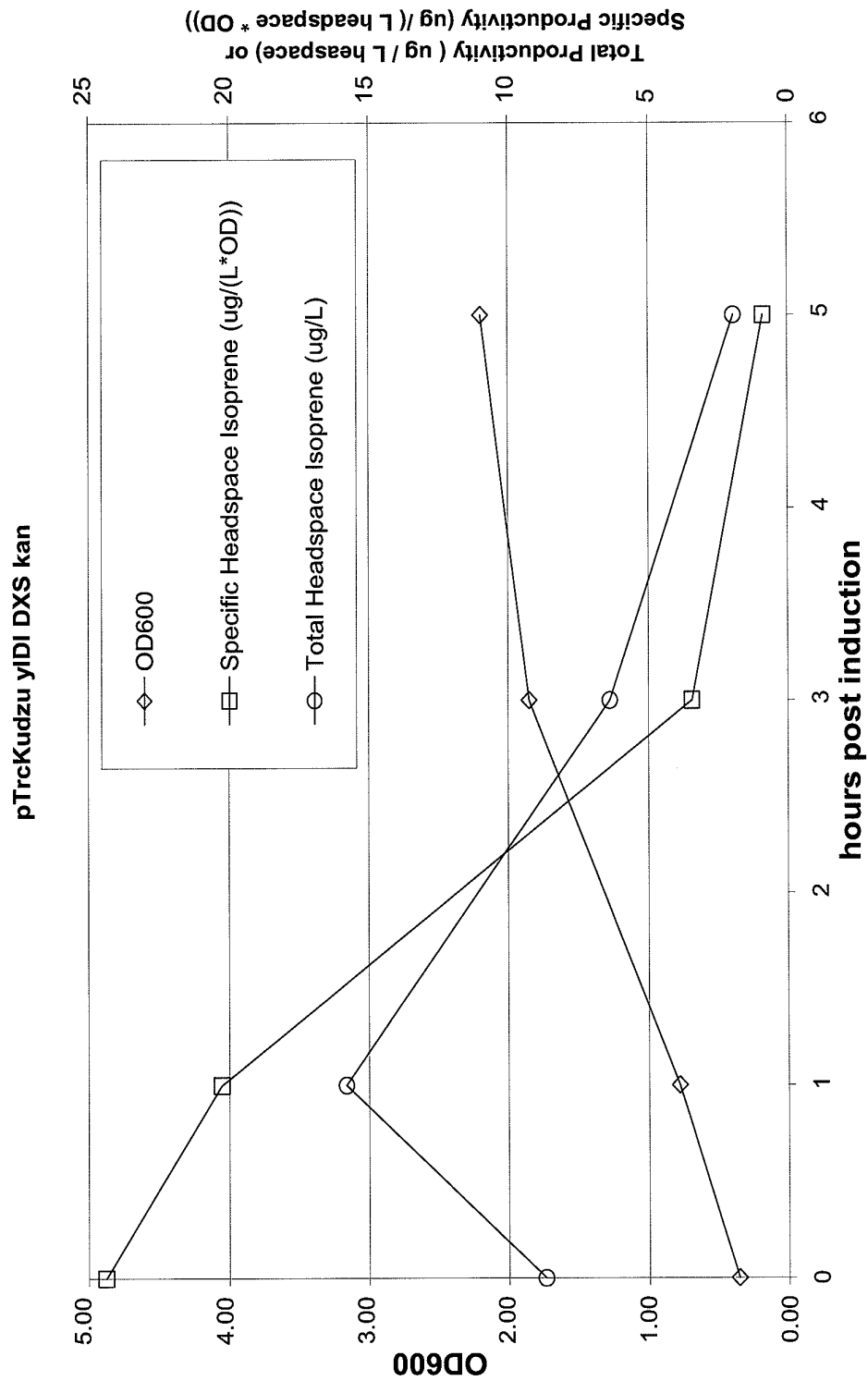


Figure 23E

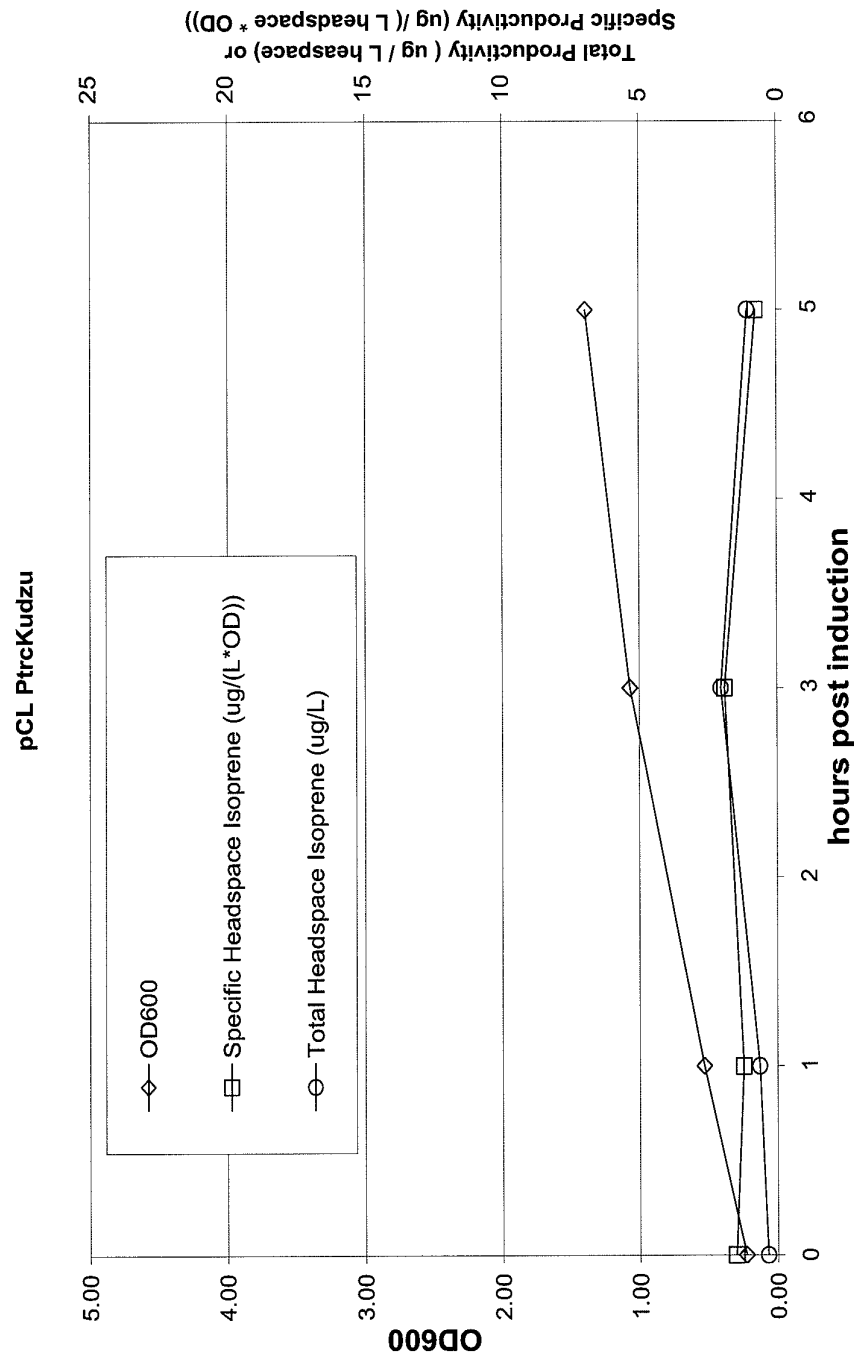


Figure 23F

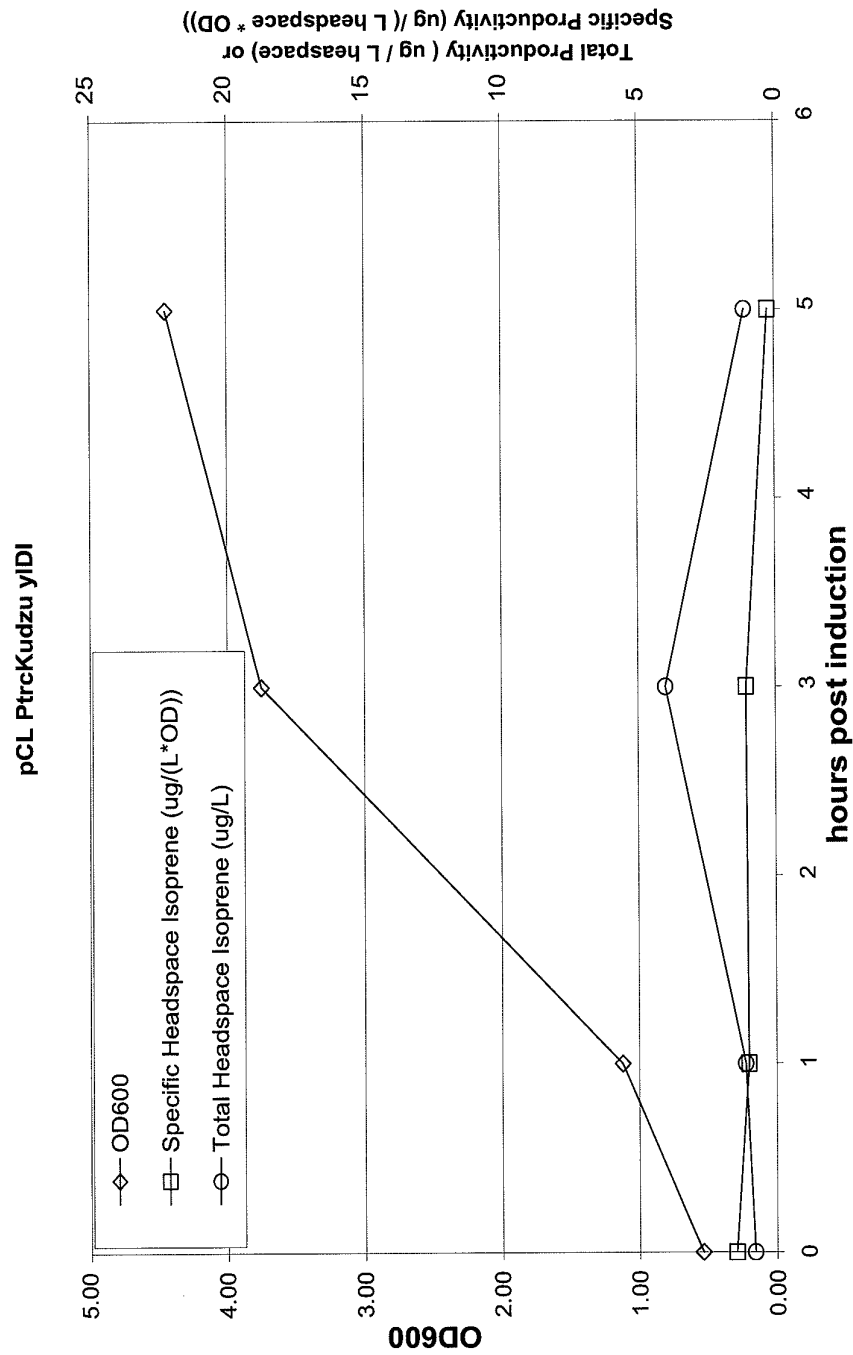


Figure 23G

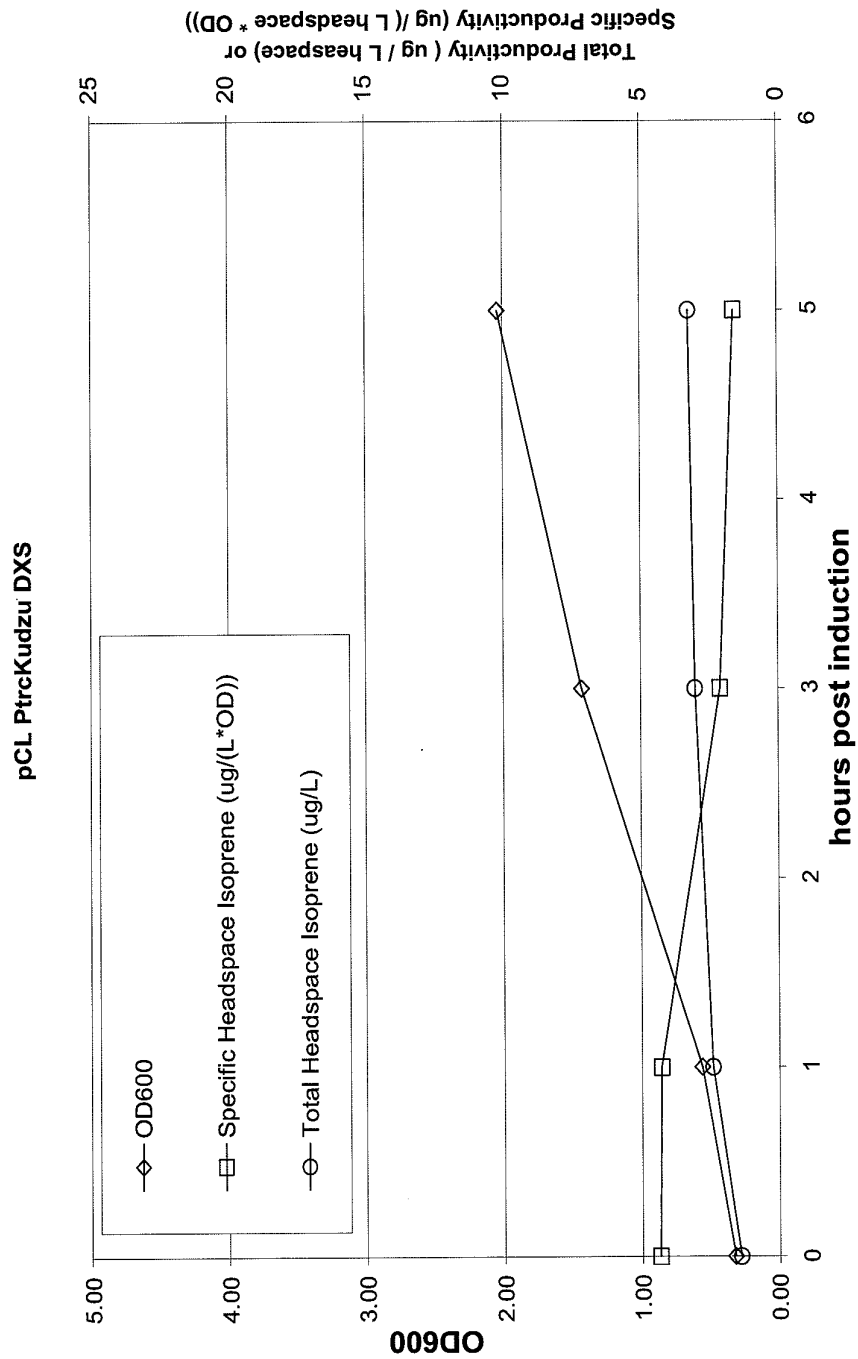


Figure 23H

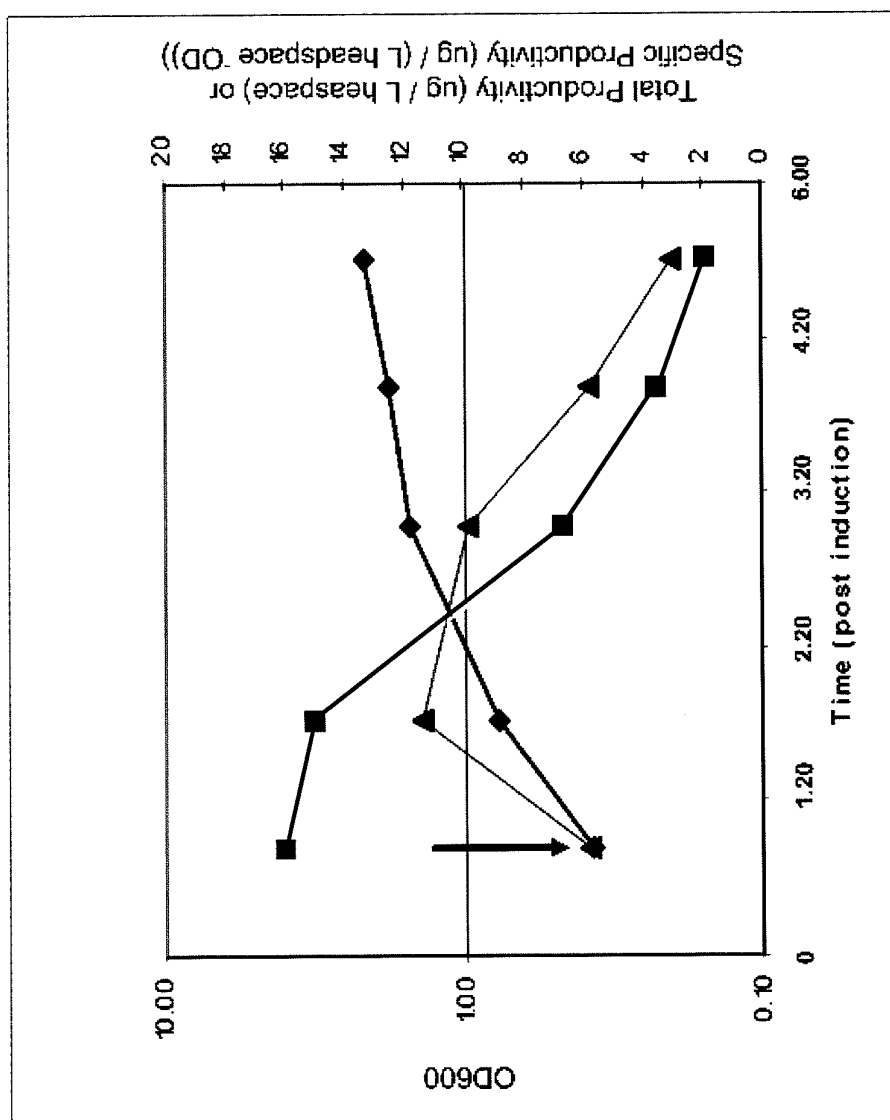


Figure 24

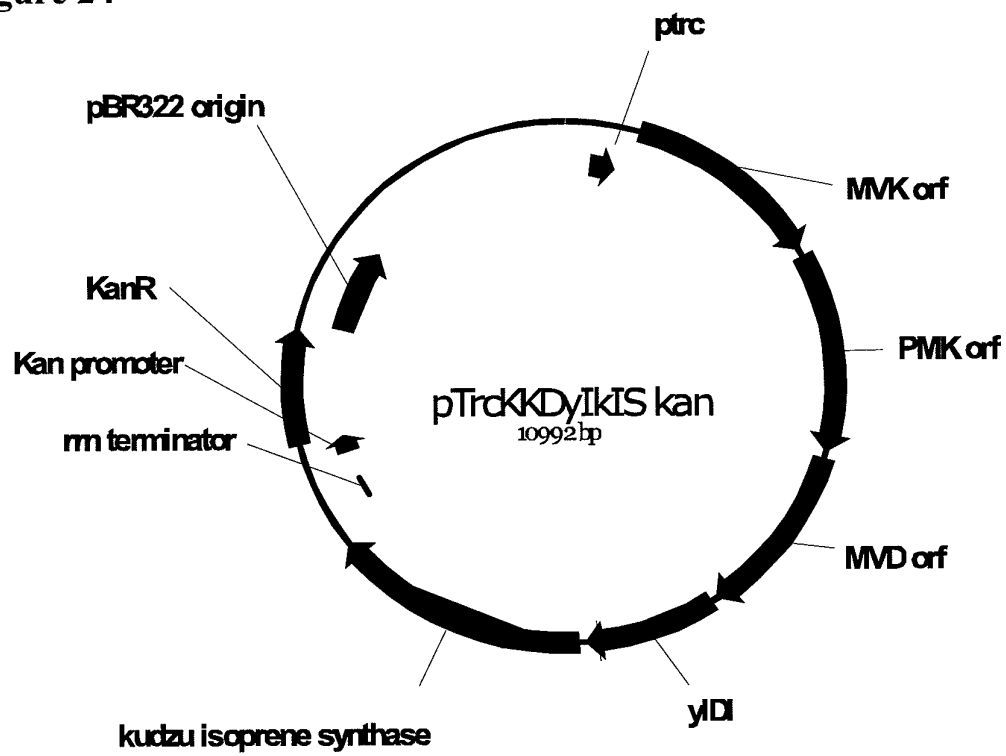


Figure 25A

5' -

gtttgacagcttatcatcgactgcacgggtgcaccaatgcttctggcgctcaggcagccatcggaa
gctgtggtatggctgtgcaggctcgtaaatcactgcataattcgtgtcgctcaaggcgccactccc
gttctggataatgttttttgcgccgacatcataacgggttctggcaaatattctgaaatgagctg
ttgacaattaatcatccggctcgtataatgtgtggaattgtgagcgggataacaatttcacacag
gaaacagcgccgctgagaaaaagcgaagcggcactgctctttaacaatttatcagacaatctgt
gtgggcactcgaccggaattatcgattaactttattattaaaaattaaagaggtatatattaat
gtatcgattaaataaggaggaataaaccatggatccgagctcggatccactagtaacggccgcc
agtgtgclggaattcgcccttaggaggtaaaaaaacatgtcattaccgttcttaacttctgcac
cgggaaagggttattatttttgggtgaacactctgctgtgtacaacaagcctgccgtcgtgctag
tgtgtctgcttgagaacctacctgctaataagcgagtcactctgcaccagatactattgaattg
gacttcccgacattagctttaatcataagtgggtccatcaatgatttcaatgccatcacggagg
atcaagtaaactcccaaaaattggccaaggctcaacaagccacgatggcttgtctcaggaact
cgttagtcttttggatccgttgttagctcaactatccgaatccttcactaccatgcagcggtt
tgtttcctgtatatgtttgttgcctatgccccatgccagaatattaagttttctttaaagt
ctactttaccatcggtgctgggttgggtcgaagcgccctctatttctgtatcactggccttagc
tatggcctacttgggggggttaataggatctaatagacttggaaaagctgtcagaaaacgataag
catatagtgaatcaatgggccttcataaggtgaaaagtgtattcacggtaaccttcaggaatag
ataacgctgtggccacttatggtaatgcctgctatttgaaaaagactcacataatggaacaat
aaacacaaaacaattttaagttcttagatgatttcccagccattccaatgatcctaacctatact
agaattccaaggtctacaaaagatcttgttgcctcggttcgtgtgttggtcaccgagaaatttc
ctgaagttatgaagccaattctagatgccatgggtgaatgtgccctacaaggcttagagatcat
gactaagtttaagtaaatgtaaaggcacccgatgacgaggctgtagaaactaataatgaactgtat
gaacaactatttgaattgataagaataaatcatggactgcttgtctcaatcggtgtttctcatc
ctggattagaacttattaaaaatctgagcgatgatttgagaattgggtccacaaaacttacggg
tgctggtggcgcggttgcctctttgactttgttacgaagagacattactcaagagcaaattgac
agcttcaaaaagaaattgcaagatgatttttagttacgagacatttgaaacagacttgggtggga
ctggctgctgtttgttaagcgcaaaaaatttgaataaagatcttaaaatcaaatccctagtatt
ccaattatttgaaaataaaaactaccacaaagcaacaaattgacgatctattattgccaggaaac
acgaatttaccatggacttcataagctaatttgcgataggcctgcacccttaaggaggaaaaaa
acatgtcagagttgagagccttcagtgcgccagggaagcggttactagctggtggatatttagt
tttagatacaaaatatgaagcatttgtagtcggattatcggcaagaatgcagtgctgtagcccat
ccttacgggttcattgcaagggtctgataagtttgaagtgcgtgtgaaaagtaacaattttaag
atggggagtggtgtaccatataagtcctaaaagtggcttcattcctgtttcgataggcgggatc
taagaaccctttcattgaaaaagttatcgctaacgtatttagctactttaaacctaactggac
gactactgcaatagaaacttgttcgttattgatattttctctgatgatgcctaccattctcagg
aggatagcgttacccaacatcgctggcaacagaagattgagttttcattcgcacagaattgaaga
agttcccaaaacagggtcgggtcctcggcagggtttagtcacagtlttaactacagctttggcc
tcttttttgtatcggaacctggaaaataatgtagacaaatatagagaagttattcataatttag
cacaagttgctcattgtcaagctcagggtaaaatttgaagcgggtttgatgtagcggcggcagc
atatggatctatcagatatagaagattcccaccgcattaatctctaatttgcagatatttga
agtgtacttacggcagtaaaactggcgcatttgggttgatgaagaagactggaatattacgatta
aaagtaaccatttaccttcgggattaaactttatggatgggcgatattaagaatggttcagaaac
agtaaaactgggtccagaaggtaaaaaatttgggtatgattcgcatatgccagaaagcttgaaaata

Figure 25B

tatacagaactcgatcatgcaaattctagatttatggatggactatctaaactagatcgcttac
acgagactcatgacgattacagcgatcagatatattgagtcctcttgagaggaatgactgtacctg
tcaaaagtatcctgaaatcacagaagttagagatgcagttgccacaattagacgttcctttaga
aaaataactaaagaatctggtgccgatatcgaaacctcccgtaaaaactagcttattggatgatt
gccagaacttaaaaggagttcttacttgcttaataacctggtgctggtggttatgacgccattgc
agtgattactaagcaagatgttgatcttagggctcaaaccgctaatagacaaaagattttctaag
gttcaatggctggatgtaactcagggtgactgggggtgttaggaaagaaaaagatccggaaactt
atcttgataaataacttaaggtagctgcatgcagaattcgcccttaaggaggaaaaaaaatga
ccggtttacacagcatccggttacgcaccccgtaacatcgcaaccttaagtattgggggaaaag
ggacacgaagttgaatctgccaccaattcgtccatatcagtgaacttatcgcaagatgacctc
agaacgttgacctctgcggctactgcacctgagtttgaacgcgacactttgtgggttaaatggag
aaccacacagcatcgacaatgaaagaactcaaaattgtctgcgcgacctacgccaattaagaaa
ggaaatggaatcgaaggacgcctcatggccacattatctcaatggaaactccacattgtctcc
gaaaataactttcctacagcagctgggttttagcttccctccgctgctggctttgtgcattggctc
ctgcaattgctaagttataccaattaccacagtcaacttcagaaatatctagaatagcaagaaa
ggggtctgggttcagctttagatcggttggttgccgatacgtggcctgggaaatgggaaaagct
gaagatggctcatgattccatggcagtaaaaatcgacagacagctctgactggcctcagatgaaag
cttggtgctctagttgtcagcgatattaaaaaggatgtgagttccactcagggtatgcaattgac
cgtggcaacctccgaactatttaaaagaagaattgaacatgtcgtaccaagagatttgaagtc
atgcgtaaaagccattgttgaaaaagatttcgcacactttgcaaaggaaacaatgatggattcca
actctttccatgccacatgtttggactctttccctccaatattctacatgaatgacacttccaa
gcgatcatcagttgggtgccacaccattaatcagttttacggagaaacaatcggtgcatacacg
tttgatgcaggtccaaatgctgtgtgtgtactacttagctgaaaatgagtcgaaaactctttgcat
ttatctataaattgtttggctctgttccctggatgggacaagaaatttactactgagcagcttga
ggctttcaaccatcaatttgaatcatctaactttactgcacgtgaattggatcttgagttgcaa
aaggatgttgccagagtgattttaactcaagtccggttcaggcccaagaaacaaacgaatctt
tgattgacgcaaagactggtctaccaaaggaataagatcaattcgctgcacgccccttaggagg
taaaaaaaaatgactgccgacaacaatagtatgccccatggtgcagtatctagttacgccaat
tagtgcaaaaccaaacacctgaagacatttttgaagagtttccctgaaattattccattacaaca
aagacctaataccgatctagtgcagcgtcaaatgacgaaagcggagaaacatgtttttctggt
catgatgaggagcaaattaagttaatgaatgaaaattgtattgttttgattgggacgataatg
ctattgggtgccggtaccaagaaagtttgtcatttaattggaataattgaaaagggtttactaca
tcgtgcattctccgtctttattttcaatgaacaagggtgaattacttttacaacaaagagccact
gaaaaaataactttccctgatctttggactaacacatgctgctctcatccactatgtattgatg
acgaattaggtttgaagggttaagctagacgataagattaagggcgctattactgcggcggtgag
aaaactagatcatgaattaggtattccagaagatgaaactaagacaagggttaagtttcacttt
ttaaacagaatccattacatggcaccaagcaatgaacctgggggtgaacatgaaattgattaca
tcctattttataagatcaacgctaagaaaaacttgactgtcaacccaaacgtcaatgaagttag
agacttcaaatgggtttcaccaaattgatttgaaaactatgtttgctgacccaagttacaagttt
acgccttggtttaagattatttgcgagaattacttattcaactgggtgggagcaattagatgacc
ttctgaagtggaaaatgacaggcaaatcatagaatgctataacaacgcgctcctgcattcgcc
cttaggaggttaaaaaacatgtgtgcgacctcttctcaatttactcagattaccgagcataatt
cccgctggtccgcaaaactatcagccaaacctgtggaatttcgaattcctgcaatccctggagaa
cgacctgaaagtggaaaagctggaggagaaagcgaccaaaactggaggagaaggttcgctgcatg

Figure 25C

atcaaccgtgtagacacccagcgcgtgtccctgctggagctgatcgacgatgtgcagcgccctgg
gtctgacctacaaatgtgaaaaagacatcattaaagccctggaaaacatcgtactgctggacga
aaacaaaaagaacaaatctgacctgcacgcaaccgctctgtctttccgtctgctgcgtcagcac
ggtttcgagggtttctcaggatgtttttgagcgtttcaaggataaagaagggtggtttcagcggtg
aactgaaagggtgacgtccaaggcctgctgagcctgtatgaagcgtcttacctgggtttcagagg
tgagaacctgctggaggaggcgctaccttttccatcaccacctgaagaacaacctgaaagaa
ggcattaataccaaggttgacagaacaagtgagccacgcccctggaactgccatatcaccagcgtc
tgacccgtctggaggcacgttggttccctggataaatacgaaccgaaagaaccgcatcaccagct
gctgctggagctggcgaagctggattttaacatggtagacacccctgcaccagaaagagctgcaa
gatctgtcccgtggtggaccgagatgggcctggctagcaaaactggattttgtacgcgacccgc
tgatggaagtttatttctgggcactgggtatggcgccagacccgcagtttggtgaatgtcgcaa
agctgttactaaaaatgtttggtctggtgacgatcatogatgacgtgtatgacgtttatggcact
ctggacgaactgcaactgttcaccgatgctgtagagcgtgggacgttaacgctatttaacaccc
tgccggactatatgaaactgtgtttccctggcactgtacaacaccgttaacgacacgtccctattc
tattctgaaagagaaaggtcataacaacctgtccctatctgacgaaaagctggcgtgaactgtgc
aaagcccttctgcaagaggcgaaatgggtccaacaacaaaattatcccggctttctccaagtacc
tggaacacgcccagcgtttccctccctccgggtgtagcgtgctggcgccgtcttactttccgtatg
ccagcagcaggaagacatctccgaccaacgcgtgctgcttccctgaccgacttccatggctctgggtg
cgttctagctgcgttatcttccgcctgtgcaacgatctggccacctctgcccggcgagctggaac
gtggcgagactaccaattctatcattagctacatgcacgaaaacgatggtaaccagcgagggaaca
ggcccgcgaagaactgcgtaaactgatcgacgcgcgaatggaaaaagatgaatcgtgaacgcgtt
agcgactccacctgctgcctaaagcgttcatggaaatcgacagttaacatggcacgtgtttccc
actgcacctaccagtatggcgatgggtctgggtcgcccagactacgcgactgaaaaccgcatcaa
actgctgctgattgacctttcccgattaaaccagctgatgtatgtctaactgcagctggtacca
tatgggaattcgaagctttctagaacaaaaactcatctcagaagaggatctgaatagcgcctc
gacctcatcatcatcattgagtttaaacgggtctccagcttggtgttttgccggtgaga
gaagattttcagcctgatacagattaaatcagaacgcagaagcgtctgataaaacagaatttg
cctggcggcagtagcgcggtggtcccaacctgaccccatgccgaactcagaagtgaacgcctga
gcgcgatggtagtggtggtctcccatgcgagagtagggaactgccaggcatcaaataaac
gaaaggctcagtcgaaagactgggcctttcgttttatctgttggttgctcggtgaacgctctcc
gagtaggacaaatccgcgggagcggatttgaaacgttgcaagcaacggcccgagggtggcg
gcaggacgcccgcataaactgccaggcatcaaattaagcagaaggccatcctgacggatggcc
tttttgctttctacaaactcttttggtttatttttctaaatacattcaaataatgtatccgctt
aacgggaattgccagctggggcgccctctggttaaggttggaagccctgcaaagttaaactggat
ggctttctcgccgccaaggatctgatggcgaggggatcaagctctgatcaagagacaggatga
ggatcgtttcgcgatgattgaacaagatggattgcacgcaggttctccggccgcttggtggaga
ggctattcggctatgactgggcacacagacaatcggtgctctgatgccgcccgtgttccggt
gtcagcgcagggggcgcccggttcttttgtaagaccgacctgtccggtgcccgtgaatgaactg
caagacgaggcagcgcggtatcgtggctggccacgacggcggttccctgcccagctgtgctcg
acgttgctcactgaagcgggaagggaactggctgctattggggaagtgccggggcaggatctcc
gtcatctcaccttgctccctgccgagaaagtatccatcatggctgatgcaatgcggcggtgcat
acgcttgatccggctacctgccattccgaccaccaagcgaaacatcgcatcgagcgagcacgta
ctcggtggaagccggtcttgctgatcaggatgatctggaagaagagcatcaggggctcgccgc
agccgaactgttcgccaggctcaaggcgagcatgcccgcggcgaggatctcgtcgtgacctat

Figure 25D

ggcgatgcctgcttgccgaatatcatgggtggaaaatggccgcttttctggattcatcgactgtg
gcccggctgggtgtggcgaccgctatcaggacatagcgttggctaccgctgatattgctgaaga
gcttggcggaatgggctgaccgcttccctcgtgctttacgggtatcgccgctcccgattcgag
cgcatcgcttctatcgcttcttgacgagttcttctgacgcatgacaaaaatcccttaacgtg
agttttcgttccactgagcgtcagaccccgtagaaaagatcaaaggatcttcttgagatccttt
ttttctgcgcgtaatctgctgcttgcaaacaaaaaaaccacgctaccagcggtgggttgggtt
ccggatcaagagctaccaactctttttccgaaggtaactggcttcagcagagcgcagataccaa
atactgtccttctagtgtagccgtagttaggccaccacttcaagaactctgtagcaccgctac
atacctcgctctgctaactcctgttaccagtggtgctgctgccagtggcgataagtctgtcttacc
gggttggactcaagaagatagttaccggataaggcgagcggtcggttgaacgggggggttctg
gcacacagcccagcttggagcgaacgacctacaccgaactgagatacctacagcgtgagctatg
agaaagcgccacgcttcccgaaggagaaaggcgagcaggtatccggttaagcggcagggctcgga
acaggagagcgcacgagggagcttccaggggaaacgcctggtatctttatagtcctgtcgggt
ttcgccacctctgacttgagcgtcgatttttgtgatgctcgtcagggggcgagcctatggaa
aaacgccagcaacggcgctttttacggttccctggccttttctggtccttttctcacatgttc
tttccctgcgttatccctgattctgtggataaccgtattaccgctttgagtgaagctgataccg
ctcgccgcagccgaacgaccgagcgcagcagtcagtgagcgaagcgggaagagcgcctgat
gcggtattttctccttacgcattctgtgcggtatttcacaccgcataatggtgcactctcagtaca
atctgctctgatgccgcatagttaagccagtatacactccgctatcgctacgtgactgggtcat
ggctgcgccccgacaccccgcaacacccgctgacgcgcccctgacgggcttgtctgctcccgca
tccgcttacagacaagctgtgaccgtctccgggagctgcatgtgtcagaggttttcacccgcat
caccgaaacgcgcgagggcagcagatcaattcgcgcgcgaaggcgaagcggcatgcatttacgtt
gacaccatcgaaatggtgcaaaacctttcgcgggtatggcatgatagcgcccggaagagagtcact
tcagggtggtgaatgtgaaaccagtaacgttatacgatgtcgcagagtatgccgggtgtctctta
tcagaccgtttcccgctggtgaaccaggccagccacgtttctgcgaaaacgcgggaaaaaagt
gaagcggcgatggcgagctgaattacattcccaaccgctggcacaacaactggcgggcaaac
agtcgttgcgtgattggcggtgccacctccagctctggccctgcacgcgcccgtcgcaaatgtcgc
ggcgattaaatctcgcgcgcgatcaactgggtgccagcgtgggtggtgtcgatggtagaacgaagc
ggcgtcgaagcctgtaaagcggcggtgcacaatcttctcgcgcaacgcgtcagtgggctgatca
ttaactatccgctggatgaccaggatgccattgctgtggaagctgcctgcactaatgttccggc
gttattttcttgatgtctctgaccagacacccatcaacagttatttttctcccatgaagacggt
acgcgactggcggtggagcatctggtcgcattgggtcaccagcaaatcgcgctgttagcgggccc
cattaagtctgtctcggcgcgctctgcgtctggctggctggcataaatactcactcgcaatca
aattcagccgatagcggaaacgggaaggcgactggagtgccatgtccggttttcaacaaaccatg
caaattgctgaatgagggcatcgctcccaactgcgatgctgggttgccaacgatcagatggcgctgg
gcgcaatgcgcgccattaccgagtcggggctgcgcgttgggtgcggatactcggtagtgggata
cgacgataccgaagacagctcatgttatatcccgccgtcaaccaccatcaaacaggattttcgc
ctgctggggcaaacacgcgtggaccgcttgcgtgcaactctctcagggccaggcgggtgaagggca
atcagctgttgcccgctcactgggtgaaaagaaaaaccacctggcgcccaatacgcgaaccgc
ctctcccgcgcggttggcgatcattaatgcagctggcacgacaggtttcccgactggaaagc
gggcagtgagcgaacgcaattaatgtgagttagcgcaattgatctg
(SEQ ID NO:33)

Figure 26

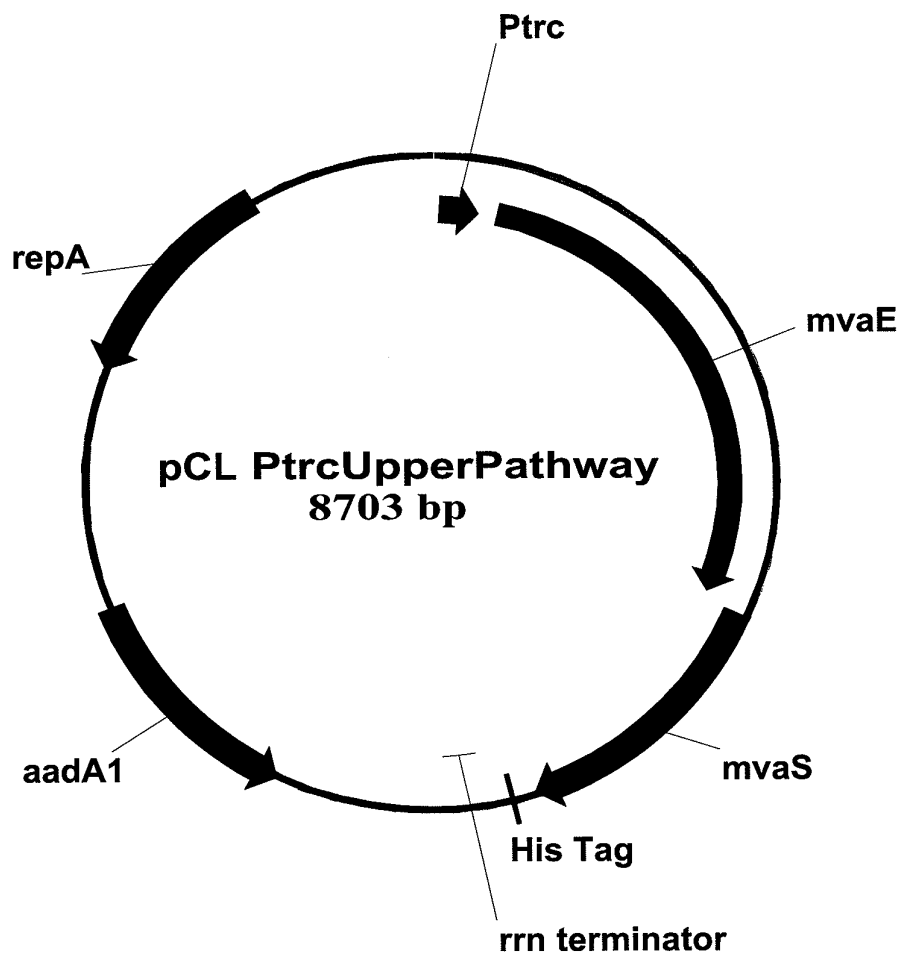


Figure 27A

5' -

cccgctcttactgtcgggaattcgcggttgccgattcattaatgcagattctgaaatgagctgtt
gacaattaatcatccggctcgtataatgtgtggaattgtgagcggataacaatttcacacagga
aacagcgcgcgctgagaaaaagcgaagcggcactgctctttaacaatttatcagacaatctgtgt
gggcactcgaccggaattatcgattaactttattattaaaaattaaagaggtatatattaatgt
atcgattaaataaggaggaataaaccatggatccgagctcaggaggtaaaaaacatgaaaaca
gtagttattattgatgcattacgaacaccaattggaaaatataaaggcagcttaagtcaagtaa
gtgccgtagacttaggaacacatgttacaacacaacttttaaaaagacattccactatttctga
agaaattgatcaagtaatctttggaaatgttttacaagctggaaatggccaaaatcccgcacga
caaatagcaataaacagcgggttgtctcatgaaattcccgaatgacggttaatgaggtctgcg
gatcaggaatgaaggccggttattttggcgaaacaattgattcaattaggagaagcgggaagtttt
aattgctggcgggattgagaatatgtcccaagcacctaaattacaacgtttttaattacgaaaca
gaaagctacgatgcgcctttttctagtagatgatgatgatggattaacggatgcctttagtggtc
aggcaatgggcttaactgctgaaaatgtggccgaaaagtatcatgtaactagagaagagcaaga
tcaattttctgtacattcacaattaaaagcagctcaagcacaagcagaagggatattcgctgac
gaaatagccccattagaagtatcaggaacgcttgtggagaaagtgaagggattcgccctaatt
cgagcgttgagaagctaggaacgcttaaaacagtttttaagaagacgggtactgtaacagcagg
gaatgcatcaaccattaatgatggggtctctgctttgattattgcttcacaagaatatgccgaa
gcacacgggtcttccttatttagctattattcgagacagtggtggaagtccggtattgatccagcct
atatgggaatttcgccgattaaagccattcaaaaactggttagcgcgcaatcaacttactacgga
agaaattgatctgtatgaaatcaacgaagcatttgcagcaacttcaatcgtgggtccaaagagaa
ctggctttaccagaggaaaaggtcaacattttatgggtggcgggtatttcattaggtcatgcgattg
gtgccacaggtgctcgtttattaacgagtttaagtattcaattaaatcaaaaagaaaagaata
tgagagtggcttctttatgtatcggcgggtggcttaggactcgctatgctactagagagacctcag
caaaaaaaaaaacagccgattttatcaaatgagtcctgaggaacgcctggcttctctcttaattg
aaggccagattttctgctgatacaaaaaagaatttgaaaatacggctttatcttcgcagattgc
caatcatatgattgaaaatcaaatcagtgaaacagaagtgcogatgggcttggttacattta
acagtggaacgaaactgattattttggtaccaatggcgacagaagagccctcagttattgaggctt
tgagtaatggtgcaaaaatagcacaaggatttaaaacagtgaaatcaacaacgcttaatgcgtgg
acaaatcgttttttacgatgttgcatcccgagtcattgattgataaactacaagtaagagaa
gcggaagtttttcaacaagcagagtttaagttatccatctatcgttaaacggggcgggcgttaa
gagatttgcaatatcgtaacttttgatgaatcatttgatctgtcgacttttttagtagatgttaa
ggatgcaatgggggcaaatatcgttaacgctatgttggaaggtgtggccgagttgttcogtgaa
tggtttgcgagcaaaagattttattcagtattttaagtaattatgccacggagtcggttgta
cgatgaaaacggctattccagtttcacgtttaagtaaggggagcaatggccgggaaattgctga
aaaaattgttttagcttcacgctatgcttcattagatccctatcgggcagtcacgcataacaaa
ggaatcatgaatggcattgaagctgtagtttttagctacaggaaatgatacacgcgctgttagcg
cttcttgctcatgcttttgcggtgaaggaggtcgctaccaaggccttgactagttggacgctgga
tgccgaacaactaattgggtgaaatttcagttccgcttgcttttagccacgggtggcggtgccaca
aaagtcttacctaaatctcaagcagctgctgatttggttagcagtgacggatgcaaaagaactaa
gtcgagtagtagcggctgttggtttggcacaaaatttagcggcggttacgggccttagtctctga
aggaattcaaaaaggacacatggctctacaagcagttcttttagcgatgacggctcgagctact
ggtaagaagttgaggcagtcgctcaacaattaaaacgtcaaaaaacgatgaaccaagaccgag
ccatggctatttttaaatgatttaagaaaaacaataaaggaggtaaaaaacatgacaattgggat

Figure 27B

tgataaaattagttttttgtgcccccttattatattgatatgacggcactggctgaagccaga
aatgtagaccttgaaaaatttcatattggtattgggcaagaccaaattggcgggtgaacccaatca
gccaagatattgtgacatttgcagccaatgccgcagaagcgatcttgaccaaagaagataaaga
ggccattgatatgggtgattgtcgggactgagtcagatcgatgagtcaaaagcggccgcagtt
gtcttacatcgtttaattggggattcaacctttcgctcgctctttcgaaatcaaggaagcttggt
acggagcaacagcaggcttacagtttagctaagaatcacgtagccttacatccagataaaaaagt
cttggctcgtagcggcagatattgcaaaatatggcttaaattctggcgggtgagcctacacaagga
gctggggcgggttgcaatgtagttgctagtgaaccgcgcattttggctttaaaagaggataatg
tgatgctgacgcaagatatctatgacttttggcgtccaacaggccaccgctatcctatggtcga
tggctcctttgtcaaacgaaacctacatccaatcttttggccaagtctgggatgaacataaaaaa
cgaaaccggtcttgattttgcagattatgatgctttagcgttccatattccttacacaaaaatgg
gcaaaaaagccttatttagcaaaaaatctccgaccaaactgaagcagaacaggaacgaatttttagc
ccgttatgaagaaagtatcgtctatagtcgctgtaggaaacttgatatacgggttcactttat
ctgggactcatttcccttttagaaaaatgcaacgactttaaccgcaggcaatcaaattgggttat
tcagttatgggtctgggtgctgctgaattttcaactgggtgaattagtagctgggtatcaaaa
tcatttacaaaaagaaactcatttagcaactgctggataatcggacagaactttctatcgctgaa
tatgaagccatgtttgcagaaacttttagacacagacattgatcaaacggttagaagatgaattaa
aatatagtatcttctgctattaataataaccgttcgttcttatcgaaaactaagagatctgcagctg
gtaccatatgggaattcgaagcttgggcccgaacaaaaactcatctcagaagaggatctgaata
gcgcgctcgaccatcatcatcatcattgagtttaaaccggtctccagcttggctgttttggc
ggatgagagaagattttcagcctgatacagattaaatcagaacgcagaagcgggtctgataaaac
agaatttgcctggcggcagtagcgcggtggtcccacctgaccccatgccgaactcagaagtga
acgcgctagcgcgatggtagtggtggtctcccatgagagtagggaactgccaggcatca
aataaaacgaaaggctcagtcgaaagactgggcctttcgttttatctgttgttgtcggtgaac
gctctcctgagtaggacaaatccgcggggagcggatttgaacggtgcgaagcaacggcccgag
ggtggcgggcaggacgcccgcataaaactgccaggcatcaaattaagcagaaggccatcctgac
ggatggcctttttgcgtttctacaaactcttttggttatttttctaaatacattcaaataatgt
atccgctcatgagacaataacctgataaatgcttcaataatctggcgtaatagcgaagaggcc
cgacccgatcgcccttcccaacagttgcgcagcctgaatggcgaatggcgcctgatgcggtatt
ttctccttacgcatctgtgcggtatttcacaccgcatatgggtgcaactctcagtacaatctgctc
tgatgcgcgatagtttaagccagccccgacacccgccaacacccgctgacgagcttagtaaagcc
ctcgctagatttttaattgoggatgttgcgattacttcgccaactattgcgataacaagaaaaagc
cagcctttcatgatataatctccaatttgtgtagggttattatgcacgcttaaaaaataataaa
agcagacttgacctgatagtttggctgtgagcaattatgtgcttagtgcatctaacgcttgagt
taagccgcgcgcgaagcggcgtcggttgaacgaattgttagacattatttgcgactacctt
ggtgatctcgctttcacgtagtggaacaaattcttccaactgatctgcgcgcgaggccaagcga
tcttcttcttgtccaagataagcctgtctagcttcaagtatgacgggctgatactgggcccgcga
ggcgtctcattgcccagtcggcagcgacatccttcggcgcgattttgcccgttactgcgctgta
ccaaatgcgggacaacgtaagcaactacatttcgctcatcgccagcccgagtcgggoggcgagttc
catagcgttaagggtttcatttagcgcctcaaatagatcctgttcaggaaccggatcaaagagtt
cctccgcgcgtggacctaccaaggcaacgctatgttctcttgccttttgcagcaagatagccag
atcaatgtcgatcgtggctggctcgaagataacctgcaagaatgtcattgcgctgccattctcca
aattgcagttcgcgcttagctggataacgccacggaatgatgtcgtcgtgcacaacaatggtga
cttctacagcgcggagaatctcgctctctccaggggaagccgaagtttccaaaaggctcgttgat

Figure 27C

caaagctcgcgcggttgtttcatcaagccttaacggtaaccagcaaatcaatatcaactg
tgtggcttcaggccgccatccactgaggagcgtacaaatgtacggccagcaacgtcggttoga
gatggcgctcgatgacgccaaactacctctgatagttgagtogatacttcggcgatcacgcttc
cctcatgatgtttaactttgttttagggcgactgccctgctgcgtaacatcgttgctgctccat
aacatcaaacatcgacccacggcgtaacgcgcttgctgcttggtatgcccagggcatagactgta
ccccaaaaaacagtcataacaagccatgaaaaccggccactgcgcggttaccaccgctgcgttc
gggtcaagggttctggaccagttgcgtgagcgcatacgcctacttgattacagottacgaaccgaa
caggcttatgtccactgggttcgtgccttcacccgtttccacgggtgtgcgtcacccggcaacct
tgggcagcagcgaagtcgaggcatttctgtcctggctggcgaacgagcgaagggttcggcttc
cacgcacgtcaggcattggcgcccttgctgttcttctacggcaagggtgctgtgcacggatctg
ccctggcttcaggagatcggaagacctcggcgctgcggcgcttgccgggtggtgctgaccccg
atgaagtgggttcgcacccctcgttttctggaaggcgagcatcgtttgttcgcccagcttctgta
tggaaacgggcatgcggatcagtgagggtttgcaactgcgggtcaaggatctggatttcgatcac
ggcacgatcatcgtgcgggagggaagggtccaaggatcgggccttgatgttaccgagagact
tggcaccacagcctgcgcgagcagggggaatttaattccacgggttttgctgcccgaacgggct
gttctcgtgttgctagtttgttatcagaatcgagatccggcttcagccggtttgcccggctgaa
agcgcctatttcttcagaattgccatgatttttcccccacgggaggcgtcactggctcccggtgt
tgtcggcagctttgattcgataagcagcatcgccgtttcaggctgtctatgtgtgactgttga
gctgtaacaagtgtctcagggtttcaatttcagttctagttgctttgttttactgggttcac
ctgttctattaggtgttacatgctgttcacatgttcacatgttcacatggtgaacagc
tttgaatgcacaaaaactcgtaaaagctctgatgtatctatcttttttacaccggttttcact
gtgcataatggacagttttccctttgatatgtaacggtgaacagttgttctacttttgtttgtta
gtcttgatgcttcactgatagatacaagagccataagaacctcagatccctccgtatttagcca
gtatgttctctagtgtggttcgttgttttgcgtgagccatgagaacgaaccattgagatcata
cttactttgcatgtcactcaaaaattttgcctcaaaaactgggtgagctgaatttttgcagttaaa
gcacgtgtagtgtttttcttagtcggttatgtaggttaggaatctgatgtaatggttgttggtta
ttttgtcaccattcatttttatctggttgttctcaagttcgggttacgagatccatttgtctatc
tagttcaacttggaaaatcaacgtatcagtcgggcggcctcgttatcaaccaccaatttcata
ttgctgtaagtgtttaaatcttacttattggtttcaaaaccattgggttaagccttttaaat
catggtagttattttcaagcattaacatgaacttaaattcatcaaggctaattctctatatttgc
cttgtgagttttcttttgtgttagttcttttaataaccactcataaatcctcatagagtatttg
ttttcaaaagacttaacatgttccagattatattttatgaatttttttaactggaaaagataag
gcaatatctctcactaaaaactaattctaatttttcgcttgagaacttggcatagtttgtcca
ctggaaaatctcaaagcctttaaccaaaggattcctgatttccacagttctcgtcatcagctct
ctgggttgcttagctaatacaccataagcattttccctactgatgttcacatctgagcgtatt
gggtataagtgaacgataaccgtccggttctttcccttgtagggttttcaatcgtggggttgagtag
tgccacacagcataaaattagcttgggttcatgctccgttaagtcatagcgactaatcgctagt
tcatttgccttgaaaacaactaattcagacatacatctcaattgggtctaggtgatttttaacac
tataccaattgagatgggctagtcaatgataattactagtccttttccctttgagttgtgggtat
ctgtaaatctcgttagacctttgctggaaaacttgtaaatctcgttagaccctctgtaaatcc
gctagacctttgtgtgtttttttgtttatattcaagtgggtataatttatagaataaagaaag
aataaaaaaagataaaaagaatagatcccagccctgtgtataactcactacttttagtcagttcc
gcagttattacaaaaggatgtcgcaacgctgtttgctcctctacaaaacagaccttaaaacct
aaaggcttaagttagcaccctcgcaagctcgggcaaatcgtgtaatttccctttgtctccgacc

Figure 27D

AtcaggcacctgagtcgctgtotTTTTcgtgacattcagttcgctgcgctcacggctctggcag
tgaatgggggtaaatggcactacaggcgcttttatggattcatgcaaggaaactaoccataat
acaagaaaagcccgtcacgggcttctcagggcgTTTTatggcgggtctgctatgtgggtgctatc
tgactTTTTgctgttcagcagttcctgccctctgattttccagttctgaccacttcggattatcc
cgtgacaggtcattcagactggotaatgcacccagtaaggcagcggtatcatcaacaggotta
(SEQ ID NO:46)

Figure 28

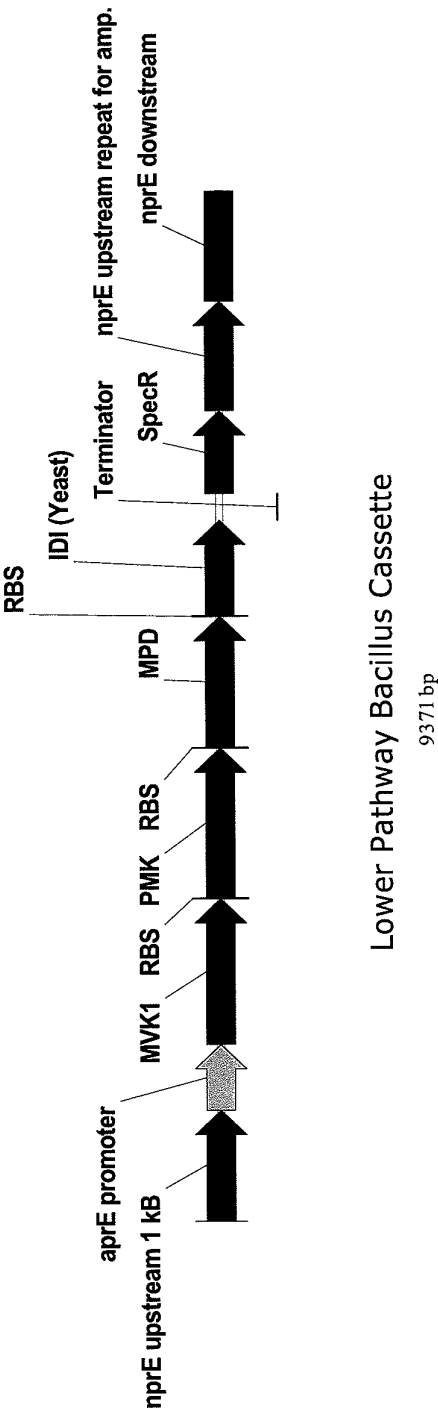


Figure 29A

5' -

tgtaaccttttgctttcaaatgagtagaataatgcacatccatggttgatcgtgcaaataaag
tgtttcatccgtaggaaaaaatgacttttagtatctgttccgctttttctgatgaaatgtgctcc
ccgacaaaattgaatgaatcatggacatttgctggctttgatacagcgaaagcagccgttccta
tgttatatatcggatttaacagcaggacaaaaaacacccatgacagccatcgtcacccacttatt
cacacgcacataaaccttttctgacttttggaacagatgatagctcatcaaaaatcccgcatt
gcaaaaataaatcgtatatggcattactgcaccataatcttttgagatttgattgggatatggcg
caagcagcaagacaagcagtcgataatcagcgtataaaataagcctagtaagatcttatccgt
tctccaatacagcttgaaaaacactacattcaacgcaatgggaagagtgatgatgaaaaacaga
aacacgaatgcaatcggctccatcccatccgggtattccttccaatacgaagaagaaactaaaaa
tcatttgtagcatcggcaaaactgacaacagcaaggtcgaacgtataaaacttaccctttccgcc
atgatcacgcggcatcagcatatagtgaagaagccgtcagcagcacatatccgtatacaaaaaa
tgacgagcggcagcagttcttttccgtcctctcttaagtaagcgtggtgaagtttggtgatt
gcacctggtgaataagttcaacagacactcccgccagcagcacaaatccgcaatataacaccgc
caagaacattggtgcgtgcccgtttattttgggatgatgcacaaaagatatagcccgcgaga
acaacaattgaccattgaatcagcaggggtgcttgtctgcttaataataaaataacgttcgaaat
gcaatacataatgactgaataactccaacacgaacaacaactccattttcttctgctatcaaaa
taacagactcgtgattttccaaacagagctttcaaaaaagcctctgccccttgcaaatcggatgc
ctgtctataaaaattcccgatattggttaaacagcggcgcaatggcggcgcatctgatgtctt
gcttggcgaatgttcatcttattttcttccctctcaataattttttcattctatcccttttc
tgtaaagtttatttttcagaatacttttatcatcatgctttgaaaaaatatcacgataatatcc
attgttctcaggaagcacacgcaggtcatttgaacgaattttttcgacaggaatttgccggga
ctcaggagcatttaacctaaaaaagcatgacatttcagcataatgaacatttactcatgtctat
tttcgttcttttctgtatgaaaatagttatttcgagtcctctacggaaatagcagagatgatat
acctaaatagagataaaaatcatctcaaaaaatgggtctactaaaatattattccatctattac
aataaattcacagaatagtcttttaagtaagtcactctgaatttttttaaaaggagagggtaa
agagtgtcattaccgttcttaacttctgcacccgggaaagggtattatttttggtgaacactctg
ctgtgtacaacaagcctgcogtcogtgcctagtggtctgcgttgagaacctacctgctaataag
cgagtcatctgcaccagatactattgaattggacttcccgacatttagctttaatcataagtgg
tccatcaatgatttcaatgccatcaccgaggatcaagtaaaactccaaaaattggccaagggtc
aacaagccaccgatggcttgtctcaggaactcgttagtcttttgatccgttggttagctcaact
atccgaatccttccactaccatgcagcgttttggttccgtgtatgtttggttgccatgcccc
catgccagaatattaagttttctttaaagtcactttaccatccgtgctgggttggtgctcaa
ggcctctattttctgtatcactggccttagctatggcctacttgggggggttaataggatctaa
tgacttggaaaagctgtcagaaaacgataagcatatagtgaatcaatgggccttcataagtgaa
aagtgtattcacggtaaccttccaggaatagataacgctgtggccacttatggtaatgcctgc
tatttgaaaaagactcacataatggaacaataaacacaaacaattttaagttcttagatgattt
cccagccattccaatgatcctaacctatactagaattccaaggtctacaaaagatcttggtgct
cgcgttcgtgtgttggtcacccagaaaatttccgaagttatgaagccaattctagatgccatgg
gtgaatgtgccctacaaggcttagagatcatgactaagttaagtaaatgtaaggccaccgatga
cgaggctgtagaaactaataatgaactgtatgaacaactattggaattgataagaataaatcat
ggactgcttgtctcaatcgggtgtttctcatcctggattagaacttattaaaaatctgagcgatg
atttgagaattgggtccacaaaacttaccggtgctgggtggcggttgctcttgactttggt
acgaagagacattactcaagagcaaattgacagcttcaaaaagaaattgcaagatgattttagt

Figure 29B

tacgagacatttgaaacagacttgggtgggactggctgctgtttgttaagcgcaaaaaatttga
ataaagatccttaaaatcaaaccctagtagtattccaattatttgaaaataaaaactaccacaaagca
acaaattgacgatctattattgccaggaaacacgaatttaccatggacttcataaaaggagagg
gtgtcagagttgagagccttcagtgtcccagggaaagcggttactagctggtggatatttagttt
tagatacaaaaatatgaagcattttagtgcggattatcggcaagaatgcatgctgtagcccatcc
ttacgggttcattgcaagggctctgataagtttgaagtgcgtgtgaaaagtaacaatttaaagat
ggggagtggctgtaccatataagtcctaaaagtgggttcattcctgtttcgataggcggatcta
agaaccctttcattgaaaaagttatcgctaacgtatttagctactttaaacctaaccatggacga
ctactgcaatagaaacttgttcggtattgatattttctctgatgatgcctaccattctcaggag
gatagcgttaccgaacatcgtggcaacagaagattgagttttcattcgcacagaattgaagaag
ttcccaaaacagggctgggctcctcggcaggttttagtcacagttttaactacagctttggcctc
cttttttgtatcggacctggaaaataatgtagacaaatatagagaagttattcataatttagca
caagttgctcatttgtcaagctcagggtaaaattggaagcgggtttgatgtagcggcggcagcat
atggatctatcagatatagaagattcccaccgcattaatctctaatttgccagatattggaag
tgctacttacggcagtaaaactggcgcatttgggttgatgaagaagactggaatattacgattaaa
agtaaccattttaccttcgggattaaactttatggatggcgatattaagaatggttcagaaacag
taaaactgggtccagaaggtaaaaaattgggtatgattcgcatatgccagaaagcttgaaaatata
tacagaactcgatcatgcaaattctagattttatggatggactatctaaactagatcgcttacac
gagactcatgacgattacagcgatcagatatttgagttctcttgagaggaatgactgtacctgtc
aaaagtatcctgaaatcacagaagttagagatgcagttgccacaattagacgttcctttagaaa
aataactaaagaatctgggtgcgatatcgaaacctcccgtaaaaactagcttattggatgattgc
cagaccttaaaaggagttcttacttgcttaataacctgggtgctgggtggttatgacgccattgcag
tgattactaagcaagatgttgatcttagggctcaaacccgctaatagacaaaagattttctaagggt
tcaatggctggatgtaactcaggctgactggggtgttaggaaagaaaaagatccggaaacttat
cttgataaataaaaggagaggggtgaccgtttacacagcatccgttaccgcaccctcaacatcg
caacccttaagtattgggggaaaaggacacgaagttgaatctgccaccaattcgtccatatc
agtgaactttatcgcaagatgacctcagaacgttgacctctgcggctactgcacctgagtttgaa
cgcgacactttgtgggttaaatggagaaccacacagcatcgacaatgaaagaactcaaaattgtc
tgcgcgacctacgccaatgaagaaaggaaatggaatcgaggacgcctcattgccacattatc
tcaatggaaactccacattgtctccgaaaataactttcctacagcagctggtttagcttcctcc
gctgctggctttgctgcattgggtctctgcaattgctaagttataccaattaccacagtcaactt
cagaaatatctagaatagcaagaaaggggtctgggttcagctttagatcggttggttgccgggata
cgtggcctgggaaatgggaaaagctgaagatgggtcatgattccatggcagtaaaaatcgagac
agctctgactggcctcagatgaaagcttggtgcctagttgtcagcgatattaaaaggatgtga
gttccactcagggtatgcaattgaccgtggcaacctccgaactatttaaagaagaattgaaca
tgtcgtaaccaagagatttgaagtcattgcgtaaagccattgttgaaaaagatttcgccaccttt
gcaaaggaaacaatgatggattccaactctttccatgccacatgtttggactctttccctccaa
tattctacatgaatgacacttccaagcgtatcatcagttgggtgccacaccattaatcagtttta
cggagaaacaatcgttgcatacacgtttgatgcagggtccaaatgctgtgtgtactacttagct
gaaaatgagtcgaaaactctttgcatttatctataaattgtttggctctgttcctggatgggaca
agaaatttactactgagcagcttgaggctttcaaccatcaatttgaatcatctaactttactgc
acgtgaattggatcttgagttgcaaaaggatgttgccagagtgattttaactcaagtcggttca
ggcccacaagaacaaacgaatctttgattgacgcaagactgggtctaccaaggaataaaagg
agaggggtgactgccgacaacaatagtagtgcgccatgggtgcagtatctagttacgccaaattagt

Figure 29C

gcaaaaccaaacacctgaagacattttggaagagtttcctgaaattattccattacaacaaaga
cctaatacccgatctagtgaacgtcaaatgacgaaagcggagaaacatgttttctgggtcatg
atgaggagcaaattaagttaataatgaaattgtattgttttggttgggacgataatgctat
tggtgccggtaccaagaaagtttgtcatttaattggaataattgaaaagggtttactacatcgt
gcattctccgtctttattttcaatgaacaagggtgaattacttttacaacaaagagccactgaaa
aaataactttccctgatctttggactaacacatgctgctctcatccactatgtattgatgaoga
attaggtttgaagggttaagctagacgataagattaaggggcgtctattaotgcggcgggtgagaaaa
ctagatcatgaattaggtattccagaagatgaaactaagacaaggggtaagtttcactttttaa
acagatccattacatggcaccaagcaatgaaccatgggggtgaacatgaaattgattacatcct
attttataagatcaacgctaaagaaaacttgactgtcaacccaaacgtcaatgaagttagagac
ttcaaatgggtttccacaaatgatttgaaaactatgtttgctgacccaagttacaagtttacgc
cttggtttaagattatttgcgagaattacttattcaactgggtgggagcaattagatgaccttcc
tgaagtggaaaatgacaggcaaatcatagaatgctataaaaaaacggccttgccccgcgcg
gttttttattatttttcttccctccgcgtgttcaatccgctccataatcgacgggatggctccctc
tgaaaatttttaacgagaaacggcgggttgacccgggtcagtcocgtaacgggccaaagtccgaaa
cgtctcaatcgccgcttcccggtttccggtcagctcaatgccgtaacgggtcggcggcggttttcc
tgataccggggagacggcattcgtaatttgaatacatacgaacaaattaataaagtgaaaaaaat
acttcggaaacatttaaaaaataaccttatttggtacttacatgtttggatcaggagttgagagt
ggactaaaaccaaatagtgatcttgacttttttagtcgtcgtatctgaaccattgacagatcaaa
gtaagaaatacttatatacaaaaaatttagacctatttcaaaaaaaataggagataaaagcaactt
acgatataattgaattaacaattattattcagcaagaaatgggtaccgtggaatcatcctccaaa
caagaattttatttatggagaatggttacaagagctttatgaacaaggatacattcctcagaagg
aattaaattcagatttaaccataatgctttaaccaagcaaaacgaaaaataaaagaatataccg
aaattatgacttagaggaattactacctgatattccattttctgatgtgagaagagccattatg
gattcgtcagaggaattaatagataattatcaggatgatgaaaccaactctatattaactttat
gccgtatgattttaactatggacacgggtaaaatcataccaaaagatattgcgggaaatgcagt
ggctgaatcttctccattagaacatagggagagaattttgttagcagttcgtagttatcttggga
gagaatattgaatggactaatgaaaatgtaaatttaactataaaactatttaataacagattaa
aaaaattataatgtaacctttgctttcaaatgagtagaaataatgcacatccatgtttgtatcg
tgcaataaagtgtttcatccgtaggaaaaaatgacttttagtatctgttccgctttttctgatg
aaatgtgctcccccagacaaaattgaatgaatcatggacattttgctggctttgatacagcgaaagc
agccgttccctatgttatatcctggatttaacagcaggacaaaaaacacatgacagccatcgtc
accacttattcacacgcacataaacctttccctgactttttggaacagatgatagctcatcaaaa
atccccgccattgccaaataaatcgtatatggcattactgcaccataatcttttgagatttgatt
gggatatggcgcaagcagcaagacaagcagtcgcgataatcagcgtataaaataagcctagtaag
atcttatccgttctccaatacagcttgaaaaacactacattcaacgcaatgggaagagtgatga
tgaaaaacagaaacacgaatgcaatcggtccatcccatccgggtattccttccaatacgaaaa
gaaactaaaaatcattttgtacgatcggcaactgacaacagcaagggtcgaaactataaaactta
ccctttccgcatgatcacgcggcatcagcatatagtgaaaagccgtcagcagcacatatccgt
ataacaaaaaatgcagcagcggcagcagttcttttccgtcctctcttaagtaagcgtggtgaa
gtttgttgattgcacctgggtgaataagttcaacagacactcccgccagcagcacaatccgcaat
ataacacccgccaaagaacattgtgcgctgccggtttattttgggatgatgcacaaaagatata
agccccgcagaacaacaattgaccattgaatcagcagggtgctttgtctgcttaataaaaaata
acgttcgaaatgcaatacataatgactgaataactccaacacgaacacaaaagtgcgcatttt

Figure 29D

Ataaaagctaattgattcagtcacacataattgatagacgaattctgtacagggtcacgtggctat
gtgaaggatcgcgcggtccagttaagagcaaaaacattgacaaaaaatttatttatgctaaaat
ttactattaatatatttgtagtataataagattctcctggccagggaatcttattttttgtg
gaggatcatttcatgaggaaaaatgagtccagcttaacgtctctaatctcagcttttgccgtg
catatcacagccgatatgacacacctcttatttttgatgattttatcgcaaaagatctcattaa
cgaaaaagagtttatcgacatcagtaaaaaatattgattcaagaaatatcgtttttcaacaaagag
atcgccgaacgtcttcaaaatgatcctgaaaaaatattaaaatgggttgacaaaatccagctgt
ctccaacgcccctagcacgtgcttcttattgtgaaaaagtcttgacacgaattaatcctggg
ggcaaaacagtatgtcattcttggagcgggactggatactttctgctttcggcatccagaatta
gaaaacagcttacaggttttcgaggttgatcatccggccacacagcaattgaaaaaaaataagc
tgaaggatgcaaatctgacaattccgggtcatcttcattttgttcctatggatttcaccaaaac
gttttcgtatgatcctctcttagatgaaggatttaaaaacacaaaaacattcttcagccttctc
ggagtgtcttattatgtaacacgggaagaaaaatgcaagcttgatcagcaatttattttctcatg
tcccgcttgaagctctattgtttttgattatgctggacgaaacactttttacagcaaaaggac
gtcgaatcgagttgaacatatggtgaagatggctgccgcaagcggggaaccgatgaaatcatgt
ttcacttatcaagagattgaacatctg

(SEQ ID NO:47)

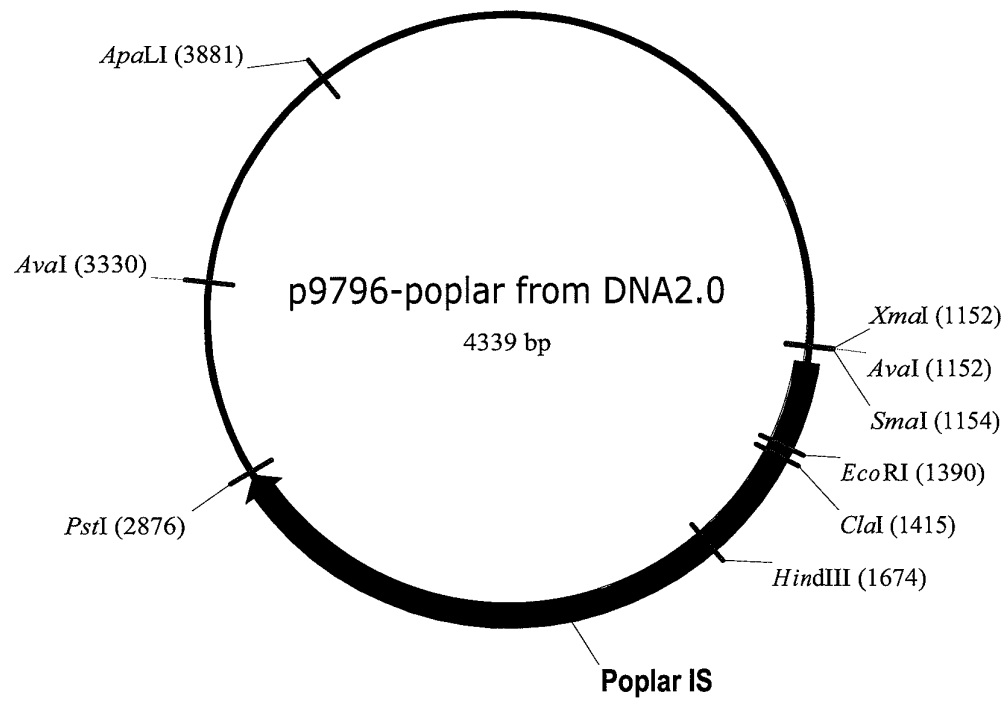
Figure 30

Figure 31A

5' -

tagaaaaactcatcgagcatcaaatagaaactgcaattttattcatatcaggattatcaataccat
atTTTTGAAAAAGCGTTTCTGTAATGAAGGAGAAAACTCACCGAGGCAGTTCCATAGGATGGC
aagatcctgggtatcggtctgcgattccgactcgtccaacatcaatacaacctattaatttcccc
tcgtcaaaaataaggttatcaagtgagaaatcaccatgagtgacgactgaatccggtgagaatg
gcaaagtttatgcatttctttccagacttggtcaacaggccagccattacgctcgtcatcaaa
atcactcgcacaaacacggttattcattcgtgattgcgcctgagcgaggcgaaatacgcga
tcgctgttaaaaggacaattacaacagggaatcgagtgcaaccggcgaggaacactgccagcg
catcaacaatattttcacctgaatcaggatattcttctaataacctggaacgctgtttttccggg
gatcgagtggtgagtaaccatgcacatcaggagtaggataaaatgcttgatggctcggaagt
ggcataaattccgctcagccagtttagtctgaccatctcatctgtaacatcattggcaacgctac
ctttgccatgtttcagaaacaactctggcgcatcgggcttcccatacaagcgatagattgtcgc
acctgattgcccagacattatcgcgagcccatttataccatataaatcagcatccatggtggaa
tttaatcgcggcctcgacgtttcccggtgaatatggctcatattcttctttttcaatattatt
gaagcatttatcaggggttatgtctcatgagcggatacatatttgaaatgtatttagaaaaataa
acaaataggggtcagtggtacaaccaattaaccaattctgaacattatcgcgagcccatttata
cctgaatatggctcataacaccccttggttgccctggcgagcagtagcgcggtggtcccacctgac
cccatgccgaactcagaagtgaacgcggtagcgccgatggtagtggtgggactcccatgcca
gagtagggaaactgccaggcatcaataaaaacgaaaggctcagtcgaaagactgggcctttcgcc
cgggctaattaggggtgtcgcccttagtcgctgaacatgtgctctgtttctaccgagaacgt
ttccttcaactgagacggaaaccgaggcacgtcgtagcgcgaactacgagccgaatagctgggac
tacgatttctgtgtcttccgatactgacgaatctattgaggtgtacaaagacaaagcaaaga
aactggagggtgaagtgcgcgcggaataacaacgagaaagctgaattcctgactctgctgga
gctgatcgataacgtacagcgccctgggtctgggttaccgcttcgaatctgatatccgtcgcgca
ctggatcgtttcgttaagcagcgcggtttcgatggcgtgacccaaaacgagccctgcacgctaccg
cgctgtccttccgtctgctgcgtcagcacggcttcgaagtttctcaggaagcattctccggtt
caaagatcaaaaacggttaacttctggaacacctgaaagaagacactaaggcgatcctgagcctg
tatgaggcaagccttctggccctggaggggtgagaacatcctggatgaggcgcgcgctattcgcca
tctcccatctgaaagagctgtctgaagagaaaatcggttaaggaaactggcagagcaggttaatca
cgcaactggaactgccgctgcacgtcgtaccagcgtctggaggcggtttggtccatcgaagcg
taccgcaaaaaggaggatgctaaccaggttctgctggaactggccatcctggactacaacatga
tccagtcggtttaccagcgtgatctgcgtgaaacctcccggttggtggcgccgtgtgggectggc
gaccaaactgcacttcgctaaggaccgctgattgagctcttttactgggcagtcggcggttgcg
ttcgaaacctcagatattctgactgccgtaacagcgttgcgaaaatgttcagcttcgttactatta
tcgacgacatctacgacgtttacggtaactctggacgagctggaactgtttaccgacgctgtcga
acgttgggatgttaacgccatcaacgatctgcctgactacatgaaactgtgcttcctggcactg
tataacacgatcaacgaaattgcatacgacaacctgaaagacaaagggtgaaaacatcctgccgt
acctgactaaagcgtgggcggtatctgtgtaacgcttttctgcaagaagcgaaatggctgtataa
caaatccactccgacctttgacgattatttcggcaatgcctggaaatccagctctggcccgctg
caactgatcttcgcttattttgcggttggtccaaaacatcaaaaaggaggaaattgaaaacctgc
aaaaataaccagatatcattagccgtccttctcatatctttcgccctgtgcaacgacctggcaag
cgcgctccgcagagatcgacgctggcgaaaccgctaactctgtttcctgctacatgcgcaccaag
ggcatttccgaagagctggcaaccgagagcgtaaatgaatctgatcgacgaaacctgtaagaaaa
tgaacaaagaaaaactgggtgggtccctgttcgctaaaccgttcgtagagactgctattaacct

Figure 31B

ggcacgtcagagccactgcacctaccacaatgggtgacgcacatactagcccggatgaactgact
cgtaaacgtgtactgtctgttatcaccgaaccgattctgcggttcgaacgttaactgcagcgctc
aatcgaaagggcgacacaaaatttattctaatgcataataaatactgataacatctttagtt
tgtattataatgtgtattatcggttgacatgtataatgtgatatacaaaaactgattttcccttt
attattttcgagattttattttcttaattctctttaacaaaactagaaatattgtatatacaaaaa
atcataaataatagatgaatagtttaattataggtgttcatcaatcgaaaaagcaacgtatctt
atttaaagtgcggttgcgtttttctcatttataaggttaaataattctcatatatcaagcaaagt
gacaggcgcccttaaatattctgacaaatgctctttccctaaactccccccataaaaaaacccg
ccgaagcgggtttttacgttatttgcggttaacgattactcgttatcagaaccgcccaggggg
cccagacttaagactggcgtcggttttacaacacagaaagagtttgtagaaacgcaaaaaggcc
atccgtcaggggcttctgcttagtttgatgcctggcagttccctactctcgcttccgcttcc
tcgctcactgactcgctgcgtcggtcggttcggctgcggcgagcgggtatcagctcactcaaagg
cggtaatacgggttatccacagaatcaggggataacgcaggaaagaacatgtgagcaaaaggcca
gcaaaaggccaggaaccgtaaaaaggccgcgttgctggcggtttttccatagggtccgccccct
gacgagcatcacaaaaatcgacgctcaagtgcagaggtggcgaaaccgcagaggactataaagat
accaggcggtttccccctggaagctccctcgctgcgtctcctgttccgacctgccgcttacggg
atacctgtccgcctttctcccttcgggaagcgtggcgctttctcatagctcacgctgtaggtat
ctcagttcgggtgtaggtcggttcgctccaagctgggctgtgtgcacgaaccccccggttcagcccg
accgctgcgccttatccggtaactatcgctcttgagtcacaacccggtaagacacgacttatcgcc
actggcagcagccactggtaacaggatttagcagagcgaggtatgtaggcgggtgctacagagttc
ttgaagtgggtgggctaactacggctacactagaagaacagtatgttggtatctgcgctctgctga
agccagttaccttcggaaaaagagttggtagctcttgatccggcaaacaaaccacgcgtggtag
cgggtggtttttttggttgcaagcagcagattacgcgcagaaaaaaaggatctcaagaagatcct
ttgatcttttctacggggtctgacgctcagtggaacgacgcgcgtaactcacgttaagggat
tttggtcatgagcttgcgccgtcccgtaagtcagcgtaaatgctctgcttt

(SEQ ID NO:48)

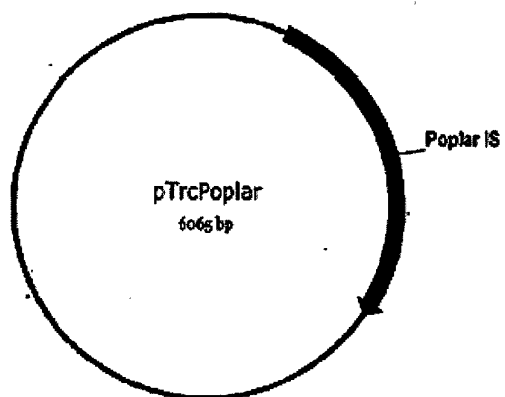
Figure 32

Figure 33A

5' -

gtttgacagcttatcatcgactgcacgggtgcaccaatgcttctggcgtcaggcagccatcggaa
gctgtggtatggctgtgcaggctcgtaaatcactgcataattcgtgtcgtcaaggcgactccc
gttctggataatgttttttgcgccgacatcataacgggtcttgccaaatattctgaaatgagctg
ttgacaattaatcatccggctcgtataatgtgtggaattgtgagcggataacaatttcacacag
gaaacagcgccgctgagaaaaagcgaagcggcactgctctttaacaatttatcagacaatctgt
gtgggcactcgcacgggaattatcgattaactttattattaaaaattaaagaggtatatattaat
gtatcgattaaataaggaggaataaaccatgtgctctgtttctaccgagaacgtttccttcaact
gagacggaaaccgaggcaagctcgtagcgcgaactacgagccgaatagctgggactacgatttcc
tgctgtcttccgatactgacgaatctattgaggtgtacaaagacaaagcaaaagaaactggaggc
tgaagtgcgcccgcgaattacaacgagaaagctgaattcctgactctgctggagctgatcgat
aacgtacagcgccctgggtctgggttacccgttcgaatctgatatccgtcgcgcactggatcggt
tcgtaagcagcggcgggtttcgatggcgtgacccaaaacgagcctgcacgctacccgcgtgtcctt
ccgtctgctgctcagcaacggcttcgaagtttctcaggaagcattctccgggtttcaaagatcaa
aacggtaacttccctggaaaacctgaaagaagacactaaggcgatcctgagcctgtatgaggcaa
gctttctggccctggagggtgagaacatcctggatgaggcgcgcgtattccgcatctcccatct
gaaagagctgtctgaagagaaaatcggtaaggaaactggcagagcaggttaatacgcactggaa
ctgcccgtgcacgtcgtacccagcgtctggaggcgggttgggtccatcgaagcgtaccgcaaaa
aggaggatgctaaccagggttctgctggaactggccatcctggactacaacatgatccagtcctgt
ttaccagcgtgatctgctgaaacctcccggttgggtggcgcgtgtgggctggcgaccaaactg
cacttcgctaaggaccgcctgattgagctcttttactgggcagtcggcgttgcgttcgaacctc
agtattctgactgccgttaacagcgttgcgaaaatgttcagcttcgttactattatcgacgacat
ctacgacgtttacggtactctggacgagctggaactgtttaccgaacgtgtcgaacgttgggat
gttaacgccatcaacgatctgcctgactacatgaaactgtgcttccctggcactgtataacacga
tcaacgaaattgcatacgcacaacctgaaagacaaagggtgaaaacatcctgccgtacctgactaa
agcgtgggaggatctgtgtaacgcttttctgcaagaagcgaaatggctgtataacaaatccact
ccgacctttgacgattatttcggcaatgcctggaaatccagotctggcccgctgcaactgatct
tcgcttatttttgcgggtgtccaaaacatcaaaaaggaggaaattgaaaacctgcaaaaatacca
cgatatcatttagccgtccttctcatatctttcgctgtgcaacgacctggcaagcgcgtccgca
gagatcgacgtggcgaaacctgtaactctgtttcctgctacatgcgcaccaagggcatttccg
aagagctggcaaccgagagcgtaatgaatctgatcgacgaaacctgtaagaaaatgaacaaaga
aaaactgggtggctccctgttcgctaaaccgttcgtagagactgctattaacctggcagctcag
agccactgcacctaccacaatggtgacgcacatactagcccggatgaactgactcgtaaacgtg
tactgtctgttatcaccgaaccgattctgcccgttcgaacgttaactgcagctggtaccatatgg
gaattcgaagctttctagaacaaaaactcatctcagaagaggatctgaatagcgcgctcgacca
tcatcatcatcatcattgagtttaaacgggtctccagcttggctgttttggcggatgagagaaga
ttttcagcctgatacagattaaatcagaacgcagaagcgggtctgataaaacagaatttgcctgg
cggcagtagcgcgggtgggtccacctgaccccatgccgaactcagaagtgaacgccgtagcgc
gatggtagtgtgggtctcccatgcgagagtagggaaactgccaggcatcaataaaaacgaaag
gctcagtcgaaagactgggccttctgttttatctgttgttgggtgaacgctctcctgagta
ggacaaatccgcccgggagcggatttgaacgttgcgaagcaacggcccggagggtggcggggcagg
acgcccgcataaaactgccaggcatcaaattaagcagaaggccatcctgacggatggccttttt
gcgcttctacaaactctttttgtttatttttctaaatacattcaaatatgtatccgctcatgag
acaataaccctgataaatgcttcaataatattgaaaagggaagagtatgagtattcaacatttc

Figure 33B

cgtgtcgcccttattcccttttttgcggcattttgccttcctgtttttgtctacccagaaacgc
tgggtgaaagtaaaagatgctgaagatcagttgggtgcacgagtgggttacatcgaactggatct
caacagcggtaagatccttgagagtttttgcggccgaagaacgttttccaatgatgagcactttt
aaagttctgctatgtggcgoggtattatcccggtgttgacgcccgggcaagagcaactcggtcgcc
gcatacactattctcagaatgacttgggttgagtaactcaccagtcacagaaaagcatcttacgga
tggcatgacagtaagagaattatgcagtgctgccataaccatgagtataacactgcggccaac
ttacttctgacaacgatcggaggaccgaaggagctaaccgcttttttgcacaacatgggggatc
atgtaactcgcccttgatcggtgggaaccggagctgaatgaagccataccaaacgacgagcgtga
caccacgatgcccgttagcaatggcaacaacggttgcgcaaaactattaactggcgaactacttact
ctagcttcccggcaacaattaatagactggatggaggcgggataaagtgcaggaccacttctgc
gctcgcccttccggctggctgggtttattgctgataaatctggagccggtgagcgtgggtctcg
cggatcattgcagcactggggccagatggtaagccctcccgatcgtagttatctacacgacg
gggagtcaggcaactatggatgaacgaaatagacagatcgctgagataggtgcctcactgatta
agcattggtaactgtcagaccaagttaactcatatatacttttagattgatttaaaacttcattt
ttaatttaaaaggatctagggtgaagatcctttttgataatctcatgaccaaactcccttaacgt
gagttttcgctccactgagcgtcagaccccgtagaaaagatcaaaggatcttcttgagatcctt
ttttctgcgcgtaactctgctgcttgcaaacaaaaaaaccacgcgtaccagcgggtggtttggtt
gccggatcaagagctaccaaactcttttccgaaggtaactggcttcagcagagcgcagatacca
aatactgtccttctagtgtagccgtagttaggccaccacttcaagaactctgtagcaccgccta
catacctcgctctgctaatcctgttaccagtggtgctgctgccagtgccgataagtctgtcttac
cgggttgagactcaagacgatagttaccggataaggcgcagcggctcgggctgaacgggggggttcg
tgcacacagcccagcttgagcgaacgacctacaccgaactgagatacctacagcgtgagctat
gagaaagcgccacgcttcccgaaaggagaaaggcggacaggtatccggtaagcggcagggtcgg
aacaggagagcgcacgagggagcttccagggggaacgcctggatctttatagtcctgtcggg
tttcgccacctctgacttgagcgtcgatttttgtgatgctcgctcaggggggaggcctatgga
aaaacgccagcaacgcggcctttttacggttccctggccttttgotggccttttgotcacatggt
ctttcctgcgttatccctgattctgtggataaccgattaccgcctttgagtgagctgatacc
gotcgccgcagccgaacgaccgagcgcagcagtgagtgagcaggaagcgggaagagcgccctga
tgccgtattttctccttacgcatctgtgcggtattttcacaccgcataatgggtgcactctcagtac
aatctgctctgatgcgcgatagttaagccagtatacactccgctatcgctacgtgactgggtca
tggctgcgccccgcaccccgccaacaccccgctgacgcgcctgaagggttggtctgctccggc
atccgcttacagacaagctgtgacgctctccgggagctgcatgtgtcagaggttttcaccgctca
tcaccgaaacgcgcgagggcagcagatcaattcgcgcggaaggcgaagcggcatgcatttacgt
tgacaccatcgaatgggtgcaaaaccttttcgcggtatggcatgatagcggccggaagagagtcaa
ttcaggggtggtgaatgtgaaaccagtaacggtatacagatgtcgcagagtatgccggtgtctctt
atcagaccggtttcccgctgggtgaaccaggccagccacggtttctgcgaaaaacgcgggaaaaagt
ggaagcggcgatggcggagctgaattacattcccaaccgcgtggcacaacaactggcgggcaaa
cagtcggttgctgattggcgttgccacctccagctctggcctgcacgcgcgctcgcaaatgtctg
cggcgattaaatctcgcgcgatcaactgggtgcagcgtgggtgggtgctgatggtagaacgaag
cggcgtcgaagcctgtaaaagcggcggtgcacaactctctcgcgcaacgcgctcagtgggctgatc
attaactatccgctggatgaccaggatgccattgctgtggaagctgcctgcactaatgttccgg
cggtattttcttgatgtctctgaccagacacccatcaacagtattattttctcccatgaagacgg
tacgcgactggcggtggagcatctggtcgcatgggtcaccagcaaatcgcgctgttagcgggc
ccattaagttctgtctcggcgcgtctgcgtctggctggctggcataaatatctcactcgcaatc

Figure 33C

aaattcagccgatatagcggaacgggaaggcgactggagtgccatgtccgggttttcaacaaaccat
gcaaattgctgaatgagggcatcgttcccactgcatgctggttgccaacgatcagatggcgctg
ggcgcaatgcgcgccattaccgagtcggggtgcgcgttggtgcggatatctcggtagtgggat
acgacgataccgaagacagctcatgttatatccgcgcgtcaaccaccatcaaacaggattttcg
cctgctggggcaaaccagcgtggaccgcttgcctgcaactctctcagggccaggcgggtgaagggc
aatcagctggtgcccgtctcactggtgaaaagaaaaaccaccctggcgccaatacgcaaaccg
cctctccccgcgcgttggcogattcattaatgcagctggcacgacaggtttcccgactggaaag
cgggcagtgagcgcaacqcaattaatgtgagttagcggaattgatctg
(SEQ ID NO:49)

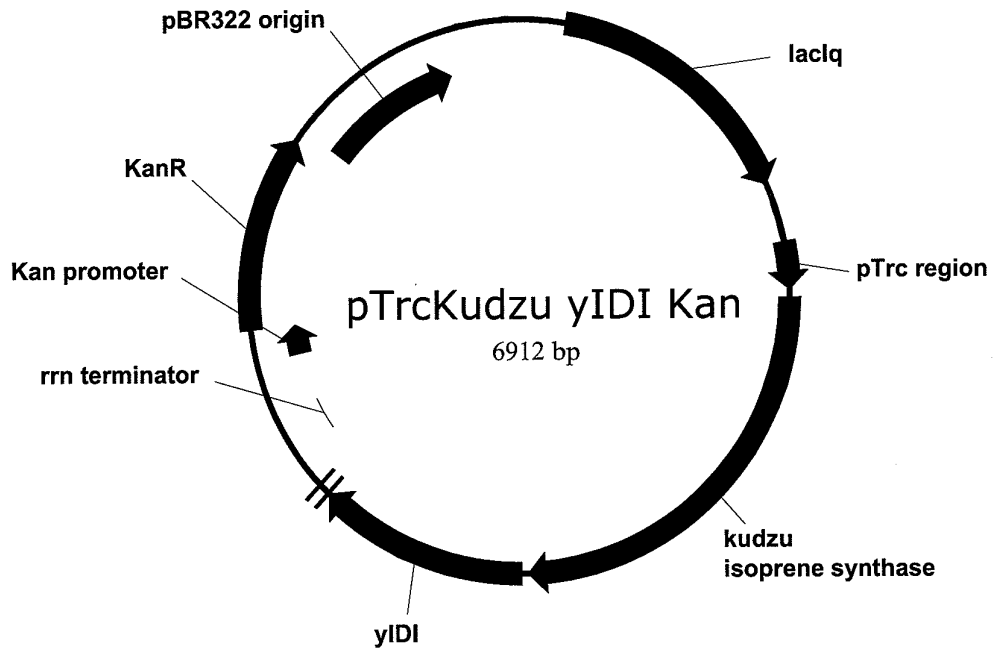
Figure 34

Figure 35A

5' -

ttgtctgtcccgcatccgcttacagacaagctgtgaccgtctccgggagctgcatgtgtcag
aggttttcaacgtcatcaccgaaacgcgcgaggcagcagatcaattcgcgcgcaaggcgaagc
ggcatgcatttacgttgacaccatcgaatggtgcaaaacctttcgcggtatggcatgatagcgc
ccggaagagagtgcaattcaggggtggtgaatgtgaaaccagtaacgttatagcatgtcgcagagt
atgcgggtgtctcttatcagacgggttcccgcggtggaaccaggccagccacgtttctgcgaa
aacgcgggaaaaagtggaagcggcgatggcgagctgaattacattcccaacccggtggcaca
caaetggcgggcaaacagtcgttggtgattggcggtgccacctccagtcctggccctgcacgcgc
cgtcgcaaatgtcgcgcgattaaatctcgcgccgatcaactgggtgccagcgtggtggtgtc
gatggtagaacgaagcggcgctgaagcctgtaaagcggcggtgcacaatcttctcgcgcaacgc
gtcagtggtgtgatcattaactatccgctggatgaccaggatgccattgctgtggaagctgcct
gcactaatgttccggcggtattttcttgatgtctctgaccagacacccatcaacagttattttt
ctcccatgaagacggtacgcgactggcggtggagcatctggtcgattgggtcaccagcaaatc
ggcgtgttagcggggccattaaagttctgtctcgcgcgctctgcgtctggctggctggcataaat
atctcactcgcaatcaaattcagccgatagcggaaacgggaaggcgactggagtgccatgtccgg
ttttcaacaaaccatgcaaatgctgaatgagggcatcgttcccaactgcgatgctggttgccaac
gatcagatggcgctggcgcaatgcgcgccattaccgagtcggggctgcgcgttggtgcgga
tctcggtagtgggatacgaagataccgaagacagctcatgttatatcccgccgtcaaccacat
caaacaggattttcgctgtggggcaaacagcgtggaccgcttgctgcaactctctcagggc
caggcgggtgaagggaatcagctgttgcccgctctcactggtgaaaagaaaaaccacctggcgc
ccaatacgcacacgcctctcccgcgcggttgcccgattcattaatgcagctggcagcagcgt
tcccgactggaaagcgggcagtgagcgcaacgcaatataatgtgagttagcggaattgatctg
gtttgacagcttatcatcgactgcacggtgcaccaatgcttctggcgctcaggcagccatcgga
gctgtggtatggctgtgcaggtcgtaaatcactgcataattcgtgtcgctcaaggcgcactccc
gttctggataatgttttttgcgcgacatcataacgggttctggcaaatattctgaaatgagctg
ttgacaattaatcatccggtcgtataatgtgtggaattgtgagcggataacaatttcacacag
gaaacagcgccgctgagaaaaagcgaagcggcactgctcttaacaatttatcagacaatctgt
gtgggcactcgaccggaattatcgattaactttattattaaaaattaaagaggtatatattaat
gtatcgattaaataaggaggaataaaccatgtgtgcgacctcttctcaatttactcagattacc
gagcataattcccgctcgttccgcaactatcagccaaacctgtggaatttcgaattcctgcaat
ccctggagaacgacctgaaagtggaaaagctggaggagaaagcgaccaaactggagggaagaagt
tcgctgcatgatcaaccgtgtagacacccagccgctgtccctgctggagctgatcgacgatgtg
cagcgccctgggtctgacctacaaatttgaaaaagacatcattaaagccctggaaaacatcgtac
tgctggacgaaaaacaaaaagaacaaatctgacctgcacgcaaccgctctgtctttccgtctgt
gcgtcagcacggtttcgaggtttctcaggatgtttttgagcgtttcaaggataaagaaggtggt
ttcagcgggtgaactgaaaggtgacgtccaaggcctgctgagcctgtatgaagcgtcttacctgg
gtttcgagggtgagaacctgctggaggaggcggtacctttccatcaccacctgaaqaacaa
cctgaaagaaggcattataaccaaggttgacagaacaagtgagccacgcctggaaactgccatat
caccagcgtctgcacgctctggaggcacgttggttccctggataaatacgaaccgaaagaaccgc
atcaccagctgctgctggagctggcgaagctggattttaacatggtacagacacctgcaccagaa
agagctgcaagatctgtcccgctgggtggaccgagatgggcctggctagcaaacctggattttgta
cgcgaccgcctgatggaagtttattttctgggcactgggtatggcgccagacccgcagtttggtg
aatgtcgcaagctgttactaaaatgtttggtctggtgacgatcatcgatgacgtgtatgacgt

Figure 35B

ttatggcactctggacgaactgcaactgttcaccgatgctgtagagcgctgggacgttaacgct
attaacaccctgccggactatatgaaactgtgtttcctggcactgtacaacaccgttaacgaca
cgtcctatttctattctgaaagagaaaggtcataacaacctgtcctatctgacgaaaagctggcg
tgaactgtgcaaagcctttctgcaagaggcgaaatgggtccaacaacaaaattatcccggctttc
tccaagtacctggaaaacgccagcggtttcctcctccggtgtagcgctgctggcgccgtcttact
tttccgtatgccagcagcaggaagacatctccgaccaacgcgctgcgttccctgaccgaactcca
tgggtctggtgcggttctagctgcgttatcttccgctgtgcaacgatctggccacctctgcggcg
gagctggaacgtggcgagactaccaattctatcattagctacatgcacgaaaacgatggtacca
gcgaggaacaggcccgcggaagaactgcgtaaactgatcgacgccgaatggaaaaagatgaatcg
tgaacgcggttagcgactccacctgctgcctaaagcggttcattgaaatcgacagttaacatggca
cgtgtttcccactgcacctaccagtatggcgatgggtctgggtcgcccagactacgcgactgaaa
accgcatcaaactgctgctgattgaccttttcccgattaaccagctgatgtatgtctaactgca
tcgccccttaggaggtaaaaaaaatgactgccgacaacaatagtatgccccatggtgcagtatc
tagttacgccaattagtgcaaaaaccaaacacctgaagacatttttggaaagagtttccctgaaatt
attccattacaacaaagacctaataccgatctagtgcagcgtcaaatagcgaaagcggagaaa
catgtttttctggtcatgatgaggagcaaatgaagttaatgaatgaaaattgtattgttttgga
ttgggacgataatgctattggtgccggtaccaagaaagtttgtcatttaattgaaaatattgaa
aagggtttactacatcgtgcattctccgtctttattttcaatgaacaagggtgaattacttttac
aacaagagccactgaaaaataactttccctgatctttggactaacacatgctgctctcatcc
actatgtattgatgacgaattaggtttgaagggttaagctagacgataagattaagggcgctatt
actgcggcggtgagaaaactagatcatgaattaggtattccagaagatgaaactaagacaaggg
gtaagtttctactttttaacagaatccattacatggcaccaagcaatgaacctatggggtgaaca
tgaaattgattacatctattttataagatcaacgctaaagaaaacttgactgtcaacccaaac
gtcaatgaagttagagacttcaaattgggtttcaccaaatgatttgaaaactatgtttgctgacc
caagttacaagtttacgccttgggttaagattatttgcgagaattacttattcaactggtggga
gcaattagatgacctttctgaagtggaaaatgacaggcaaattcatagaatgctataacaacgc
gtcctgcagctggtaccatattgggaattcgaagctttctagaacaaaaactcatctcagaagag
gatctgaatagcgccgtcgaccatcatcatcatcattgagtttaacgggtctccagcttgg
ctgttttgccggatgagagaagattttcagcctgatacagattaaatcagaacgcagaagcgg
ctgataaaaacagaatttgctggcggcagtagcgcggtggtcccacctgaccccatgccgaact
cagaagtgaacgcctgtagcgccgatggtagtgtgggtctcccatgcgagagtagggaactg
ccaggcatcaaataaaacgaaaggctcagtcgaaagactgggcctttcgttttatctgttgttt
gtcgggtgaacgctctcctgagtaggacaaatccgcgggagcggatttgaacgttgcaagcaa
cgccccggagggtggcgggcaggacgcccgccataaactgccaggcatcaaattaagcagaagg
ccatcctgacggatggcctttttgcgtttctacaaactctttttgtttatttttctaaatacat
tcaaatatgtatccgcttaaccggaattgccagctggggcgccctctggttaagggttgggaagcc
ctgcaaagtaaactggatggctttctcgccgccaaggatctgatggcgaggggatcaagctct
gatcaagagacaggatgaggatcgtttcgcatgattgaacaagatggattgcacgcaggttctc
cgcccgcttgggtggagaggctattcggtatgactgggcacaacagacaatcggtgctctga
tgcgcgcgtgttccggctgtcagcgcaggggcgcccgttctttttgtcaagaccgacctgtcc
ggtgccctgaatgaactgcaagacgaggcagcgcggttatcgtggctggccacgacggcggttc
cttgccgagctgtgctgcagcttgtcactgaagcgggaagggaactggctgctattgggcgaagt
gcgggggcaggatctcctgtcatctcaccttgcctcctgccgagaaagtatccatcatggctgat

Figure 35C

gcaatgcggcggctgcatacgccttgatccggctacctgccattcgaccaccaagcgaaacatc
gcatcgagcgagcacgtactcggatggaagccggctcttgatcgatcaggatgatctggacgaaga
gcatcaggggctcgcgccagccgaactgttcgccagggtcaaggcgagcatgcccgacggcgag
gatctcgtcgtgacccatggcgatgctgcttgccgaatatcatgggtggaaaatggccgctttt
ctggattcatcgactgtggccggctgggtgtggcggaccgctatcaggacatagcgttggctac
ccgtgatattgctgaagagcttggcggcgaatgggctgaccgcttcctcgtgctttacggtatc
gccgctcccgatcgcagcgcacgccttctatcgccctcttgacgagttcttctgacatgacc
aaaatcccttaacgtgagttttcgttccactgagcgtcagaccccgtagaaaagatcaaaggat
cttcttgagalccttttttctgcgcgtaatctgctgcttgcaaacaaaaaaaccaccgctacc
agcgggtggtttgtttgccggatcaagagctaccaactctttttccgaaggtaactggcttcagc
agagcgcagataccaaatactgtccttctagtgtagccgtagttaggccaccacttcaagaact
ctgtagcaccgcctacataacctcgctctgctaattcctgttaccagtggctgctgccagtggcga
taagtctgtgtcttaccgggttggactcaagacgatagttaccggataaggcgcagcggctcgggc
tgaacgggggggttcgtgcacacagcccagcttggagcgaacgacctacaccgaactgagatacc
tacagcgtgagctatgagaaagcgccacgcttccgaaggagaaaggcggacagggtatccggt
aagcggcagggctcggaacaggagagcgcacgaggagcttccagggggaacgcctggtatctt
tatagtcctgtcgggtttcgccacctctgacttgagcgtcgatttttgtgatgctcgtcagggg
ggcggagcctatggaaaaacgccagcaacgcggcctttttacggttcttgcccttttctgctggc
ttttgctcacatgttctttctgcttatccctgattctgtggataaccgtattaccgccttt
gagtgagctgataccgctcgccgcagccgaacgaccgagcgcagcgagtcagtgagcgaggaag
cggaagagcgcctgatgcggtattttctccttacgcacctctgtgcggtatttcacaccgcatacg
gtgcactctcagtacaatctgctctgatgccgcatagttaagccagtatacactccgctatcgc
tacgtgaactgggtcatggctgcgccccgacacccgccaacacccgctgacgcgccctgacgggc
(SEQ ID NO:50)

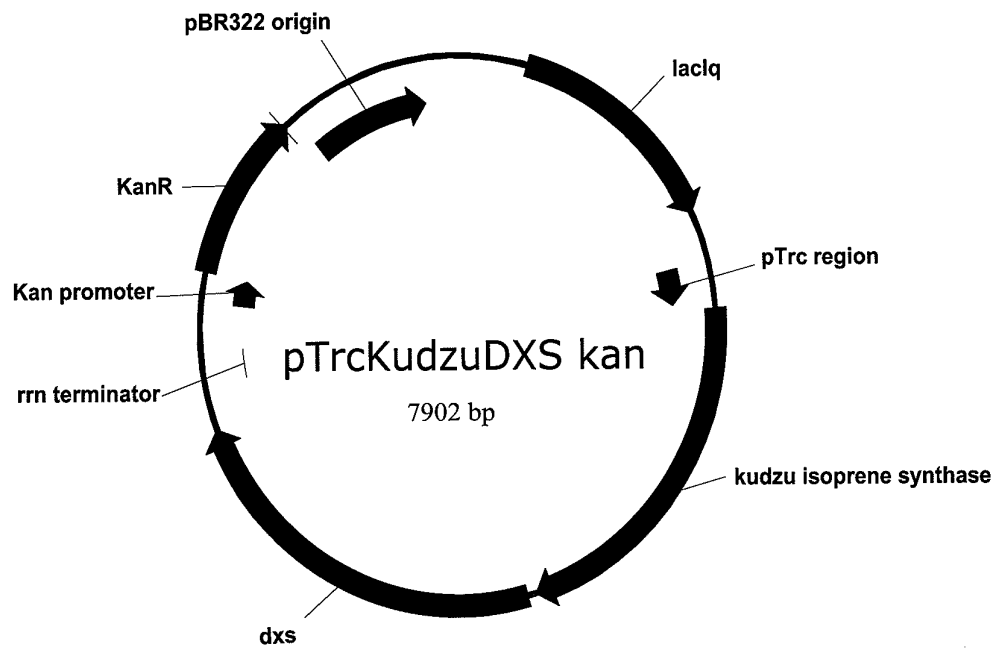
Figure 36

Figure 37A

5'-

ttgtctgtctcccgcatccgcttacagacaagctgtgaccgtctccgggagctgcatgtgtcag
aggttttcaccgatcatcaccgaaacgcgcgaggcagcagatcaattcgcgcgcgaaggcgaagc
ggcatgcatttacgttgacaccatcgaatgggtgcaaaacctttcgcggtatggcatgatagcgc
ccggaagagagtcattcagggtggtgaatgtgaaaccagtaacgttatacgtatgtcgcagagt
atgccggtgtctcttatcagaccgtttcccgcgtggtgaaccaggccagccacgtttctgcgaa
aacgcgggaaaaagtgaagcggcgatggcggagctgaattacattcccaaccgogtggcaca
caactggcgggcaaacagtcgttgctgattggcgttgccacctccagctctggccctgcacgcgc
cgtcgcaaatgtcgcggcgattaaatctcgcgcgatcaactgggtgccagcgtggtggtgtc
gatggtagaacgaagcggcgtcgaagcctgtaaagcggcgggtgcacaatcttctcgcgcaacgc
gtcagtgggctgatcattaactatccgctggatgaccaggatgccattgctgtggaagctgct
gcactaatgttccggcgttatttcttgatgtctctgaccagacacccatcaacagtattatttt
ctcccatgaagacggtagcgcgactggcgtggagcatctggtcgcattgggtcaccagcaaactc
gcgtgttagcgggcccattagttctgtctcggcgcgtctgcgtctggctggctggcataaat
atctcactcgcaatcaaattcagccgatagcggaaacgggaaggcgactggagtgccatgtccgg
ttttcaacaacccatgcaaatgctgaatgagggcatcgttcccactgcgatgctggttgccaac
gatcagatggcgtggcgcaatgcgcgccattaccgagtcggggtgcgcgttggtgcggata
tctcggtagtgggatacgcgataaccgaagacagctcatgttatatcccgcgtcaaccacat
caaacaggattttcgcctgctggggcaaacccagcgtggaccgcttgctgcaactctctcagggc
caggcgggtgaagggcaatcagctgttgccgtctcactggtgaaaagaaaaaccacctggcgc
ccaatacgcgaacccgctctcccgcgcgttgccgattcattaatgcagctggcacgcagcaggt
ttcccgactggaaagcgggcagtgagcgcacacgcaatgaatgtgagttagcgcgaattgatctg
gtttgacagcttatcatcgcactgcacgggtgcaccaatgcttctggcgtcaggcagccatcggaa
gotgtggtatggctgtgcaggtcgtaaatcactgcataattcgtgtcgtcaaggcgcactccc
gttctggataatgtttttgcccgcacatcataacgggttctggcaaatattctgaaatgagctg
ttgacaattaatcatccggctcgtataatgtgtggaattgtgagcggataacaatttcacacag
gaaacagcgcgcgtgagaaaaagcgaagcggcactgctctttaacaatttatcagacaatctgt
gtgggcactcgaaccggaattatcgattaaactttattattaaaaattaaagaggtatatattaat
gtatcgattaaataaggaggaataaacatgtgtgcgacctcttctcaatttactcagattacc
gagcataattcccgtcgttccgcaaacatcagccaaacctgtggaatttcgaattcctgcaat
ccctggagaacgcactgaaagtggaaaagctggaggagaaagcgaccaaactggagggaagaagt
tcgctgcatgatcaaccgtgtagacacccagccgctgtccctgctggagctgatcgaogatgtg
cagcgctgggtctgacctacaaatttgaaaaagacatcattaaagccctggaaaacatcgtac
tgctggacgaaaaacaaaaagaacaaatctgacctgcacgcaaccgctctgtctttccgtctgct
gcgtcagcacgggtttcagaggtttctcaggatgtttttgagcgtttcaaggataaagaagggtgg
ttcagcgggtgaactgaaaggtgacgtccaaggcctgctgagcctgtatgaagcgtottacctgg
gtttcagagggtgagaacctgctggaggaggcgcgtaccttttccatcaccacctgaagaacaa
cctgaaagaaggcattataaccaagggttcgagaacaagtgagccacgcctggaactgccatat
caccagcgtctgcacgcgtctggaggcacgttggttccctggataaatacgaaccgaaagaaccgc
atcaccagctgctgctggagctggcgaagctggattttaacatggtacagacctgcaccagaa
agagctgcaagatctgtcccgtggtggaccgagatgggcctggctagcaaacctggattttgta
cgcgaccgcctgatggaagtattttctgggcaactgggtatggcgccagaccgcagtttggtg
aatgtcgcaagctgttactaaaatgtttggtctggtgacgatcatcgatgacgtgtatgacgt
ttatggcactctggacgaactgcaactgttcaccgatgctgtagagcgtgggacgttaacgct

Figure 37B

attaacaccctgccggactatatgaaactgtgtttcctggcactgtacaacaccgttaacgaca
cgtcctattctattctgaaagagaaagggtcataacaacctgtcctatctgacgaaaagctggcg
tgaactgtgcaaagcctttctgcaagaggcgaaatgggtccaacaacaaaattatcccggcctttc
tccaagtacctggaaaacgccagcggtttcctcctccgggtgtagcgctgctggcgccgtcttact
ttccgtatgccagcagcaggaagacatctccgaccacgcgtgcgttccctgaccgaactcca
tggtctgggtgcgttctagctgcgttatcttcgcctgtgcaacgatctggccacctctgcccgcg
gagctggaacgtggcgagactaccaattctatcattagctacatgcacgaaaacgatggtacca
gcgaggaacaggcccgcgaagaactgcgtaaactgatcgacgccgaatggaaaaagatgaatcg
tgaacgcgttagcgactccacctgctgcctaaagcggtcatggaaatcgcagttaacatggca
cgtgtttccactgcacctaccagtatggcgatgggtctgggtcgcccagactacgcgactgaaa
accgcatcaaaactgctgctgattgacctttcccgattaccagctgatgtatgtctaactgca
ttcgcccttaggaggtaaaaaaacatgagttttgatattgcaaatacccgacctggcactgg
tcgactccaccaggagttacgactgttgccgaaagagagtttacgaaaactctgcgacgaact
gcgcgctatttactcgacagcgtgagccgttccagcgggcacttcgcctccgggctgggcacg
gtcgaactgaccgtggcgctgcaactatgtctacaacaccccggttgaccaattgatttgggatg
tggggcatcaggcttatccgcataaaaattttgaccggacgcgcgacaaaatcggcaccatccg
tcagaaaggcggctctgcacccgttcccggtggcgccgcgaaagcgaatatgacgtattaagcgtc
gggcattcatcaacctccatcagtgccggaattgggtattgcggttgctgccgaaaaagaaggca
aaaatcgccgcacccgtctgtgtcattggcgatggcgcgattaccgcaggcatggcggtttgaagc
gatgaatcaocggggcgatatccgtcctgatatgctggtgattctcaacgacaatgaaatgtcg
atttccgaaaatgtcggcgcgctcaacaacatctggcacagctgctttccggtaagctttact
cttactgcgcgaaggcgggaaaaaaagttttctctggcgtgcgcgcaattaaagagctgctcaa
acgcaccgaagaacatattaaaggcatggtagtgctggcacgttggttgaaagagctgggcttt
aactacatcggcccgggtggacggtcacgatgtgctggggcttatcaccacgctaagaacatgc
gcgacctgaaaggcccgagttcctgcataatcatgacaaaaaagggtcggtgttatgaaccggc
agaaaaagacccgatcactttccacgcctgtgcctaaatttgatccctccagcgggtgtttgccc
aaaagtagcggcggtttgcccagctattcaaaaatctttggcgactgggtgtgcaaacggcag
cgaaagacaacaagctgatggcgattactccggcgatgcgtgaagggtccggcatggctcgagtt
ttcacgtaaatcccggtatcgctacttcgacgtggcaattgccgagcaacacgcgggtgacctt
gctgcgggtctggcgattgggtgggtacaaacccattgtcgcgatttactccactttcctgcaac
gcgcctatgatcagggtgctgcatgacgtggcgattcaaaagcttccggctcctgttcgccatcga
ccgcgcgggcattgttgggtgctgacggtcaaacccatcagggtgcttttgatctctcttaacctg
cgctgcataccggaaatgggtcattatgaccccgagcgatgaaaacgaatgtcgccagatgctct
ataccggctatcactataacgatggcccgctcagcgggtgcgtaccgcggtggcaacgcggtcgg
cgtggaactgacgcgcgtggaaaaactaccaattggcaaaggcattgtgaagcgtcgtggcgag
aaactggcgatccttaactttggtacgctgatgccagaagcggcgaaagtcgccgaatcgctga
acgccacgctggctgatatgcgttttgtgaaacgcgttgatgaagcgttaattctggaaatggc
cgccagccatgaagcgctgggtcaccgtagaagaaaaacgccattatggygcggcgaggcagcggc
gtgaacgaagtgtgatggcccatcgtaaacagtaaccgtgctgaacattggcctgccggact
tctttattccgcaaggaaactcaggaagaaatgcgcgcgcaactcggcctcgatgcgcgtggat
ggaagccaaaatcaaggcctggctggcataactgcagctgggtaccatattgggaattcgaagctt
tctagaacaaaaactcatctcagaagaggatctgaatagcgcgctcgaccatcatcatcatcat
cattgagtttaaacgggtctccagcttggctgttttggcggtgagagaagattttcagcctgat
acagattaaatcagaacgcagaagcggctctgataaaacagaatttgccctggcggcagtagcgcg

Figure 37C

gtggtccacactgaccccatgccgaactcagaagtgaacgcccgtagcgccgatggtagtggtg
ggtctcccatgagagtagggaactgccaggcatcaaataaaacgaaaggctcagtcgaaag
actgggcctttcggttttatctgtgtttgtcgggtgaacgctctcctgagtaggacaaatccgcc
gggagcggatttgaacggttgcgaagcaacggcccgagggtggcgggcaggacgcccgcataa
actgccaggcatcaaattaagcagaaggccatcctgacggatggcctttttgcgtttctacaaa
ctctttttgtttatttttctaaatacattcaaataatgtatccgcttaaccggaattgccagctg
ggcgccctctgttaagggttgggaagccctgcaaagtaaaactggatggctttctcgccgccaag
gatctgatggcgaggggatcaagctctgatcaagagacaggatgaggatcggttcgcatgatt
gaacaagatggattgcacgcaggttctccggccgcttgggtggagaggctattcggctatgact
gggcacaacagacaatcggtgctctgatgccgcccgtgttcgggtgtcagcgcagggggcgccc
ggttctttttgtcaagaccgacctgtccgggtgccctgaatgaactgcaagacgaggcagcgcg
ctatcggtggctggccacgacgggcttccctggcgagctgtgctcgacgttgtcactgaagcgg
gaagggaactggctgctatttgggcgaagtgccggggcaggatctcctgtcatctcaccttgctcc
tgccgagaaagtatccatcatggctgatgcaatgcggcggtgtcatacgtttgatccggctacc
tgcccatcgaccaccaagcgaacatcgcatcgagcgagcactcggtatggaagccgggtc
ttgtcgatcaggatgatctggaagagacatcaggggctcgcgccagccgaactgttcgccag
gctcaaggcgagcatgccgcagggcgaggatctcgtcgtgacccatggcgatgcctgcttgccg
aatatcatggtggaaaatggccgcttttctggattcatcgactgtggccggctgggtgtggcgg
accgctatcaggacatagcggttggctaccgctgatattgctgaagagcttggcgccgaatgggc
tgaccgcttccctgctgctttacgggtatcgccgctcccgattcgacgcgcatcgcttctatcgc
cttcttgacgagttcttctgacgcgatgacaaaaatcccttaacgtgagttttcggtccactgag
cgtcagaccccgtagaaaaagatcaaaggatcttcttgagatcctttttttctgcgcgtaatctg
ctgcttgcaaacaaaaaaaccaccgctaccagcgggtggtttgttggccggatcaagagctacca
actctttttccgaaggtaactggcttcagcagagcgagataccaaataactgtccttctagtgt
agccgtagttaggccaccacttcaagaactctgtagcaccgcctacatacctcgctctgcta
cctgttaccagtggctgctgccagtggcgataagtgcgtgtcttaccgggttggactcaagacga
tagttaccggataaggcgacagcggtcgggctgaacggggggttcgtgcacacagcccagcttg
agcgaacgacctacaccgaactgagatacctacagcgtgagctatgagaaagcgccacgcttcc
cgaaggggagaaaaggcggacaggtatccggtaagcggcagggtcggaacaggagagcgcacgagg
gagcttccagggggaaaacgcctggtatctttatagtcctgtcgggtttogccacctctgacttg
agcgtcgatttttgtgatgctcgtcagggggcgaggacctatggaaaaacgccagcaacgcggc
ctttttacggttccctggccttttgcgtggccttttgcctcacatgttcttctcgttatccct
gattctgtggataaccgtattaccgcctttgagtgaactgataccgctcgccgcagccgaacga
ccgagcgcagcgagtcagtgagcgagggaagcgggaagagcgccctgatgoggatattttctccttac
gcatctgtgoggatatttcacaccgcatatgggtgcaactctcagtacaatctgctctgatgccga
tagttaagccagtatatactccgctatcgctacgtgactgggtcatggctgcgccccgacacc
gccaacacccgctgacgcgcctgacgggc

(SEQ ID NO:51)

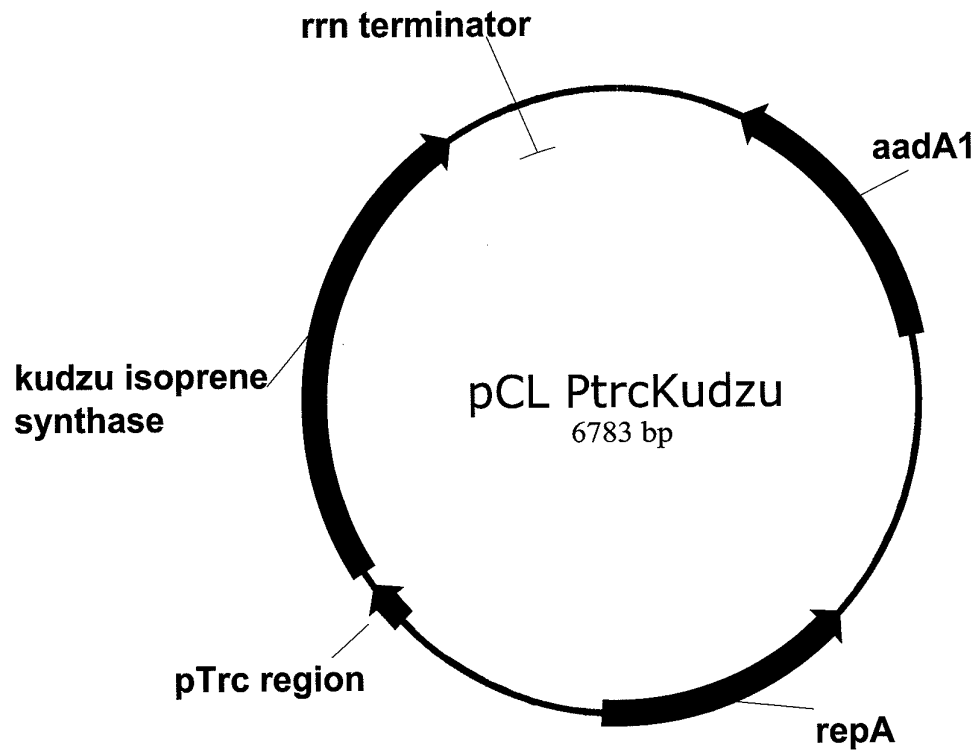
Figure 38

Figure 39A

5' -

ctggcgtaatagcgaagaggcccgcccgatcgcccttcccaacagttgcgagcctgaatggc
gaatggcgccctgatgcggtatcttctccttacgcacatctgtgcggtatctcacaccgcacatggg
gcactctcagtacaatctgctctgatgcgcgcatagtttaagccagccccgacccccgccaacacc
cgctgacgagcttagtaaaagccctcgctagatctttaaagcggtggtgagcattacttcgccaac
tattgcgataacaagaaaaagccagcctttcatgatatacttccaatttgtgtagggttatt
atgcacgcttaaaaaataaaaaagcagacttgacctgatagtttggtgtgagcaattatgtgc
ttagtgcatctaacgcttgagtttaagccgcgcgcgaagcggtcggttgaaacgaattgtta
gacattatcttgcgactaccttgggtgatctgcctttcacgtagtggaacaaattcttccaactg
atctgcgcgcgagggccaagcgatcttcttcttgtccaagataagcctgtctagcttcaagtatg
acgggctgatactgggcccgcagggcctccattgccagtcggcagcgacatccttcggcgcgga
ttttgcgggttactgcgctgtaccaaagcggggacaacgtaagcactacatttcgctcatcgcc
agcccagtcggggcggcgagttccatagcggttaaggttccatttagcgccctcaaatagatcctgt
tcaggaacgggatcaaagagttcctccgcgcgtggacctaccaaggcaacgctatgttctcttg
cttttgtcagcaagatagccagatcaatgtcgatcggtggctggaagatacctgcaagaat
gtcattgcgctgccattctccaaattgcagttcgcgcttagctggataacgccacgggaatgatg
tcgtcggtgcacaacaatgggtgacttctacagcgcgagagaatctcgctctctccaggggaagccg
aagtttccaaaaggtcggtgatcaaagctcgccgcgttgtttcatcaagccttacggtcaccgt
aaccagcaaatcaatatcactgtgtggttcaggccgcctccactgcggagccgtacaaatgt
acggccagcaacgtcggttcgagatggcgctcgatgacgccaactacctctgatagttgagtcg
atacttcggcgatcacgccttccctcatgatgtttaactttgttttagggcgactgccctgctg
cgtaacatcggttgcgtctccataacatcaaacatcgacccacggcgtaacgcgcttgcgtgcttg
gatgcccgggcatagactgtacccccaaaaaacagtcataacaagccatgaaaaacggccactg
cgccgttaccacgcgtgcgttcggtcaaggttctggaccagttgcgtgagcgcatacgctactt
gcattacagcttacgaaccgaacaggccttatgtccaactgggttcgtgccttcatccgtttccac
ggtgtgcgtcaccgcggaacacctgggagcagcgaagtcgaggcatttctgtcctggctggcga
acgagcgcaaggtttcggtctccacgcctcgtcaggcattggcgcccttgcgttcttctacgg
caaggtgctgtgcacggatctgcctggcttcaggagatcggaagacctcgccgctcgccggcg
ttgcccgtggtgctgaccccggtgaagtgggttcgcatcctcggttttctggaaggcgagcatc
gtttgttcgccagcttctgtatggaacgggcacgagatcagtgagggtttgcaactgcgggt
caaggatctggatttcgatcacggcacgatcatcgtgcgggaggggcaagggtccaaggatcgg
gccttgatgttacccgagagcttggcaccagcctgcgcgagcaggggaatttaattcccacggg
ttttgctgcccgcaaacgggctgttctggtgttgctagttgttatcagaatcgagatccggc
ttcagccggtttgcggctgaaagcgctatttcttccagaattgccatgattttttcccacgg
gaggcgtcactggctcccggtgttgcggcagctttgattcgataagcagcatcgccgtgttcag
gctgtctatgtgtgactgttgagctgtaacaagttgtctcaggtgttcaatttcattgttctagt
tgctttgttttactgggttccacctgttctattagggtgttacatgctgttcatctgttacattgt
cgatctgttcatggtgaacagctttgaatgcacaaaaactcgtaaaagctctgatgtatctat
cttttttacaccggttttcatctgtgcataatggacagttttccctttgatatgtaacgggtgaaca
gttgttctacttttgtttgttagtcttgatgcttcaactgatagatacaagagccataagaacct
cagatccttccgtatttagccagtatgttctctagtgtggttcgttgttttgcgtgagccatg
agaacgaaccattgagatcatacttactttgcagtgctactcaaaaattttgcctcaaaaactggt
gagctgaatttttgcagttaaagcatcggtgtagtgtttttcttagtccgttatgtaggtaggaa
tctgatgtaatggttgttgggtattttgtcaccattcatttttatctggttgttctcaagttcgg

Figure 39B

ttacgagatccatttgtctatctagttcaacttggaatcaacgtatcagtcgggcgccctcg
cttatcaaccaccaatttcatattgctgtaagtgtttaaatctttacttattggtttcaaaacc
cattgggttaagccttttaactcatggtagttattttcaagcattaacatgaacttaattcat
caaggctaattctctataatttgccttgtgagttttcttttgtgttagttcttttaataaccactc
ataaatcctcatagagtatttgttttcaaaagacttaacatgttccagattatattttatgaat
ttttttaactggaaaagataaggcaatatctctcactaaaaactaattctaatttttcgcttg
agaacttggcatagtttgtccactggaaaatctcaaagcctttaaccaaggattcctgatttc
cacagttctcgtcatcagctctctggttgcttttagctaatacaccataagcattttccctactg
atgttcatcatctgagcgtattgggtataagtgaacgataccgtccgttctttccttgtaggtt
tttcaatcgtggggttgagtagtgccacacagcataaaaattagcttggtttcatgctccgttaa
gtcatagcgactaatcgctagttcatttgctttgaaaacaactaattcagacatacatctcaat
tggctaggtgattttaatcactataccaattgagatgggctagtcaatgataattactagtcc
ttttcctttgagttgtgggtatctgtaaatctgctagaccttggctggaaaacttgtaaatc
tgctagacctctgtaaatccgctagaccttgggtgtttttttgtttatattcaagtgggt
ataatttatagaataaagaaagaataaaaaaagataaaaaagaatagatcccagccctgtgtata
actcactacttttagtcagttccgcagttattacaaaaggatgtcgcaaacgctgtttgctcctct
acaaaacagaccttaaaaccctaaaggcttaagtagcacccctcgcaagctcgggcaaatcgctg
aatattccttttgtctccgacctcaggcacctgagtcgctgtcttttctgtgacattcagttc
gctgcgctgaacggtctggcagtgaaatgggggttaattggcactacaggcgcttttatggattc
atgcaaggaaactaccataatacaagaaaagccgctcacgggcttctcagggcggttttatggc
gggtctgctatgtgggtgctatctgacttttggctgttcagcagttcctgacctctgattttcca
gtctgaccttccgatttatcccggtgacaggtcattcagactggctaattgcaccagtaaggca
gcggtatcatcaacagggttaccogtcttaactgtcgggaattcgcggttgccgattcattaatg
cagattctgaaatgagctgttgacaattaatcatccggctcgataaatgtgtggaattgtgagc
ggataacaatttcacacaggaaacagcgccgctgagaaaaagcgaagcggcactgctcttaac
aatttatcagacaatctgtgtgggactcgaccggaattatcgatttaactttattattaaaaat
taaagaggtatataattaatgtatcgattaaataaggaggaataaaaccatgtgtgacacctctc
tcaatttactcagattaccgagcataattcccgctcgttccgcaactatcagccaaacctgtgg
aatttcgaattcctgcaatccctggagaacgacctgaaagtggaaaagctggaggagaaagcga
ccaaactggaggaagaagttcgctgcatgatcaaccgtgtagacaccagccgctgtccctgct
ggagctgatcgacgatgtgcagcgccctgggtctgacctacaaatttgaaaaagacatcattaaa
gccttgaaaaacatcgtaactgttgacgaaaacaaaaagaacaaatctgacctgcacgcaaccg
ctctgtctttccgtctgtgctgagcagcgtttcgagggtttctcaggatgtttttgagcgttt
caaggataaagaaggtgggttcagcgggtgaactgaaaggtgacgtccaaggcctgctgagcctg
tatgaagcgtcttacctgggtttcgaggggtgagaacctgctggaggaggcgctaccttttcca
tcaccacacctgaagaacaacctgaaagaaggcattaataccaaggttgacagaacaagtgaacca
cgccctggaaactgccatatcaccagcgtctgcacctgctggaggcacgttggttcctggataaa
tacgaaccgaaagaaccgcatcaccagctgctgctggagctggcgaaagctggattttaacatgg
tacagaccctgcaccagaaagagctgcaagatctgtcccgctgggtggaccgagatgggctggc
tagcaaaactggattttgtacgcgacctgctgatggaagtttattttctgggactgggtatggcg
ccagaccgcgagtttgggtgaatgtcgcaagctgttactaaaatgtttggctgtggtgacgatca
tcgatgacgtgtatgacgtttatggcactctggacgaaactgcaactgttcaccgatgctgtaga
gcgctgggacgttaacgctattaacaccctgccggactatatgaaactgtgtttcctggcactg
tacaacaccgttaacgacacgtcctattctattctgaaagagaaaggtcataacaacctgtcct

Figure 39C

atctgacgaaaagctggcggtgaactgtgcaaagcctttctgcaagaggcgaaatgggtccaacaa
caaaattatcccggcttttctccaagtacctggaaaacgccagcgtttctcctccgggtgtagcg
ctgctggcgccgtcttacttttccgtatgccagcagcaggaagacatctccgaccacgcgctgc
gttccctgaccgacttccatgggtctgggtgcttctagctgcgttatcttccgcctgtgcaacga
tctggccacctctgcggcggagctggaacgtggcgagactaccaattctatcattagctacatg
cacgaaaacgatggtaccagcgaggaacaggcccgcgaagaactgcgtaaactgatcgacgccg
aatggaaaaagatgaatcgtgaacgcgttagcgactccaccctgctgcctaaagcgttcatgga
aatcgcgagttaacatggcacgtgtttcccactgcacctaccagtatggcgatgggtctgggtcgc
ccagactacgcgactgaaaaccgcacaaactgctgctgattgaccctttcccgattaaccagc
tgatgtatgtctaactgcagctgggtaccatattgggaattcgaagctttctagaacaaaaactca
tctcagaagaggatctgaatagcgccgtcgaccatcatcatcatcattgagtttaaacggt
ctccagcttgggtgttttggcggatgagagaagattttcagcctgatacagattaaatcagaac
gcagaagcgggtctgataaaacagaatttgccctggcggcagtagcgcggtgggtcccacctgacc
catgccgaactcagaagtgaacgcgcgtagcgccgatggtagtgtgggtctcccatgcgaga
gtagggaactgccaggcatcaaataaaacgaaaggctcagtcgaaagactgggcctttcgttt
atctgttgtttgtcggtgaacgctctcctgagtaggacaaatccgcggggagcggatttgaacg
ttgcgaagcaacggcccgagggtggcgggcaggacgcccgcataaaactgccaggcatcaaat
taagcagaaggccatcctgacggatggcctttttgctttctacaaactcttttgtttat
tctaaatacattcaaatatgtatccgctcatgagacaataaccctgataaatgcttcaataat
(SEQ ID NO:52)

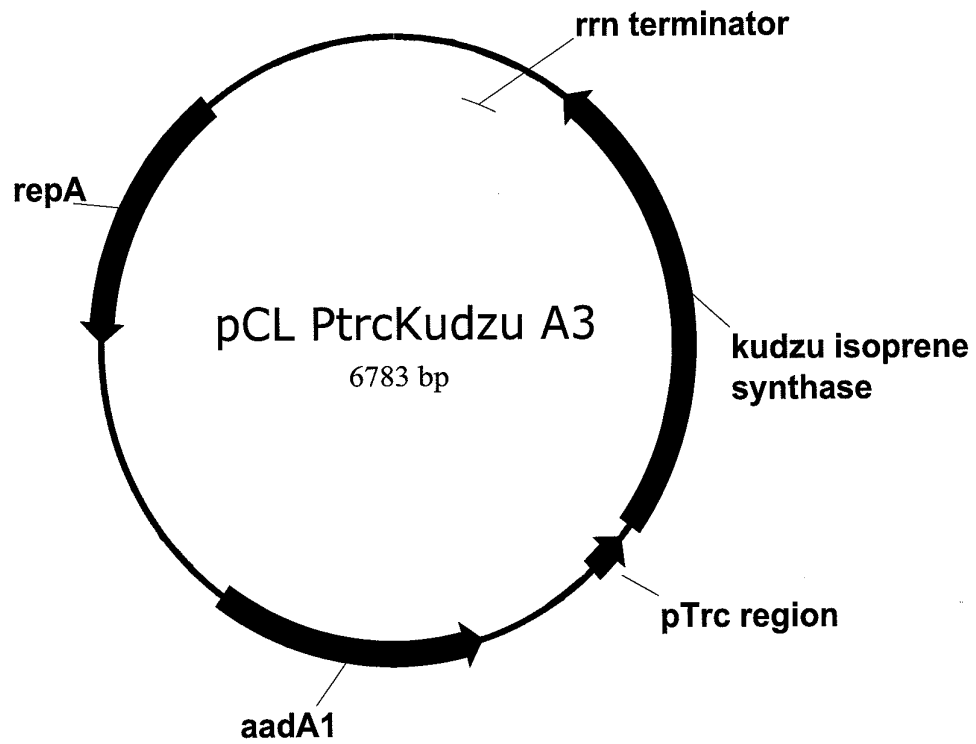
Figure 40

Figure 41A

5' -

cccgtcttactgtcgggaattcgcggttgcccgattcattaatgcagattattgaagcatttatc
agggttattgtctcatgagcggatacatatttgaatgtatttagaaaaataaacaagaggtt
tgtagaaacgcaaaaaggccatccgtcaggatggccttctgcttaatttgatgcctggcagttt
atggcggggtcctgcccgcacccctccggggcgttgcttcgcaacgttcaaatccgctcccg
cggatttgtcctactcaggagagcgttcaccgacaaacaacagataaaacgaaaggccagctc
ttcgactgagcctttcgttttatttgatgcctggcagttccctactctcgcatggggagacccc
acactaccatcggcgctacggcggttccacttctgagttcggcatggggtcagggtgggaccaccg
cgctactgcgcgccaggcaaatctgttttatcagaccgcttctgcgttctgatttaatctgtat
caggctgaaaaatcttctctcatccgcaaaacagccaagctggagaccgtttaaactcaatgat
gatgatgatgatggtcgacggcgctattcagatcctctctgagatgagttttgttctagaaa
gcttcgaattcccatatggtaccagctgcagttagacatacatcagctggttaatcgggaaagg
gtcaatcagcagcagtttgatgcgggttttcagtcgcgtagtctgggagaccagaccatcgcca
tactggtaggtgcagtgaggaaacagtgccatgttaactgcgatttccatgaacgctttaggca
gcagggtggagtcgctaacgcgttcacgattcatcttttccattcggcgctcgatcagtttacg
cagttcttcgcggggtgttccctcgctggtaccatcggttttcgtgcagtagctaatgatagaa
ttggtagctctcgccacgttccagctccgcgcagaggtggccagatcgttgcacaggcggaga
taacgcagctagaacgcaccagaccatggaagtgcgtcagggaacgcagcgcgtggtcggagat
gtcttcctgctgctggcatacggaaaagtaagacggcgccagcagcgtacaccggaggaggaa
acgctggcggttttccaggtacttgagaaagccgggataattttgttggtagaccatttcgcct
cttcgcaaaaggctttgcacagttcacgccagcttttcgtcagataggacagggtgttatgacc
tttctctttcagaatagaataggacgtgtcgttaacgggtgttgtagcagtgccaggaaacacagt
ttcatatagtcgggcagggtgttaataagcgttaacgtcccagcgtctacagcatcggtgaaca
gttcgagttcgtccagagtgccataaacgtcatacacgtcatcgatgatcgtcaccagaccaaa
catttttagtaacagctttgcgacattcaccaaactgcgggtctggcgccatacccagtgcccag
aaataaaacttccatcaggcgggtcgcgtacaaaatccagtttgctagccaggcccatctcggtcc
accagcgggacagatccttcagctctttctggtgcagggtctgtaccatgttaaaatccagctt
cgccagctccagcagcagctggtgatgcgggttctttcgggttcgtatttatccaggaaccaacgt
gcctccagacgggtgcagacgctggtgatatggcagttccaggcggtggctcacttgttctgcaa
ccttggtattaatgccttctttcaggttggttcttcaggtgggtgatggaaaagggtacgcgcctc
ctccagcaggttctcaccctcgaaacccaggttaagacgcttcatacaggtcagcaggccttgg
acgtcacctttcagttcacgcgtgaaaccaccttctttatccttgaaacgctcaaaaacatcct
gagaaacctcgaaacgggtgctgacgcagcagacggaaagacagagcgggtgcgtgcaggtcaga
tttggtctttttgttttcgtccagcagtagatgttttccagggtttaatgatgtctttttca
aatttgtaggtcagaccaggcgtgcacatcgctcgatcagctccagcagggaacagcggctggg
tgtctacacgggtgatcatgcagcgaacttcttccctccagtttggtcgctttctcctccagctt
ttccactttcagggtcggttctccagggttgaggaaattcgaaattccacaggtttggctgatag
tttgcggaacgacgggaattatgctcggtaactctgagtaaattgagaagaggtcgcacacatgg
tttatctctccttatttaatcgatacattaataataacotctttaatttttaataataaagtta
atcgataattccgggtcgagtgcacacacagattgtctgataaattgttaaagagcagtgccgct
tcgctttttctcagcggcgctgtttcctgtgtgaaattgttatccgctcacaattccacacatt
atacgagccggatgattaattgtcaacagctcatttcagaatctggcgtaataagcgaagaggcc
cgcaccgatcgcccttcccaacagttgcgcagcctgaatggcgaatggcgctgatgcggtatt
ttctccttacgcacatctgtgcgggtatttcacaccgcacatggtgcactctcagtacaatctgctc

Figure 41B

tgatgccgcatagttaagccagccccgacacccgccaaacacccgctgacgagcttagtaaagcc
ctcgctagatTTTTAATgCGGATgTtgcgattacttcGCCAACTATTgCGATAACAAGAAAAAGC
cagcctttcatgatataTctcccaatttTgtgtagggcttattatgcacgcttaaaaaataataaa
agcagacttgacctgatagttTggctgtgagcaattatgtgcttagtgcatctaacgcttgagt
taagccgcgcgcgaagcggcgctcggttgaacgaattgttagacattatttgccgactacctt
ggtgatctcgctttcacgtagtggaacaaattcttccaactgatctgcgcgcgaggccaagcga
tcttcttcttTgtccaagataagcctgtctagcttcaagtatgacgggctgatactgggcggga
ggcgctccattgccagtcggcagcgacatccttcggcgcgattttgccggttactgcgctgta
ccaaatgccgggacaacgtaagcactacatttcgctcatcgccagcccagtcgggcggcgagttc
catagcgTTAAGGTTTcatttagcgctcaaatagatcctgttcaggaaaccggatcaaagagtt
cctcgcgcgctggacctaccaaggcaacgctatgttctcttTgtcagcaagatagccag
atcaatgtcgatcgtggctggctcgaagatacctgcaagaatgtcattgcgctgccatttcca
aattgcagttcgcgcttagctggataacgccacgggaatgatgtcgtcgtgcacacaatgggtga
cttctacagcgcgagaaTctcgtctctccaggggaagccgaagtttccaaaagggtcgTTgat
caaagctcgcgcgctTgtttcatcaagccttacgggtcacgtaaccagcaaatcaatatcactg
tgtggcttcaggccgccatccactgcggagccgtacaaatgtacggccagcaacgctcggttcga
gatggcgctcgatgacgccaaactacctctgatagttgagtcgatacttcggcgatcacgcgttc
cctcatgatgtttaactttgttttagggcgactgccctgctgcgtaacatcgTTgctgctccat
aacatcaaacatcgacccacggcgtaacgcgcttgctgcttggtgcccagggcatagactgta
ccccaaaaaacagtcataaCaagccatgaaaaccgCCactgcgcggttaccaccgctgcgttc
ggtcaagggttctggaccagttgcgtgagcgcatacgctacttgCattacagcttacgaaccgaa
caggcttatgtccactgggttcgtgcttcatcggtttccacgggtgtgcgtcacccggcaacct
tgggcagcagcgaagtcgaggcatttctgtcctggctggcgaacgagcgcaaggtttcggtctc
cacgcatacgtcaggcatttggcggccttgctgttcttctacggcaaggtgctgtgcacggatctg
ccctggcttcaggagatcggaagacctcggcgctcgcgcgcttgccgggtggtgctgaccccg
atgaagtggTtcgcatcctcggtttctggaaggcgagcatcgTTTgttcgcccagcttctgta
tggaacgggcatgcggatcagtgagggtttgcaactgcgggtcaaggatctggatttcgatcac
ggcacgatcatcgTgcgggagggcaagggtccaaggatcgggccttgatgttacccgagagct
tggaacccagcctgcgcgagcaggggaattaattcccacgggtttTgtgcccgcGaaacgggct
gttctggTgttgctagttttgttatcagaatcgcatccggcttcagccggtttgcggctgaa
agcgctatttcttccagaattgccatgatttttcccacgggagggcgtcactggctcccggtgt
tgtcggcagctttgatTCgataagcagcatcgctgtttcaggctgtctatgtgtgactgttga
gctgtaacaagttgtctcaggTgttcaatttcatgttctagttgctttgttttactggttcac
ctgttctattaggtgttacatgctgttcatctgttacattgtcgatctgttcatgggtgaacagc
tttgaatgcacaaaaactcgtaaaagctctgatgtatctatcttttttacaccggttttcatct
gtgcataTggacagttttccctttgatatgtaacgggtgaacagttgttctacttttgtttgtta
gtcttgatgcttcactgatagatacaagagccataagaacctcagatccttcggtatttagcca
gtatgttctctagtgtggTtcgttgttttgcgtgagccatgagaacgaaccattgagatcata
cttactttgcatgtcactcaaaaattttgcctcaaaactggtyagctgaatttttgagttaaa
gcacgtgtgtagtgttttcttagtccgttatgtaggttaggaatctgatgtaatggTtggttgta
ttttgtcaccattcatttttatctggTtggtctcaagttcgggttacgagatccatttgtctatc
tagttcaacttggaataacgatatcagtcgggcggcctcgcttatcaaccaccaatttcata
ttgctgtaagtgtttaaatctttacttattggTttcaaaaccattggTtaagccttttaact
catggtagttattttcaagcattaacatgaacttaattcatcaaggctaattctctatatttgc

Figure 41C

cttgtgagttttcttttgtgttagttcttttaataaccactcataaatcctcatagagtatttg
ttttcaaaagacttaacatgttccagattatattttatgaatttttttaactggaaaagataag
gcaatatctcttcactaaaaactaattctaatttttcgcttgagaacttggcatagtttgtcca
ctggaaaatctcaaagcctttaaccaaaggattcctgatttccacagttctcgatcatcagctct
ctggttgcttttagctaatacaccataagcattttccctactgatgttcatcatctgagcgtatt
ggttataagtgaacgataaccgtccgttctttcctttaggggtttcaatcgtggggttgagtag
tgccacacagcataaaattagcttggtttcatgctccgttaagtcatagcgactaatcgctagt
tcatttgctttgaaaacaactaattcagacatacatctcaattgggtctaggtgattttaatcac
tataccaattgagatgggctagtcaatgataattactagtccttttcctttgagttgtgggtat
ctgtaaattctgctagacctttgctggaaaacttgtaaattctgctagacctctgtaaattcc
gctagacctttgtgtgtttttttgtttataattcaagtgggtataatttatagaataaagaaag
aataaaaaaagataaaaaagaatagatcccagccctgtgtataactcactactttagtcagttcc
gcagtattacaaaaggatgtcgcaaacgctgtttgctcctctacaaaacagaccttaaaacct
aaaggcttaagtagcacacctcgcaagctcgggcaaatcgtgaatattccttttgtctcggacc
atcaggcacctgagtcgctgtctttttcgtgacattcagttcgtcgctcacggctctggcag
tgaatgggggtaaatggcactacaggcgcttttatggattcatgcaaggaaactaccataat
acaagaaaagcccgtcacgggcttctcagggcggttttatggcggtctgctatgtggtgctatc
tgactttttgctgttcagcagttcctgccctctgattttccagtcctgaccacttcggattatcc
cgtgacaggtcattcagactggctaatagcacccagtaaggcagcggtatcatcaacaggctta
(SEQ ID NO:53)

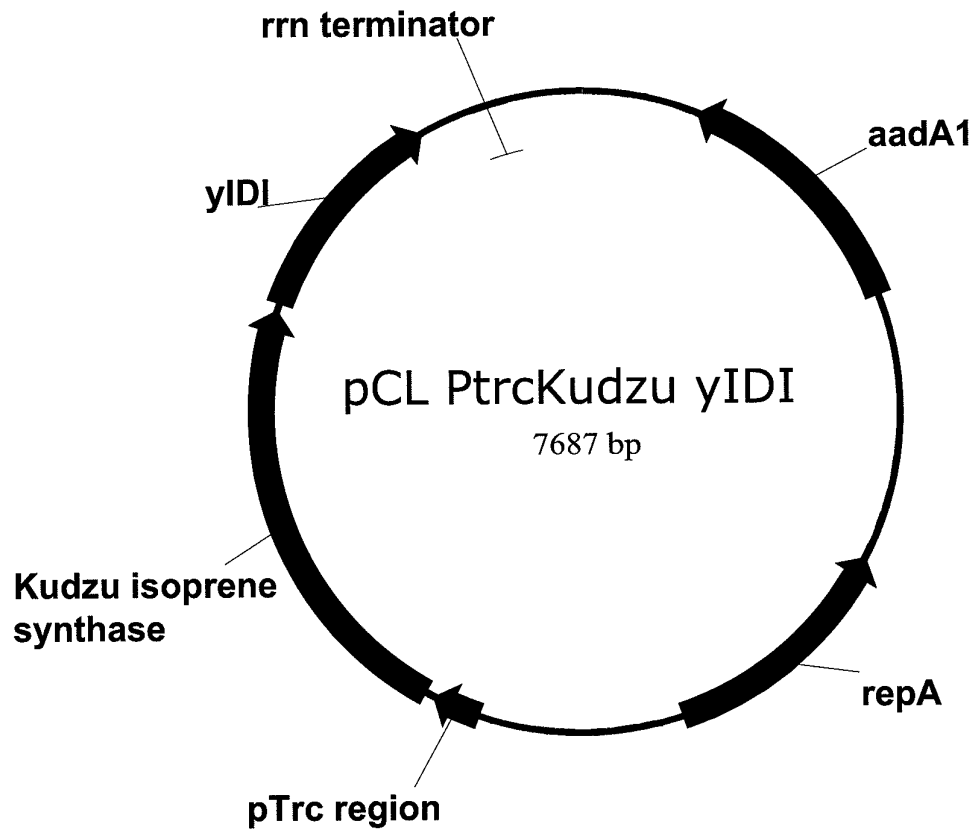
Figure 42

Figure 43A

5' -

ctggcgtaatagcgaagaggcccgacccgatcgcccttcccaacagttgcgagcctgaatggc
gaatggcgccctgatgcggtatcttctccttacgcacatctgtgcggtatctcacaccgcatatggt
gcactctcagtaacaatctgctctgatgccgcatagtttaagccagccccgacaccgccaacacc
cgctgacgagcttagtaaaagccctcgctagattttaatgcggatggtgcgattacttcgccaac
tattgcgataacaagaaaaagccagcctttcatgataatctcccaatttggtgtagggcttatt
atgcacgcttaaaaaataataaaagcagacttgacctgatagtttggctgtgagcaattatgtgc
ttagtgcatctaacgcttgagtttaagccgcgcgcggaagcggcgctcggttgaaacgaattgtta
gacattatcttgccgactaccttggtgatctcgcccttcacgtagtggaacaaattcttccaactg
atctgcgcgcgagggccaagcgatcttcttcttgtccaagataagcctgtctagcttcaagtatg
acgggctgatactgggcccggcaggcgctccattgccagtcggcagcgacatccttcgggcgcga
ttttgcccgttactgcgctgtaccaaatgcccggacaacgtaagcaactacatttcgctcatcgcc
agcccagtcgggcccgcgagttccatagcggttaagggtttcatttagcgccctcaaatagatcctgt
tcaggaaccggatcaaagagttcctccgcgcgtggacctaccaaggcaacgctatgttctcttg
cttttgtcagcaagatagccagatcaatgtcgatcggtggctggctcgaagatacctgcaagaat
gtcattgcgctgccattctccaaattgcagttcgcgcttagctggataacgccacggaatgatg
tcgtcggtgcacaacaatgggtgacttctacagcgcggaagaatctcgctctctccagggggaagccg
aagtttccaaaaggctcggtgatcaaagctcgccgcgttggttcatcaagccttacgggtcacggt
aaccagcaaatcaatatcactgtgtggttcaggccgcctccactgcggagccgtacaaatgt
acggccagcaacgtcggttcgagatggcgctcgatgacgccaaactacctctgatagttgagtcg
atacttcggcgatcacgcttccctcatgatgtttaactttgttttagggcgactgcctgctg
cgtaacatcggttgctgctccataacatcaaacatcgacccacggcgtaacgcgcttgctgcttg
gatgcccgaggcatagactgtacccccaaaaaacagtcataacaagccatgaaaaccgccactg
cgccgttaccaccgctgcgttcgggtcaagggtctggaccagttgcgtgagcgcatacgctactt
gcattacagcttacgaaccgaacaggcttatgtccactgggttcgtgccttcacccgtttccac
gggtgtcgctcaccgcggcaaccttgggcagcagcgaagtcgaggcatcttctgtcctggctggcga
acgagcgcaagggttcgggtctccacgcacgtcgtcaggcattggcgcccttgctgttctctacgg
caagggtgctgtgcacggatctgcccgtggttcaggagatcggaagacctcgccgctcgccgcgc
ttgcccgttggtgctgacccggatgaagtgggttcgcatcctcggttttctggaaggcgagcacc
gtttgttcgcccagcttctgtatggaacgggcacgcatcagtgagggtttgcaactgcgggt
caaggatctggatttcgatcacggcacgacatcgtgcgggagggcaagggtccaaggatcgg
gccttgatgttacccgagagcttggcacccagcctgcgcgagcaggggaattaattcccacggg
ttttgctgcccgcacacgggctgttctgggtgttgctagtttgttatcagaatcgagatccggc
ttcagccggtttgcccgtgaaagcgctatttcttccagaattgccatgatttttcccccagg
gaggcgtaactggctcccgtgttgctggcagctttgattcgataagcagcatcgccgtttcag
gctgtctatgtgtgactgttgagctgtaacaagttgtctcagggtgttcaatttcattgttctagt
tgctttgttttactggtttcaacctgttctattaggtgttacatgctgttcattctgttacattgt
cgatctgttcatggtgaacagctttgaatgcacaaaaactcgtaaaagctctgatgtatctat
cttttttacacccgttttcatctgtgcatatggacagttttccctttgatatgtaacgggtgaaca
gttgttctacttttgtttgttagtcttgatgcttactgatagatacaagagccataagaacct
cagatccttccgtatttagccagtatgttctctagtgtgggttcggttggttttgcggtgagccatg
agaacgaaccattgagatcatacttactttgcatgtcactcaaaaattttgcctcaaaaactgggt
gagctgaatttttgagttaaagcatcggtgtagtggttttcttagtccgttatgtaggtaggaa
tctgatgtaatgggttggttatcttgcacccattcatttttatctgggttggttctcaagttcgg

Figure 43B

ttacgagatccatttgtctatctagttcaacttggaaaatcaacgtatcagtcgggcggcctcg
cttatcaaccaccaatttcatattgctgtaagtgtttaaatctttaacttattggtttcaaaacc
cattgggttaagccttttaaaactcatggtagttattttcaagcattaacatgaacttaaatcat
caaggctaattctctatatttgccttgtgagttttcttttgtgttagttcttttaataaccactc
ataaatcctcatagagtatttgttttcaaaagacttaacatgttccagattatattttatgaat
ttttttaactggaaaagataaggcaatatctcttcaactaaaaactaattctaatttttcgcttg
agaacttggcatagtttgtccactggaaaatctcaaagcctttaaccaaaaggattcctgatttc
cacagttctcgtcatcagctctctggttgcctttagctaatacaccataagcattttccctactg
atgttcatcatctgagcgtattgggtataagtgaacgataccgtccgttctttccttgtagggt
tttcaatcgtggggttgagtagtgccacacagcataaaattagcttgggttcatgctccgttaa
gtcatagcgactaatcgctagttcatttgccttggaaaactaattcagacatacatctcaat
tgggtctaggtgattttaatcactataccaattgagatgggctagtcaatgataaataactagtc
ttttcctttgagttgtgggtatctgtaaattctgctagaccttgcgtggaaaacttgtaaattc
tgctagacctctgtaaattccgctagaccttgcgtgtgtttttttgtttatattcaagtgggt
ataatttatagaataaagaaagaataaaaaagataaaaagaatagatcccagccctgtgtata
actcactacttttagtcagttccgcagttattacaaaaggatgtcgaaaacgctgtttgctcctct
acaaaacagaccttaaaaccctaaaggcttaagtagcacctcgcaagctcgggcaaactcgctg
aatattccttttgcctccgacctcaggcacctgagtcgctgtcttttgcgtgacattcagttc
gctgcgctcacggctctggcagtgatgggggttaaatggcactacaggcgcccttttatggattc
atgcaaggaaactaccataatacaagaaaagcccgtcacgggcttctcaggggcgttttatggc
gggtctgctatgtgggtgctatctgacttttgcgtgttcagcagttcctgccctctgattttcca
gtctgaccacttcggatttatcccgtagacaggtcattcagactggctaatagcacccagtaaggca
gcggtatcatcaacaggcttaccgctcttactgtcggaatttcgcttggccgattcattaatg
cagattctgaaatgagctgttgacaattaatcatccggctcgtataatgtgtggaattgtgagc
ggataacaatttcacacaggaaacagcgccgctgagaaaaagcgaagcggcactgctctttaac
aatttatcagacaatctgtgtgggcactcgaccggaattatcgattaaactttattttaaaaat
taaagagggtatataattaatgtatcgattaaataaggaggaataaaccatgtgtgcgacctcttc
tcaatttactcagattaccgagcataattcccgctcgttccgcaaactatcagccaaacctgtgg
aatttcgaattcctgcaatccctggagaacgacctgaaagtggaaaagctggaggagaaagcga
ccaaactggaggaagaagttcgcgtgcatgatcaaccgtgtagacacccagccgctgtccctgct
ggagctgatcgacgatgtgcagcgctgggtctgacctacaaatttgaaaaagacatcattaaa
gccctggaaaacatcgtactgctggacgaaaacaaaaagaacaaatctgacctgcacgcaaccg
ctctgtctttccgtctgctgcgtcagcacgggttgcgaggttctcaggatgttttgagcggtt
caaggataaagaagggtggtttcagcgggtgaactgaaagggtgacgtccaaggcctgctgagcctg
tatgaagcgtcttacctgggtttcgaggggtgagaacctgctggaggaggcggtaccttttcca
tccccacctgaagaacaacctgaaagaaggcattaataccaagggtgcagaacaagtgaacca
cgccctggaaactgccatatcaccagcgtctgcacgctcgtggaggcacgttggttcctggataaa
tacgaaccgaaagaaccgcatcaccagctgctgctggagctggcgaagctggattttaacatgg
tacagaccctgcaccagaaagagctgcaagatctgtcccgctgggtggaccgagatgggcctggc
tagcaaaactggattttgtacgacgacctgatggaagtttatttctgggcactgggtatggcg
ccagaccgcagtttgggtgaatgtcgcaagctgttactaaaatgtttgggtctgggtgacgatca
tcgatgacgtgtatgacgtttatggcactctggacgaactgcaactgttcaccgatgctgtaga
gcgctgggacgttaacgctattaacaccctgccggactatatgaaactgtgttccctggcactg
tacaacaccgttaacgacacgtcctattctattctgaaagagaaagggtcataacaacctgtcct

Figure 43C

atctgacgaaaagctggcgtgaactgtgcaaagcctttctgcaagaggcgaaatgggtccaacaa
caaaattatcccggctttctccaagtaacctggaacgcgcagcggtttcctcctccgggtgtagcg
ctgctggcgccgtcttacttttcogtatgccagcagcaggaagacatctccgaccacgcgctgc
gttccttgaccgaacttccatgggtotgggtgcgttctagctgcgttatcttccgcctgtgcaacga
tctggccacctctgcgggcgagctggaacgtggcgagactaccaattctatcattagctacatg
cacgaaaacgatggtaccagcgaggaacaggcccgcaagaactgcgtaaactgatcgacgcgg
aatggaaaaagatgaatcgtgaacgcgttagcgactccacctgctgcctaaagcggttcatgga
aatcgcaagttaacatggcaactgtttccactgcacctaccagtatggcgatgggtctgggtcgc
ccagactacgcgactgaaaacgcgatcaaactgctgctgattgacctttcccgattaaccagc
tgatgtatgtctaactgcctccttaggaggtaaaaaaaatgactgccgacaacaatagta
tgcccatggtgcagtatctagttacgccaattagtgcaaaaccaaacacctgaagacatttt
ggaagagtttccctgaaattattccattacaacaaagacctaatcccgatctagtgcagcgtca
aatgacgaaagcgagaaacatgtttttctgggtcatgatgaggagcaaattaagttaatgaatg
aaaattgtattgttttggttgggacgataatgctattgggtgccggtaccaagaaagtttgtca
tttaattgaaaaatattgaaaagggttactacatcgtgcattctccgtctttattttcaatgaa
caaggtgaattactttttacaacaaagagccactgaaaaaataactttccctgatctttggacta
acacatgctgctctcatccactatgtattgatgacgaattaggtttgaagggtaagctagacga
taagattaagggcgctattactgcggcggtgagaaaaactagatcatgaattaggtattccagaa
gatgaaactaagacaaggggttaagtttacttttttaaacagaatccattacatggcaccaagca
atgaaccatgggggtgaacatgaaattgattacatcctatttttataagatcaacgctaagaaaa
cttgactgtcaacccaaacgtcaatgaagttagagacttcaaatgggtttcaccaaatgatttg
aaaactatgtttgctgacccaagttacaagtttacgccttgggttgaagattatttgcgagaatt
acttattcaactgggtgggagcaattagatgacctttctgaagtggaaaatgacaggcaaatca
tagaatgctataacgacgcgtcctgcagctggtaccatattgggaattogaagctttctagaacg
aaaactcatctcagaagaggatctgaatagcgccgtcgaccatcatcatcatcattgagtt
taaacgggtctccagcttggctgttttggcggtgagagaagattttcagcctgatacagattaa
atcagaacgcgagaagcggtctgataaaacagaatttgctggcggcagtagcgcggtgggtccca
cctgaccccatgccgaactcagaagtgaacgcgcgttagcgccgatggtagtgtgggggtctcccc
atgogagagtagggaaactgccaggcatcaaataaaacgaaaggctcagtcgaaagactgggcct
ttcgtttttatctgtttgttgcgtgaaacgctctcctgagtaggacaaatccgccgggagcgga
tttgaaacgttgcgaaagcaacggcccgaggggtggcgggcaggacgcccgcataaactgccagg
catcaaattaagcagaaggccatcctgacggatggcctttttgcgtttctacaaactctttttg
ttattttttctaaatacattcaaatatgtatccgctcatgagacaataaccctgataaatgctt
caataat

(SEQ ID NO:54)

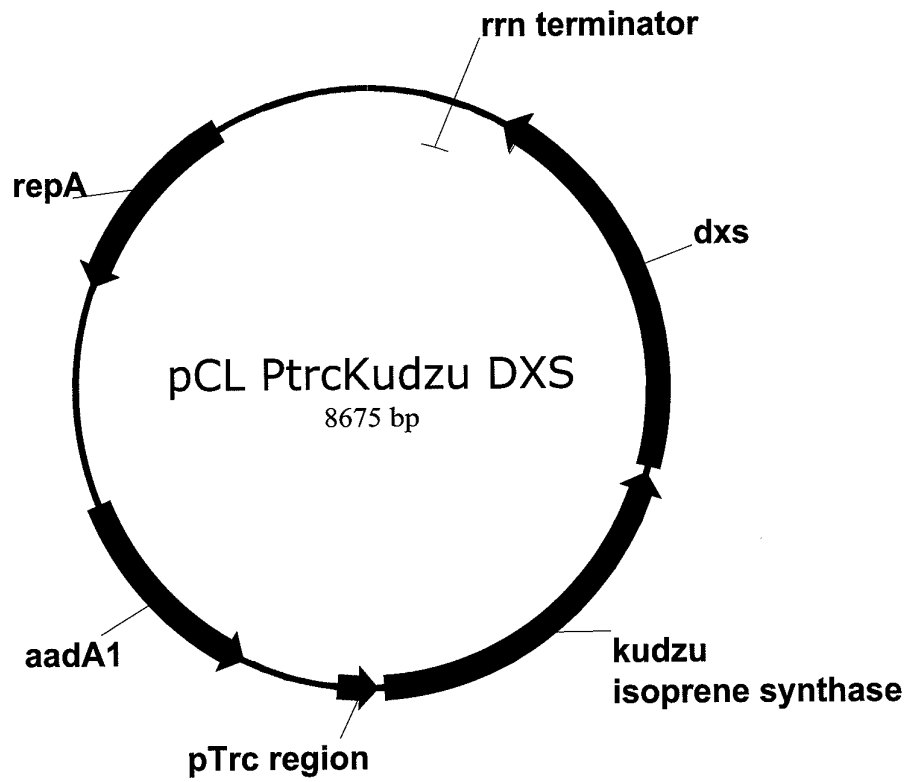
Figure 44

Figure 45A

5' -

cccgctcttactgtcgggaatttcgcggttgccgattcattaatgcagattattgaagcattttatc
agggttattgtctcatgagcggatacatatttgaatgtatttagaaaaataaacaataaagagtt
ttagaaaacgcaaaaaggccatccgtcaggatggccttctgcttaatttgatgcctggcagttt
atggcgggctcctgcccgcacccctccgggcccgttgcctcgcaacggttcaaatccgctcccg
cggatttgtcctactcaggagagcgttcaccgacaaacaacagataaaaacgaaaggcccagttc
ttcgactgagcctttcggttttatttgatgcctggcagttccctactctcgcatggggagacccc
acactaccatcggcgctacggcgtttcacttctgagttcggcatggggtcaggtgggaccaccg
cgctactgccgccaggcaaatctgttttatcagaccgcttctgcgttctgatttaatctgtat
caggctgaaaaatcttctctcatccgccaaaacagccaagctggagaccgtttaaactcaatgat
gatgatgatgatggcgacggcgctattcagatcctctctgagatgagttttgttctagaaa
gcttcgaattcccatatggtaccagctgcagttatgccagccaggccttgattttggcttccat
accagcggcatcgaggccgagttcggcgcgcttcttctgagttccttgccgaataaagaag
tcgggcaggccaatggtcagcacgggtactggtttacgatgggccatcagcacttcgttcacgc
cgctgctgcccgcgccataatggcggttttctctacgggtgaccagcgcttcaggtggcggc
catttccagaattaacgcttcacgaagcgggtttcacaaaacgcataatcgaccagcggtggcggtc
agcgattcggcgacttccgcgcttctggcatcagcgtaacaaagttaaggatcgccagtttct
cgccacgacgcttcacaatgcctttgccaatggtagtttttccagcggcgctcagttccacgcc
gaccggttgccacgcgggttagcgcaccgctgacggccatcggttatagtgatagccggtatag
agcatctggcgacattcggttttcatcgctcgggtcataatgaccatttccggtatgcagcgca
ggtaagagagatcaaaagcaccctgatgggtttgaccgtcagcaccaacaatgcccgcgcggtc
gatggcgaaacaggaccggaagccttttgaatcgccacgtcatgcagcacctgatcataggcgct
tgcaggaaagtggagtaaatcgcgacaatgggtttgtacccaccaatcgccagaccgcagcaa
aggtcaccgcgctgttgctcggcaattgccacgtcgaagtagcgatccgggaatttacgtgaaaa
ctcgaccatgccggaaccttcacgcacgcggagtaatcgccatcagcttggtgtcttctgct
ggcgtttcgcacaaccagtcgccaaagatttttgaatagctcggcaaacgcgctacttttcg
gcaaacaccgctggagggatcaaatttaggcacggcggtggaagtgategggtctttttctgc
cggttcataaccacgaccttttttggtcatgatatgcaggaactgcgggctttcaggtcgcgc
atgttctttagcgtggtgataagcccagcacatcgtagccgtccaccgggcccagtgatgtaaa
agcccagctcttcaaacacgctgccaggcactaccatgcctttaatatgttcttcggtgcgttt
gagcagctctttaattggcgggcacgccagagaaaaactttttccgccttcgcgcagtgaaagag
taaaagcttaccggaaagcagctgtgccagatgggtgttgagcgcgcgcacattttcggaatcg
acatttcattgtcgttgagaatcaccagcatatcaggacggatatcgcccgcgtgattcatcgc
ttcaaacgccatgcctgcggtaatcgcgccatcgccaatgacacagacgggtgcggcgatttttg
ccttctttttcggcagcaaccgcaataccaattccggcactgatggaggttgatgaatgccga
cgcttaatacgtcatattcgctttcgcgcgcgccacgggaacgggtgcagaccgcctttctgacg
gatggtgccgattttgtcgcggcgctccgggtcaaaattttatgaggataagcctgatgccccaca
tcccaaatcaattggtcaaacgggggtgttgtagacatagtgcagcgcacgggtcagttcgacgg
tgcccagcccggaggcgaagtgcgcgctggaacgggtcacgctgtcgagtaaatagcggcgag
ttcgtcgcagagtttcggtaaactctcttccggcaacagtcgtaactcctgggtggagtcgacc
agtgccagggctcgggtatttggcaatatcaaaactcatgttttttacctcctaagggcgaaatg
cagttagacatacatcagctggttaatcgggaagggtcaatcagcagcagtttgatgcgggttt
tcagtcgcgtagtctggcgacccagaccatcgccatactggtaggtgcagtgggaaacacggtg
ccatgttaactgcgatttccatgaacgctttaggcagcaggggtggagtcgctaacgcgttcacg

Figure 45B

attcatctttttccattcggcgctcgatcagtttacgcagttcttcgcgggcctgttcctcgctg
gtaccatcggttttcgtgcatgtagctaatgatagaattggtagtctcgccacgttccagctccg
ccgcagaggtggccagatcggtgcacaggcggaagataacgcagctagaacgcaccagaccatg
gaagtcggtcagggaacgcagcgctggctggagatgtcttcctgctgctggcatacggaaaag
taagacggcgccagcagcgctacaccggaggaggaaacgctggcggttttcaggtacttgga
aagccgggataattttgttggtagaccatttcgctcttcgagaaaggctttgcacagttcacg
ccagcttttcgtcagataggacaggttggtatgacctttctcttcagaatagaataggacgtg
tcgttaacgggtggtgacagtgccaggaaacacagtttcatatagtcgggcagggtggttaataq
cggttaacgtcccagcgctctacagcatcggtgaacagttgcagttcgtccagagtgccataaac
gctatacagctcatcgatgatcgtcaccagaccaaacttttagtaacagctttgcgacattca
ccaaactgcggtctggcgccatacccagtgcccagaaataaaacttccatcaggcggtcgcgta
caaatccagtttgtagccaggccatctcggtccaccagcgggacagatcttcgagctcttt
ctgggtgcagggctctgtaccatgttaaaatccagcttcgcccagctccagcagcagctggtgatgc
ggttcttttcgggttcgtattttatccaggaaccaacgtgcctccagaagggtgcagacgctggtgat
atggcagttccaggcgctggctcacttggtctgcaaccttggtattaatgccttctttcaggtt
gttcttcaggtgggtgatggaaaaggtagcgccctccagcaggttctcaccctcgaaaccc
aggtaagacgcttcatacaggctcagcaggccttgagcgtcacctttcagttcaccgctgaaac
caccttctttatccttgaaacgctcaaaaacatcctgagaaacctcgaaacgctgctgacgcag
cagaacggaaagacagagcggttgctgaggtcagatttggtctttttgttttcgtccagcag
acgatgttttcagggtcttaatgatgtctttttcaaatgttaggtcagacccaggcgctgca
catcgctcgatcagctccagcagggacagcggtgggtgtctacacgggtgatcatgcagcgaac
ttcttctccagtttggttcgctttctcctccagcttttccactttcaggtcgttctccagggt
tgcaggaattcgaaattccacaggtttggctgatagtttgcggaacgacgggaattatgctcg
taatctgagtaaatgagaagaggtcgccacacatgggttatctcctcttatttaatcgatacat
taatataacctctttaatttttaataataaagttaatcgataattccgggtcgagtgcccacac
agattgtctgataaattgttaagagcagtgccgcttcgctttttctcagcggcgctgtttcct
gtgtgaaattgttatccgctcacaattccacacattatacagagccggatgattaattgtcaaca
gctcatttcagaatctggcgtaatagcgaagaggcccgaccgatcgcccttcccaacagttgc
gcagcctgaatggcgaaatggcgctgatgcggtattttctccttaacgcatctgtgcggtatttc
acaccgcatatggtgcaactctcagtaaatctgctctgatgccgcatagttaagccagccccga
caccgccaacacccgctgacgagcttagtaaaagccctcgctagattttaatgaggatgttgcg
attacttcgccaactattgcgataacaagaaaaagccagcctttcatgatatactcccaattt
gtgtagggttattatgcacgcttaaaaaataataaaagcagacttgacctgatagtttggtgtg
gagcaattatgtgcttagtgcatctaacgcttgagtttaagccgcgcgcgaagcggcgctcggt
tgaacgaattgttagacattatttgccgactaccttggtgatctcgcccttcacgtagtggaca
aattcttccaactgatctgcgcgcgaggccaagcgatcttcttcttgcgaagataagcctgtc
tagcttcaagtatgacgggctgatactgggcggcaggcgctccattgcccagtcggcagcgac
atccttcggcgcgattttgcccgttactgcgctgtaccaaagtcgggacaacgtaagcactaca
tttcgctcatcgccagcccagtcgggcggcgagttccatagcgttaagggttccatttagcgct
caaatagatcctgttcaggaaccggatcaaagagttcctccgcccgtggacctaccaaggcaac
gctatgttctcttgcctttgtcagcaagatagccagatcaatgtcgatcgtggctggctcgaag
atacctgcaagaatgtcattgcgctgccattctccaaattgcagtttcgcttagctggataac
gccacggaatgatgtcgtcgtgcacaacaatggtgacttctacagcgcggagaatctcgctctc
tccaggggaagccgaagtttccaaaaggctggtgatcaaagctcgccgcttggttcatcaagc

Figure 45C

cttacgggtcaccgtaaccagcaaatcaatatcactgtgtggcttcaggccgccaatccactgceg
agccgtacaaatgtacggccagcaacgtcggttcgagatggcgctcgatgacgccaaactacctc
tgatagttgagtcgatacttcggcgatcacgcgttcctcatgatgtttaactttgttttaggg
cgactgcccgtgctgcgtaacatcggtgctgctccataacatcaaacatcgacccacggcgtaac
gcgcttgctgcttggatgcccaggcatagactgtacccccaaaaaacagtcataacaagccat
gaaaaccgccaactgcgcggttaccaccgctgcgttcgggtcaagggttctggaccagttgcgtgag
cgcatagcctaacttgcattacagcttacgaaccgaacaggcttatgtccactgggttcgtgcct
tcatccgtttccacgggtgctgcgtcaccgggaacottgggcagcagcgaagtcgaggcatttct
gtcclygctggcgaaacgagcgcaagggttcgggtctccacgcacgtcaggcattggggccttg
ctgttcttctacggcaagggtgctgtgcacggatctgcctggcttcaggagatcggaagacctc
ggccgtcgccgcttgccggtggtgctgaccccgatgaagtgggttcgcacctcgtgtttct
ggaaggcgagcatcggttctgcgccagcttctgtatggaacgggcatgcggatcagtgagggt
ttgcaactgcgggtcaaggatctggatttcgatcacggcacgatcatcgtgcgggaggggcaagg
gctccaaggatcgggccttgatgttacccgagagcttggcaccacgctgcgcgagcaggggaa
ttaattcccacgggttttgctgcccgaacacgggctgttctggtgttgctagtttggtatcaga
atcgagatccggcttcagccggttgccgggtgaaagcgtatttctccagaattgccatga
tttttcccccaggaggcgctcactggctcccggtgttgctggcagctttgattcgataagcagc
atcgctgtttcaggctgtctatgtgtgactgttgagctgtaacaagttgtctcaggtgttcaa
ttcatgttctagttgctttgttttactggtttcacctgttctattaggtgttacatgctgttc
atctgttacattgtcgatctgttcatggtgaacagctttgaatgcacaaaaactcgtaaaagc
tctgatgtatctatcttttttacaccggtttcatctgtgcatatggacagttttccctttgata
tgtaacgggtgaacagttgttctacttttgtttgttagtcttgatgcttcactgatagatacaag
agccataagaacctcagatccttcctgatttttagccagtatgttctctagtggttcgtttgtt
ttgctgagccatgagaacgaaccattgagatcatacttactttgcatgtcactcaaaaatttt
gctcaaaaactggtgagctgaatttttgagttaaagcatcgtgtagtggttttcttagtccgt
tatgtaggtaggaatctgatgtaatggttggttattttgtcaccattcatttttatctggtt
gttctcaagttcggttacgagatccatttgtctatctagttcaacttggaatatcaacgtatca
gtcgggcggcctcgcttatcaaccaccaatttcatattgctgtaagtgttaaatctttactta
ttggtttcaaaaaccattggttaagccttttaactcatggtagttattttcaagcattaacat
gaacttaaatcatcaaggctaatctctatatttgccttgtagtattttctttgtgttagttct
tttaataaccactcataaatcctcatagagtatttgttttcaaaaagacttaacatgttccagat
tatattttatgaatttttttaactggaaaagataaggcaatatctcttactaaaaactaatc
taatttttcgcttgagaacttggcatagtttgtccactggaaaatctcaaagcctttaaccaaa
ggattcctgattttccacagttctcgatcatcagctctctggttgctttagctaataccataag
cattttccctactgatgttcatcatctgagcgtattggttataagtgaacgataccgtccgttc
tttccctgtagggttttcaatcggtgggttgagtagtgccacacagcataaaattagcttggtt
tcatgctccgttaagtcatagogaactaatcgctagttcatttgccttgaaaacaactaattcag
acatacatctcaattggtctaggtgatttttaactactalaccaattgagatgggctagtcattg
ataattactagtccttttcttttgagttgtgggtatctgtaaattctgctagaccttgcgtgga
aaacttgtaaatctgctagacctctgtaaattccgctagaccttgcgtgtttttttgttt
atattcaagtggttataatttatagaataaagaagaataaaaaagataaaaaagaatagatcc
cagccctgtgtataactcactacttttagtcagttccgcagttattacaaaaggatgtcgcaaacg
ctgtttgctcctctacaaaacagaccttaaaaccctaaaggcttaagtagcacctcgcaagct
cgggcaaatcgctgaatatctctttgtctccgaccatcaggcacctgagtcgctgtcttttct

Figure 45D

Gtgacattcagttcgctgcgctcacggctctggcagtgaatgggggtaaatggcactacaggcg
ccttttatggattcatgcaaggaaactaccataatacaagaaaagcccgtcacgggcttctca
gggcgttttatggcgggtctgctatgtggtgctatctgactttttgctgttcagcagttcctgc
cctctgattttccagtctgaccaattcggattatcccgtagacaggtcattcagactggctaag
caccagtaaggcagcggtatcatcaacaggctta
(SEQ ID NO:55)

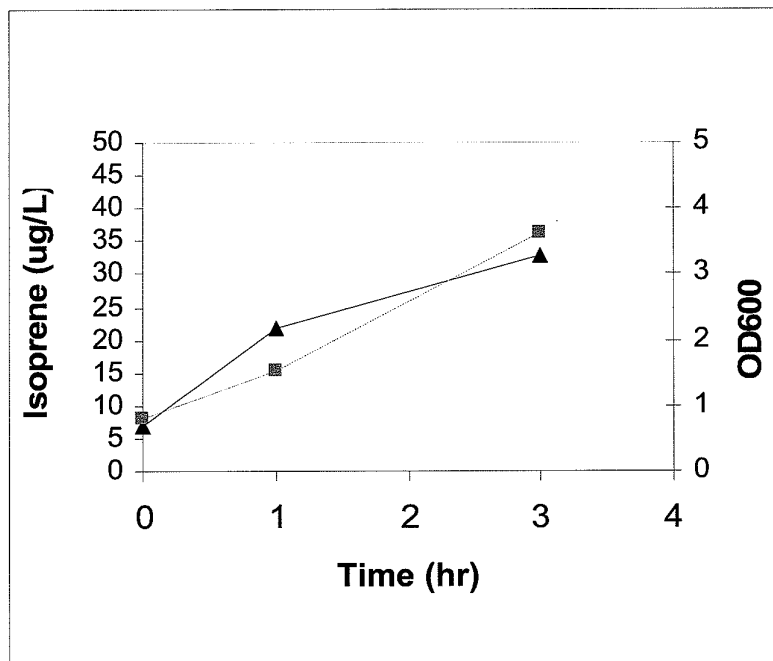
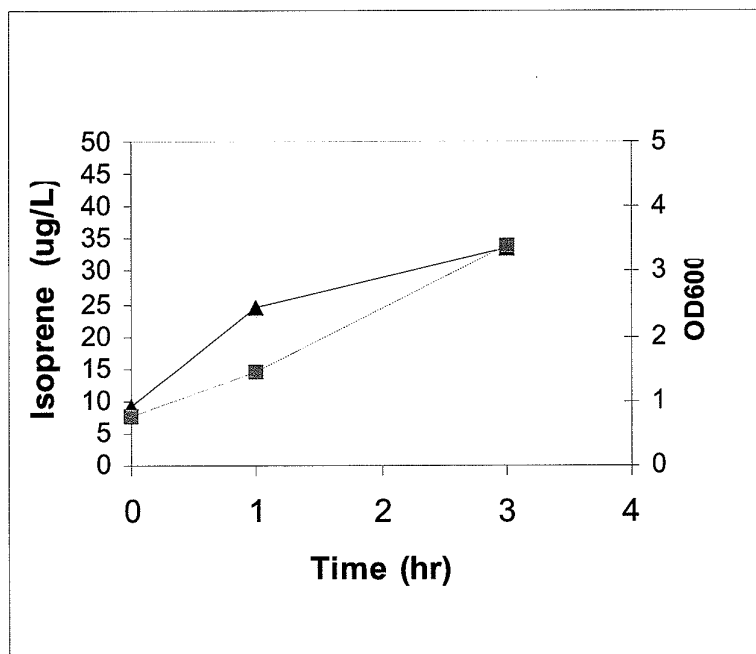
Figure 46A**Figure 46B**

Figure 46C

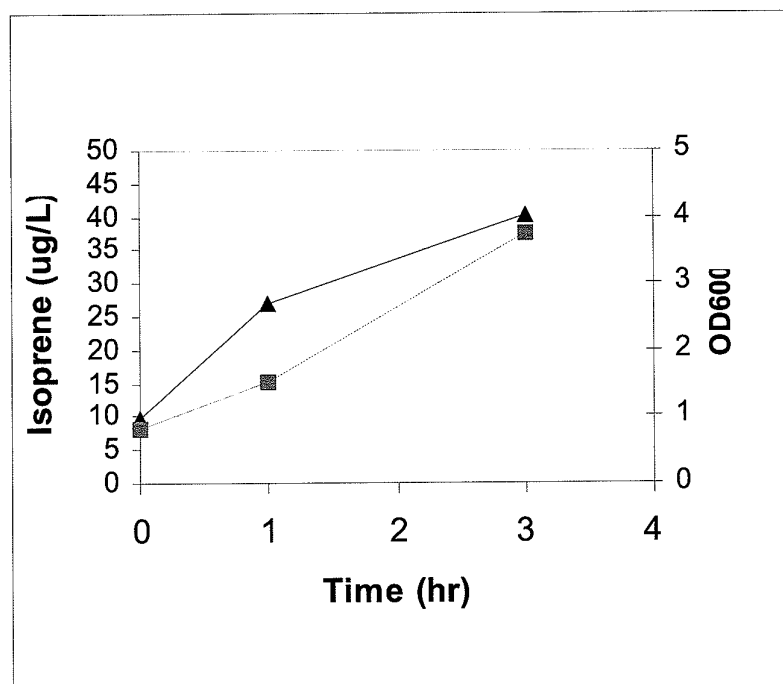


Figure 46D

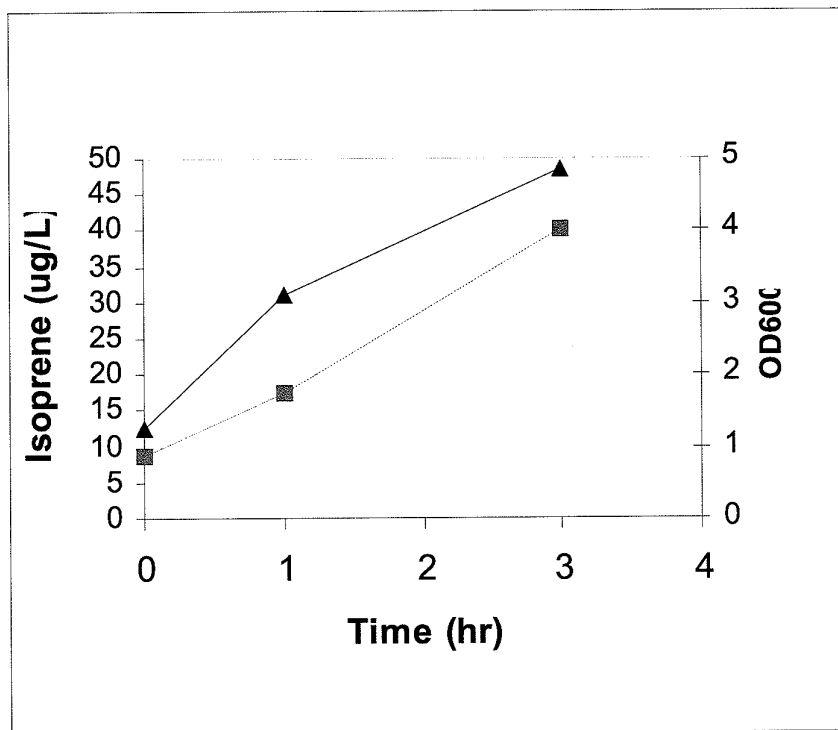


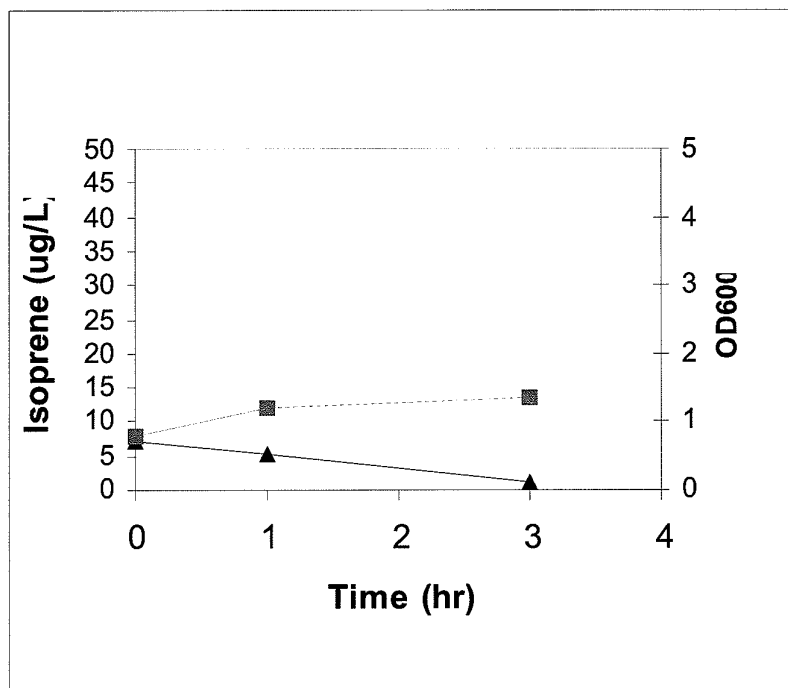
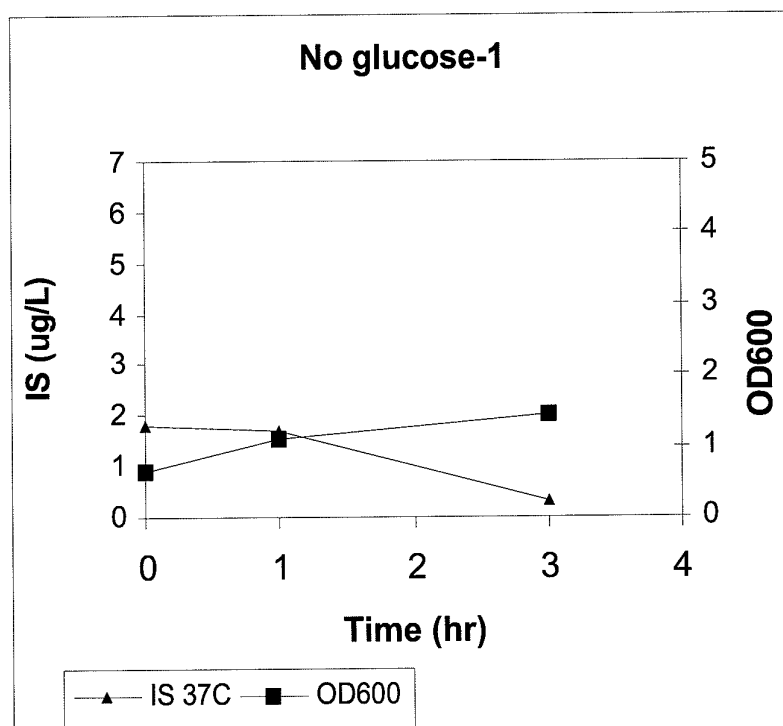
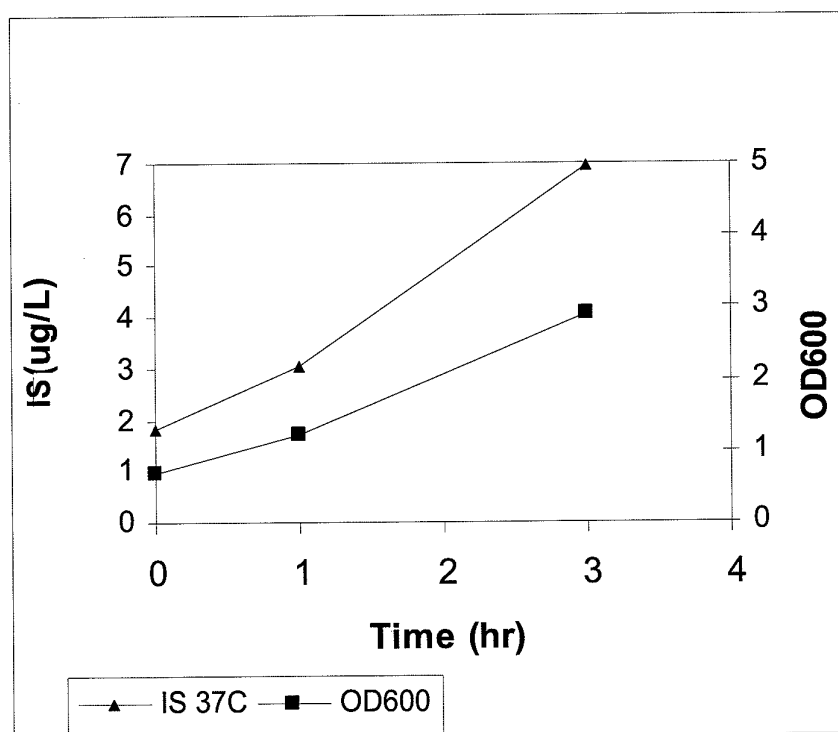
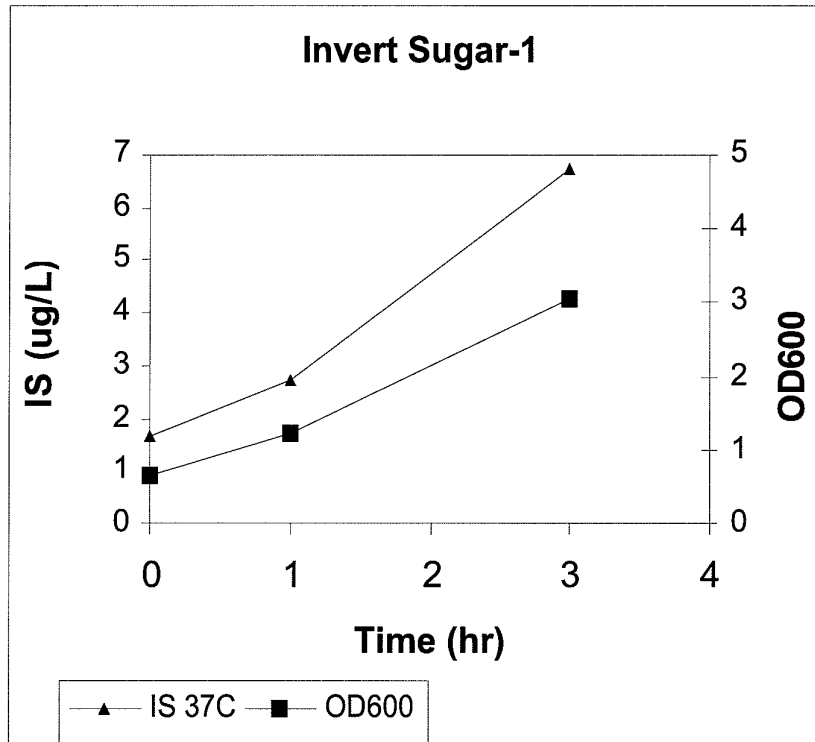
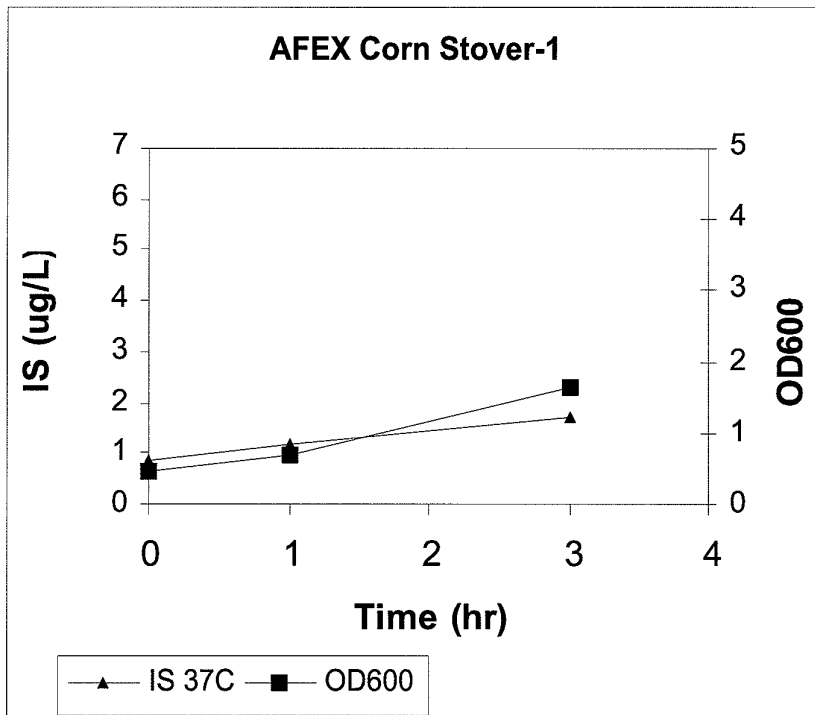
Figure 46E

Figure 47A**Figure 47B****Figure 47C**

**Figure 47D**

110/259

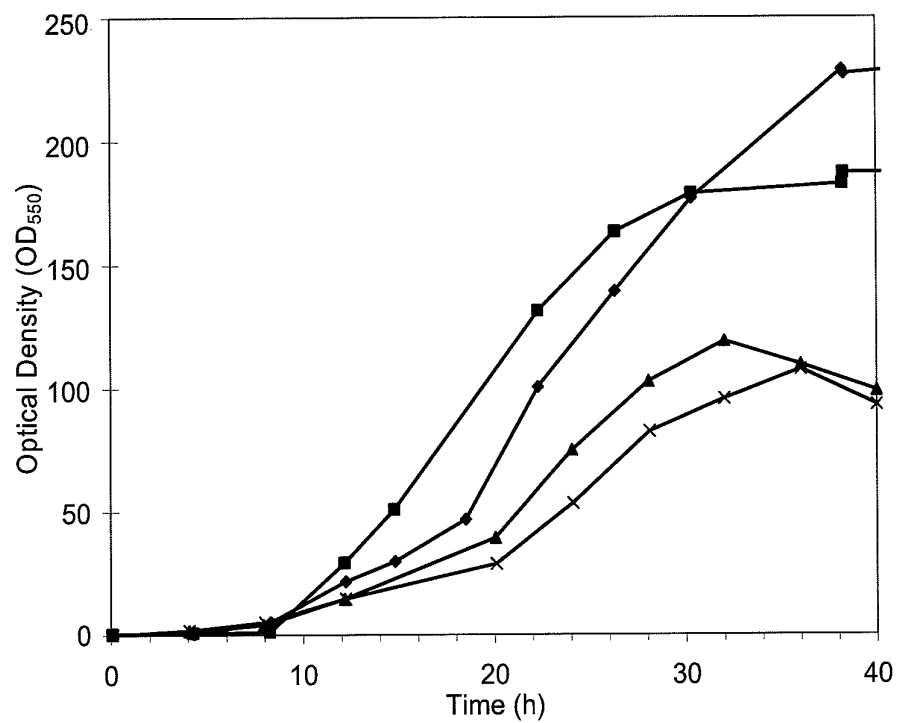
Figure 48A

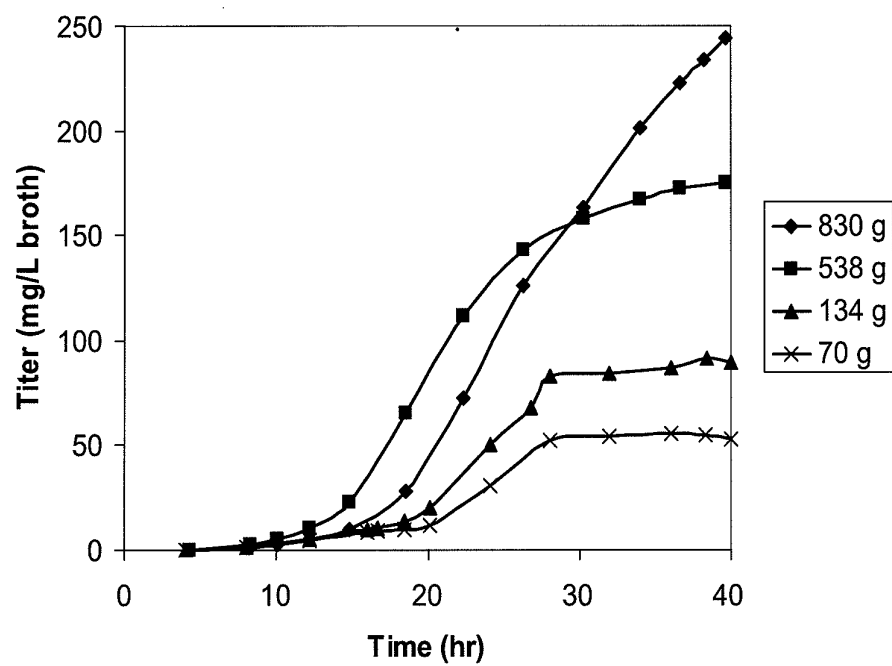
Figure 48B

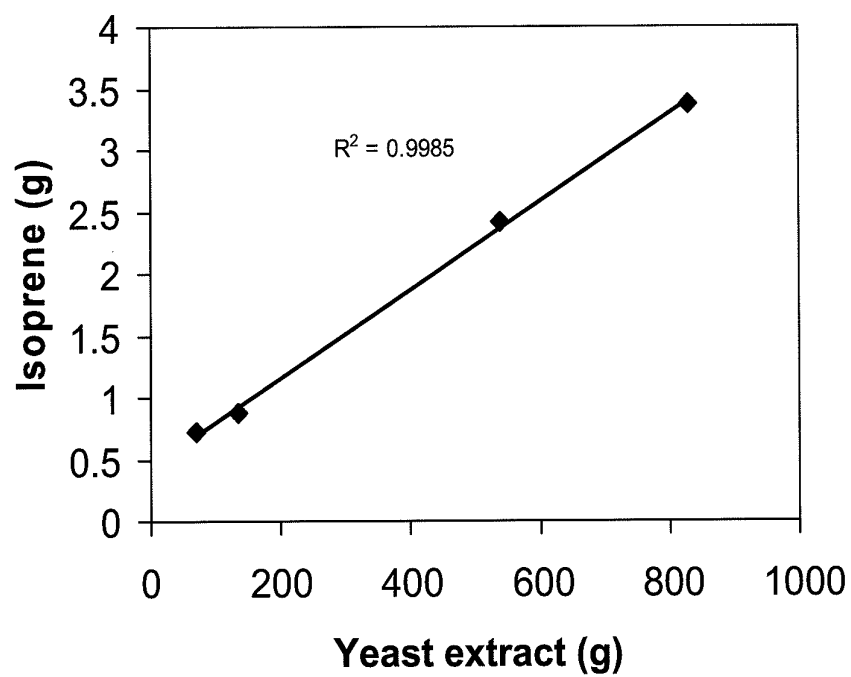
Figure 48C

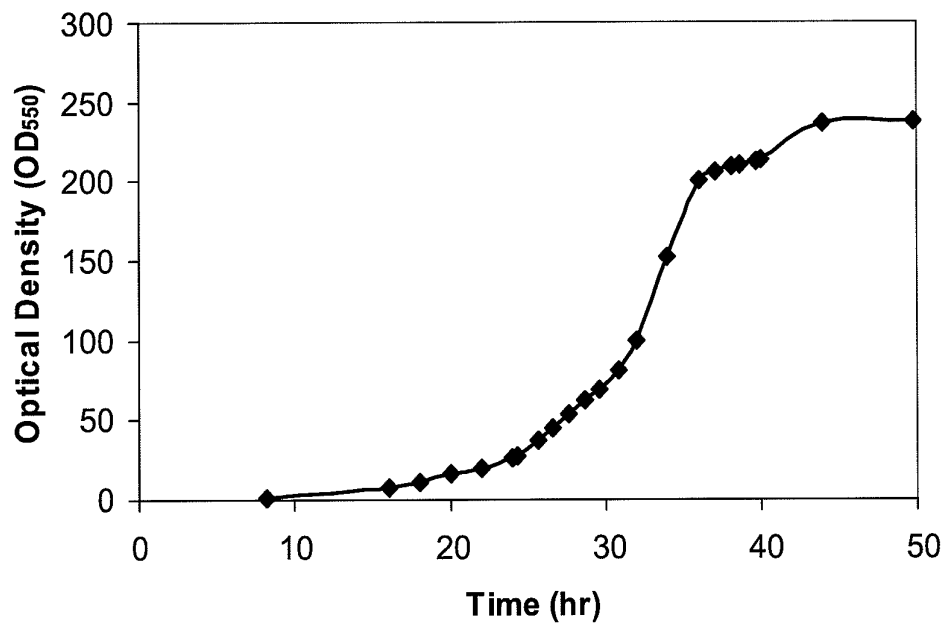
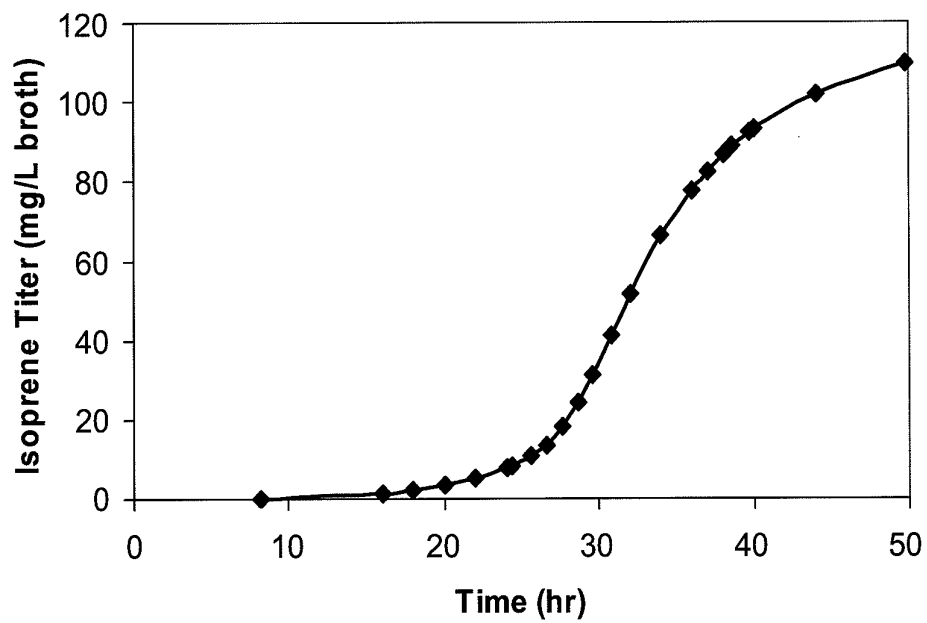
Figure 49A**Figure 49B**

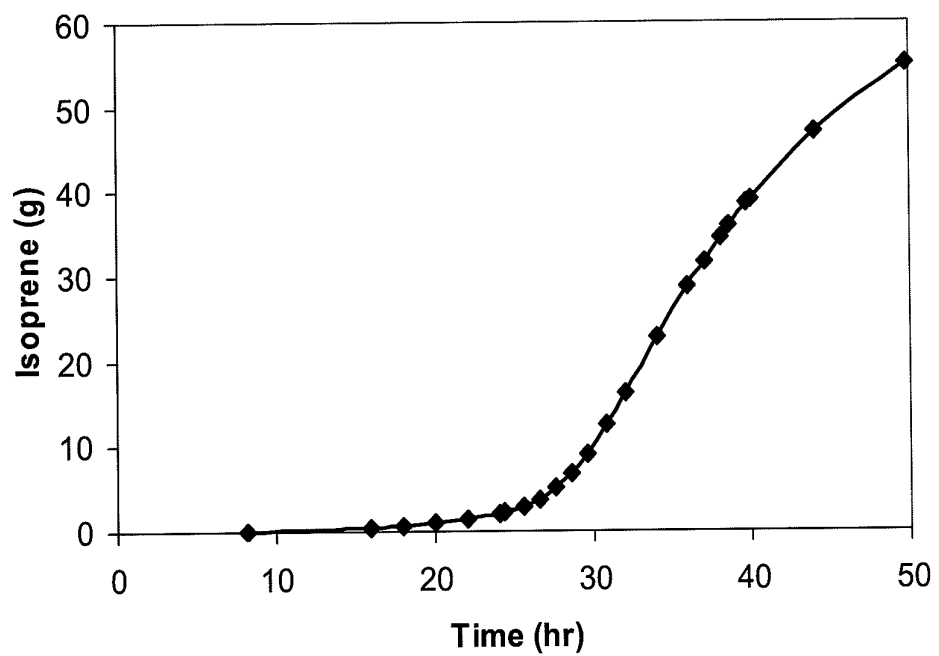
Figure 49C

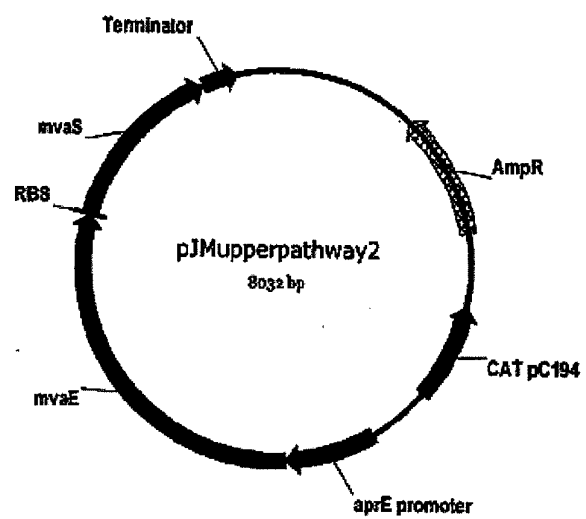
Figure 50

Figure 51A

5' -

tgcgtgcgctcggtcggttcggctgcggcgagcggtatcagctcactcaaaggcggtataacggt
tatccacagaatcaggggataacgcaggaagaacatgtgagcaaaaggccagcaaaaggccag
gaaccgtaaaaaaggccgcgttgctggcggtttttccataggctccgccccctgacgagcatcac
aaaaatcgacgctcaagtcagaggtggcgaaaaccgcaggaactataaagataaccaggcgtttc
ccctggaagctccctcggtcgctctcctgttcggaccctgccgcttacgggataacctgtccgc
ctttctcccttcgggaagcggtggcgctttctcatagctcacgctgttaggtatctcagttcgggtg
taggtcggttcgctccaagctgggctgtgtgcacgaaccccccggttcagcccgaccgctgcgcct
taccggtaactatcgctcttgagtcacaacccggtaagacacgacttatcgccactggcagcagc
cactggtaacaggattagcagagcgaggtatgttaggcggtgctacagagttcttgaagtgggtgg
cctaactacggctacactagaagaacagtattttgggtatctgcgctctgctgaagccagttacct
tcggaaaaagagttggtagctcttgatccggcaaaacaaaccacgctggtagcggtgggtttttt
tggttgcaagcagcagattacgcgcagaaaaaaaggatctcaagaagatcctttgatcttttct
acgggggtctgacgctcagtggaacgaaaactcacgtaagggatttttggtcatgagattatcaa
aaaggatcttcacctagatccttttaattaaaaatgaagttttaaatcaatctaaagtatata
tgagtaaaacttggtctgacagttaccaatgcttaatcagtgaggcacctatctcagcgatctgt
ctatttcggttcacccatagttgcctgactccccgctggtgtagataactacgatacgggagggct
taccatctggccccagtgctgcaatgataccgcgagacccacgctcacgggctccagatttatc
agcaataaaaccagccagccggaaggccgagcgcagaagtggctcctgcaactttatccgcctcc
atccagctctattaattgttgccgggaagctagagtaagtagttcgccagttaatagtttgcgca
acgttggttgccatttgctacaggcatcgtggtgtcacgctcgctcggttggtatggcttcattcag
ctccgggttcccaacgatcaaggcgagttacatgatcccccattgtgtgcaaaaaagcggttagc
tccttcgggtcctccgatcggttgctcagaagtaagttggccgcagtggttatcactcatggttatgg
cagcactgcataattctcttactgtcatgccatccgtaagatgcttttctgtgactggtagta
ctcaaccaagtcattctgagaatagtgtatgcccgcagccgagttgctcttgcccgcgctcaata
cgggataataaccgcgccacatagcagaactttaaaagtgtcatcattggaaaacggttcttcgg
ggcgaaaaactctcaaggatcttaccgctggtgagatccagttcgatgtaacccactcggtgcacc
caactgatcttcagcatcttttactttaccagcggtttctgggtgagcaaaaacaggaaggcaa
aatgccgcaaaaaagggaataaggggcgacacggaaatgttgaatactcatactcttctcttttc
aatattattgaagcatttatcaggggtattgtctcatgagcggatacatatttgaaatgtattta
gaaaaataaacaataaggggttcgcgcacatttccccgaaaagtgccacctgacgtctaagaa
accattattatcatgacattaacctataaaaaataggcggtatcacgagggcctttcgtctcgcgc
gtttcgggtgatgacggtgaaaacctctgacacatgcagctcccgagacgggtcacagcttgctct
gtaagcggatgccgggagcagacaagcccgtcagggcgcgctcagcgggtgttgccgggtgtcgg
ggctggcttaactatgcggcatcagagcagattgtactgagagtgaccatagatctggagctg
taatataaaaaaccttcttcaactaacggggcaggttagtgacattagaaaaccgactgtaaaaa
gtacagtcggcattatctcatattataaaagccagtcattaggcctatctgacaattcctgaat
agagttcataaaacaatcctgcatgataaacctacaaaacagaatgatgtacctgtaaagatagc
ggtaaatatattgaattacctttattaatgaattttcctgctgtaataatgggtagaaggtaat
tactattattattgatatttaagttaaaccagtaaatgaagtcctatggaataatagaaagaga
aaaagcattttcaggtataggtgttttgggaaacaatttccccgaaccattatatttctctaca
tcagaaaggtataaatcataaaactctttgaagtcattctttacaggagtcctaaataccagaga
atgttttagatacaccatcaaaaattgtataaagtggctctaacttatcccaataacctaactc
tcgctcgctattgttaaccagttctaaaagctgtatttgagtttatcacccttgctactaagaaa
ataaatgcagggtaaaaatttatatccttcttggttttatgtttc

Figure 51B

ggatataaaacactaatatcaattttctgtggttataactaaaagtcgtttgttggttcaaataatg
attaaatatctctttttctcttccaattgtctaaatcaattttattaaagttcatttgatatgcc
tctaaattttttatctaaagtgaatttaggaggcttacttgtctgctttcttcattagaatcaa
tcttttttaaaagtcatttactgtaacataaatatataatttttaaaaatatcccactttatc
caattttcgtttgttgaactaatgggtgcttttagttgaagaataaaaagacctatgcggtgtgaa
ataccgcacagatgcgttaaggagaaaataaccgcatcaggcgccatttcgccattcagggtgcgca
actgttgggaaggcgatcggtgcgggacctcttcgctattacgccagctggcgaaagggggatg
tgctgcaaggcgattaaagttgggtaacgccagggttttcccagtcacgacgttqttaaacgaag
gcagtgccaaagcttgcatgcctgcactccattttcttctgctatcaaaaataacagactcgtga
ttttccaaacagagctttcaaaaaagcctctgcccttgcaaatcggtatgcctgtctataaaatt
cccgatatgtggttaaacagcggcgcaatggcgccgcacatctgatgtctttgcttggcgaatgtt
catcttattttcttctccctctcaataatttttctattctatcccttttctgtaaagtttattt
ttcagaatacttttatcatcatgctttgaaaaaatatcacgataatatccattgttctcacgga
agcacacgcaggtcatttgaacgaatttttgcacaggaaatttgccgggactcaggagcattta
acctaaaaaagcatgacatttcagcataatgaacatttactcatgtctattttcgttcttttct
gtatgaaaatagttattttcgagtcctctacggaaatagcgagagatgatataacctaaatagagat
aaaatcatctcaaaaaaatgggtctactaaaatattattccatctattacaataaattcacaga
atagtccttttaagtaagtcactctgaatttttttaaaaggagagggtaaagagtgaaaacagt
agttattattgatgcattacgaacaccaatttgaaaaatataaaggcagcttaagtcaagtaagt
gccgtagacttaggaacacatgttacaacacaacttttaaaaagacattccactatttctgaag
aaattgatcaagtaatcttttgaaaatgttttacaagctggaaatggccaaaatcccgcacgaca
aatagcaataaacagcggtttgtctcatgaaattcccgcacatgacggttaatgaggtctgcgga
tcaggaatgaaggccgttattttgcgaaacaattgattcaattaggagaagcggaagtttttaa
ttgctggcggttgagaatatgtcccaagcacctaaattacaacggttttaattacgaaacaga
aagctacgatgcgcctttttctagtatgatgtatgattggaattacggatgccttttagtggtcag
gcaatgggcttaactgctgaaaaatgtggcgcaaaagtatcatgtaactagagaagagcaagatc
aattttctgtacattcacaattaaaagcagctcaagcacaagcagaagggatattcgctgacga
aatagccccattagaagtatcaggaacgcttgtggagaaagatgaagggttcgccctaattcg
agcgttgagaagctaggaacgcttaaaaacagtttttaagaagacgggtactgtaacagcagggga
atgcatcaaccattaatgatggggcttctgctttgattattgcttcacaagaatatgccgaagc
acacggtcttcttatttttagctattatttcgagacagtggtggaagtcggtattgatccagcctat
atgggaatttcgccgattaaagccattcaaaaactgttagcgcgcaatcaacttactacggaag
aaattgatctgtatgaaatcaacgaagcatttgcagcaacttcaatcgtggtccaaagagaact
ggctttaccagaggaaaagggtcaacattttatgggtggcggtatttcattaggtcatgcgattggg
gccacaggtgctcgtttattaacgagtttaagttatcaattaaatcaaaaagaaaagaaatatg
gagtggcttctttatgtatcgcggtggcttaggactcgctatgctactagagagacctcagca
aaaaaaaaaacagccgattttatcaaatgagtcctgaggaacgcctggcttctcttcttaatgaa
ggccagattttctgctgatacaaaaaaagaatttgaaaatacggctttatcttcgcagattgccca
atcatatgattgaaaatcaaatcagtgaaacagaagtgccgatggcggttggttacatttaac
agtggacgaaaactgattattttggtaccaatggcgacagaagagccctcagttattgcggctttg
agtaatgggtgcaaaaatagcacaaggatttaaaacagtgatcaacaacgcttaatgcgtggac
aaatcgttttttacgatgttgcagatcccagtcattgattgataaactacaagtaagagaagc
ggaagtttttcaacaagcagagtttaagttatccatctatcgttaaacggggcgcggttaaga
gatttgcaatatcgtacttttgatgaatcatttgtatctgtcgacttttagtagatgttaagg
atgcaatgggggcaaatatcggttaacgctatgttggaaggtgtg

Figure 51C

gccgagttgttccgtgaatggtttgaggagcaaaagattttattcagttattttaagtaattatg
ccacggagtcggttggttacgatgaaaacggctattccagtttcacgtttaagtaaggggagcaa
tggccgggaaattgctgaaaaaattgttttagcttcacgctatgcttcattagatccttatcgg
gcagtcacgcataacaaaggaatcatgaatggcattgaagctgtagtttttagctacaggaaatg
atacacgcgctgttagcgcttcttgtcatgcttttgoggtgaaggaaggtoctaccaaggctt
gactagttggacgctggatggcgaacaactaattgggtgaaatttcagttccgcttgcttagcc
acggttggcgggtgccacaaaagtcttacctaaatctcaagcagctgctgatttggttagcagtga
cggatgcaaaagaactaagtcgagtagtagcggtgttggtttggcacaaaatttagcggcggtt
acgggccttagtctctgaaggaattcaaaaaggacacatggctctacaagcacgttcttagcg
atgacggctcgagctactggtaaagaagttgaggcagtcgctcaacaattaaaacgtcaaaaaa
cgatgaaccaagaccgagccatggctatttttaattgatttaagaaaacaataaaaggagaggggt
gacaattgggattgataaaattagtttttttgtgcccccttattatattgatatgacggcactg
gctgaagccagaaatgtagacctggaaaatttcatattgggtattgggcaagaccaaatggcgg
tgaacccaatcagccaagatatgttgacatttgacgccaatgcgcagaaagcgtcttgaccaa
agaagataaagaggccattgatattggtgattgtcgggactgagtcagtcgatgagtcaaaa
gcggccgcagttgtcttacatcgtttaattggggattcaacctttcgctcgctctttcgaaatca
aggaagcttggttacggagcaacagcaggttacagttagctaagaatcacgtagccttacatcc
agataaaaaagtcttggtcgtagcggcagatatgtcaaaaatatggcttaaattctggcgggtgag
cctacacaaggagctggggcggttgcaatgttagttgctagtgaaccgcgcattttggctttaa
aagaggataatgtgatgctgacgcaagatatctatgacttttggcgtccaacaggccaccgcta
tcctatggtcgatggtcctttgtcaaacgaaacctacatccaatcttttgcccaagtctgggat
gaacataaaaaacgaaccggtcttgattttgcagattatgatgcttttagcgttccatattcctt
acacaaaaatgggcaaaaaagccttatttagcaaaaaatctccgaccaaactgaagcagaacagga
acgaatttttagcccggttatgaagaaagtatcgctctatagtcgctcgctaggaacttgatatacg
ggttcactttatctgggactcatttcccttttagaaaaatgcaacgactttaaccgcaggcaatc
aaattggttttattcagttatggttctggtgctgctgaatttttcaactggtgaatttagtagc
tggttatcaaaatcatttacaaaaagaactcatttagcactgctggataatcggacagaactt
tctatcgctgaatatgaagccatgtttgcagaaactttagacacagacattgatcaaacggttag
aagatgaattaaaaatatagttttctgctattaataataaccgttcggttcttatcgaaactaaaa
aaaaccggccttgggcccgcggttttttattatttttcttccctccgcatgttcaatccgctcc
ataatcgacggatgggtccctctgaaaattttaacgagaaacggcggttgaccgggtcagtc
ccgtaacggccaagtcctgaaacgtctcaatcgccgcttcccggtttccggtcagctcaatgcc
gtaacggctcgggcggttttcttgataccggggagacggcattcgtaatcgggatccccgggtac
cgagctcgaattcgtaatcatgtcatagctgtttcctgtgtgaaattggttatccgctcacaatt
ccacacaacatacgagccggaagcataaagtgtaaagcctggggtgctaatgagtgagctaac
tcacattaattgcttgcgctcactgccgctttccagtcgggaaacctgtcggtgccagctgca
ttaatgaatcgcccaacgcgcggggagaggcggtttgcgtattgggcgctcttccgcttccctcg
ctcactgac

(SEQ ID NO:56)

Figure 52

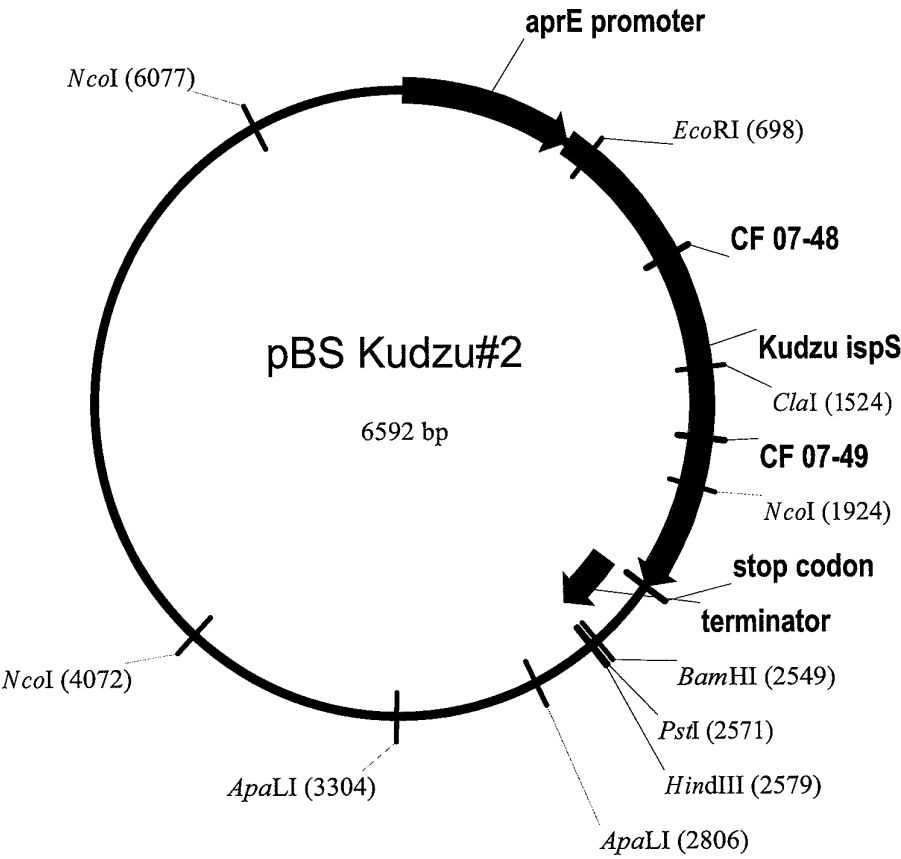


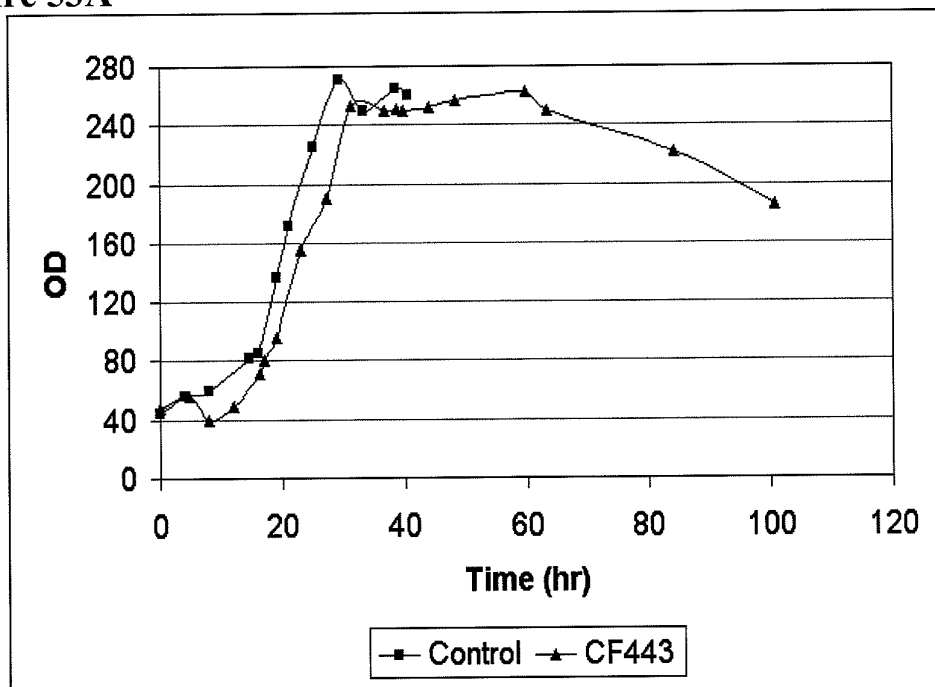
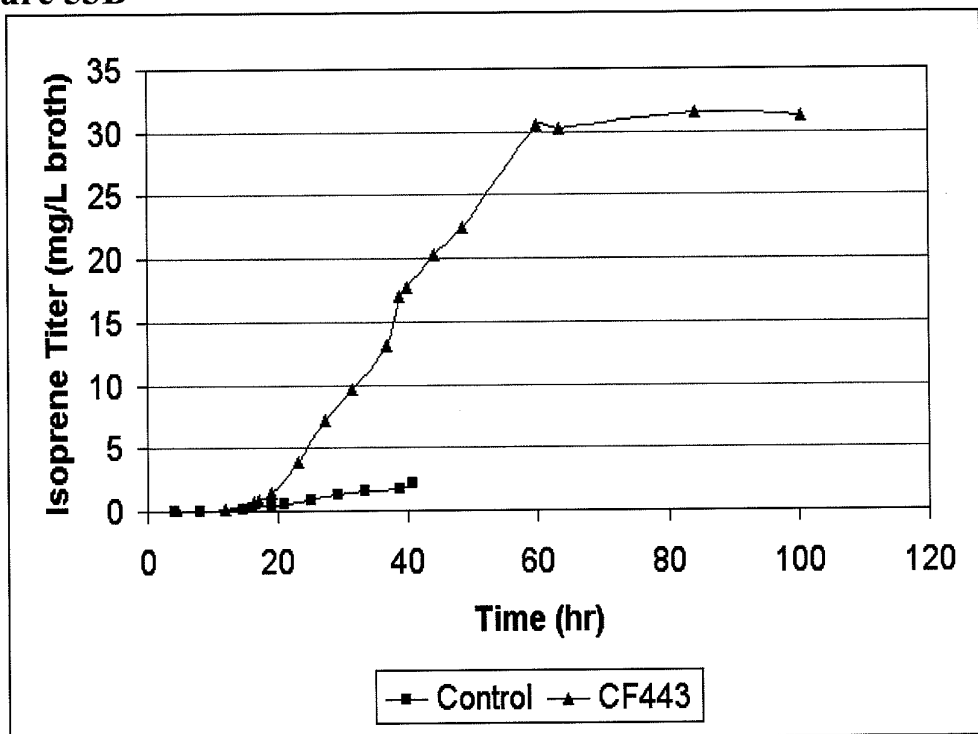
Figure 53A**Figure 53B**

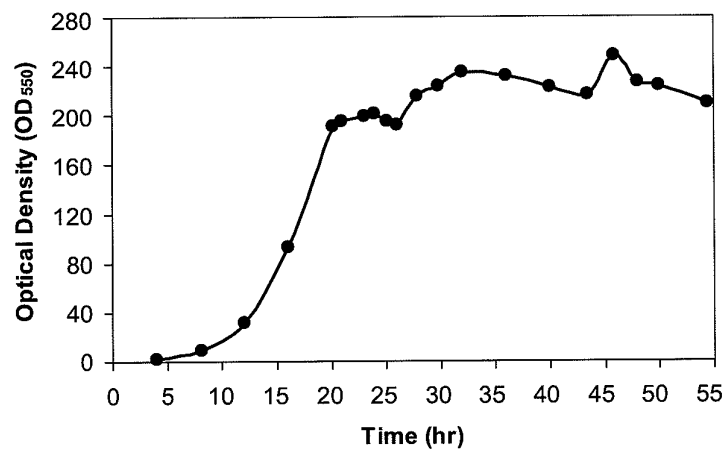
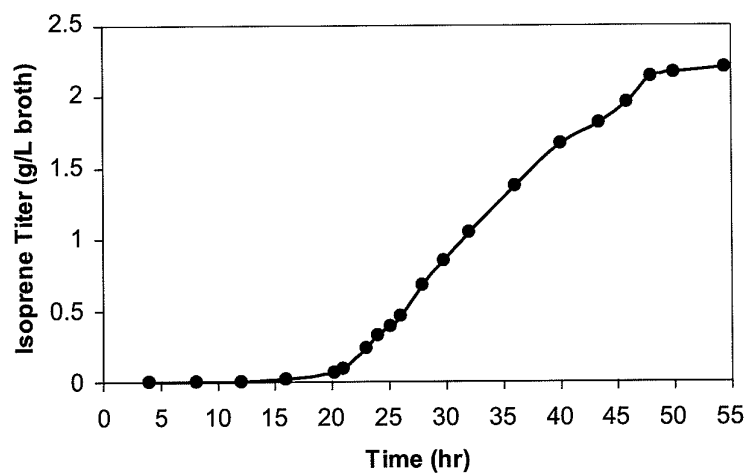
Figure 54**Figure 55**

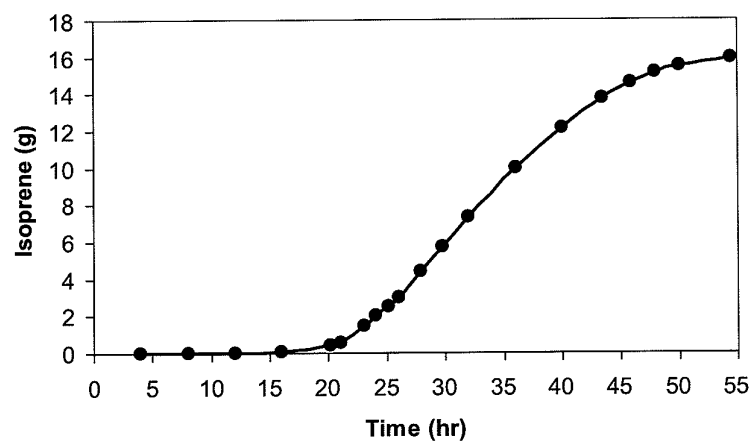
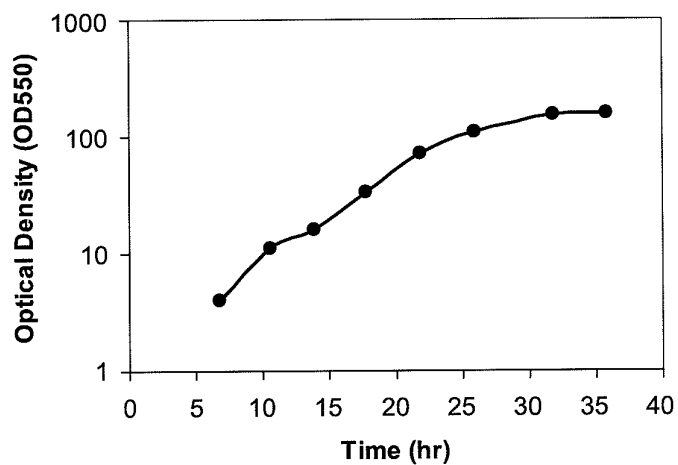
Figure 56**Figure 57**

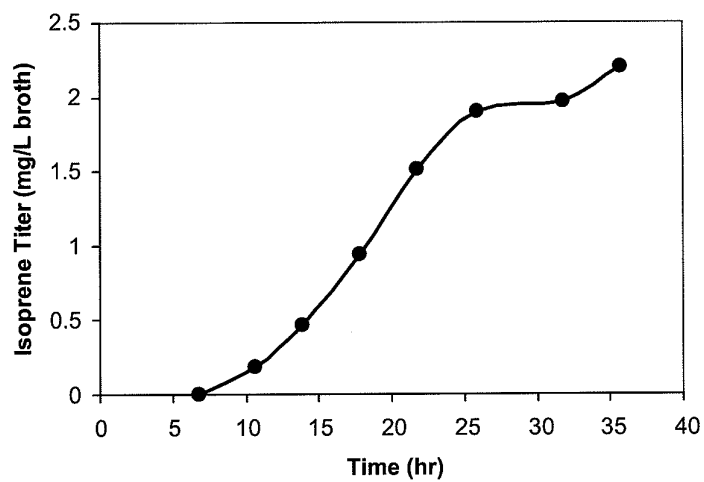
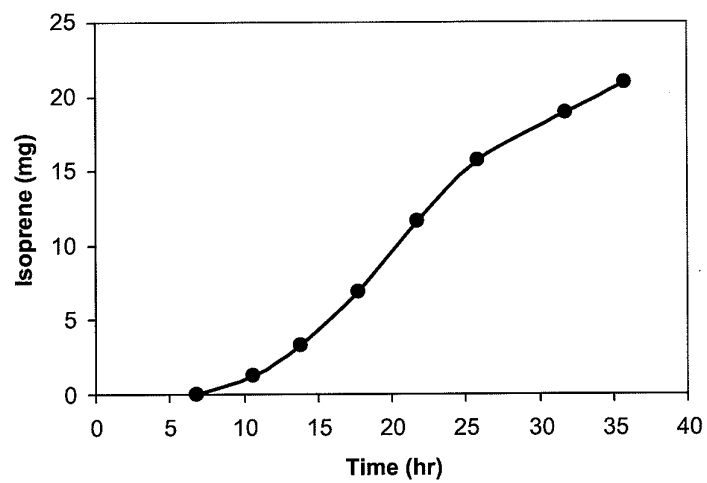
Figure 58**Figure 59**

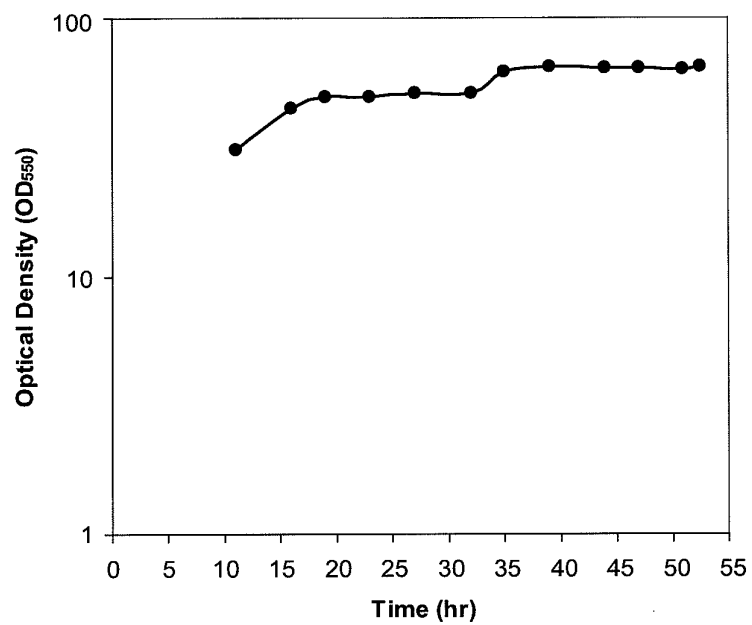
Figure 60A

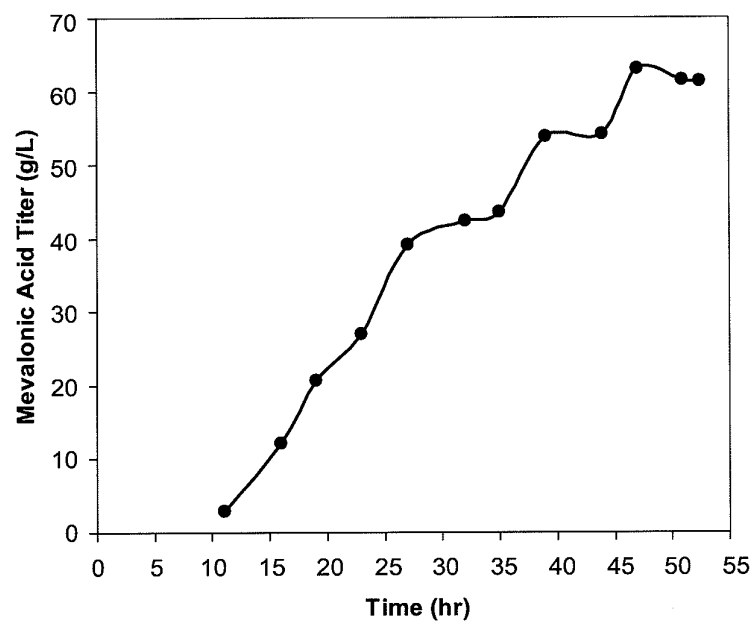
Figure 60B

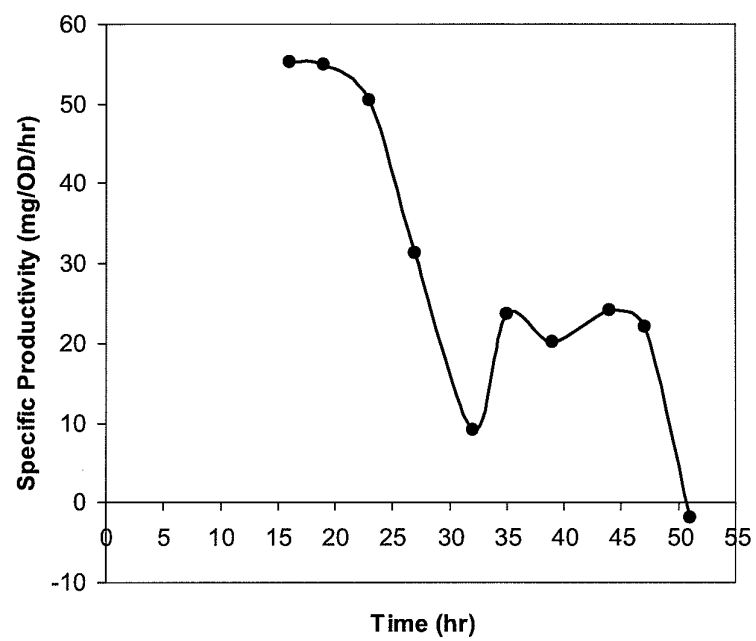
Figure 60C

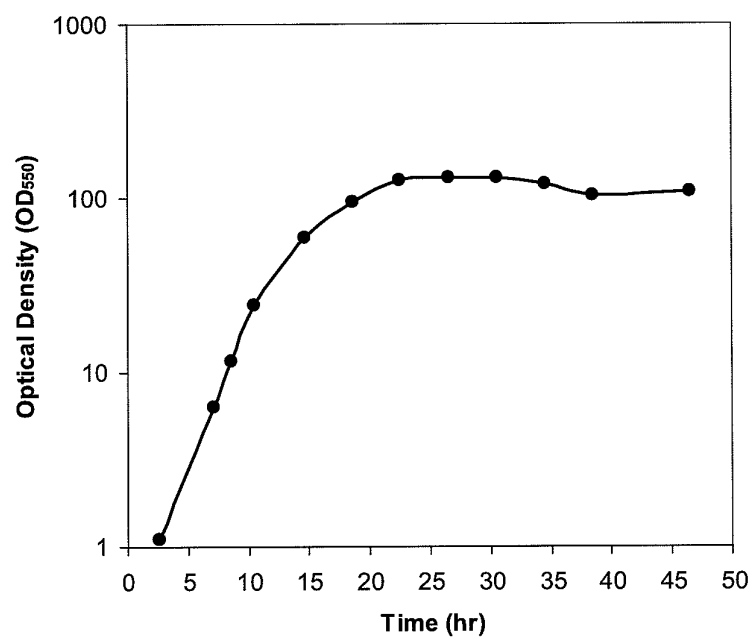
Figure 61A

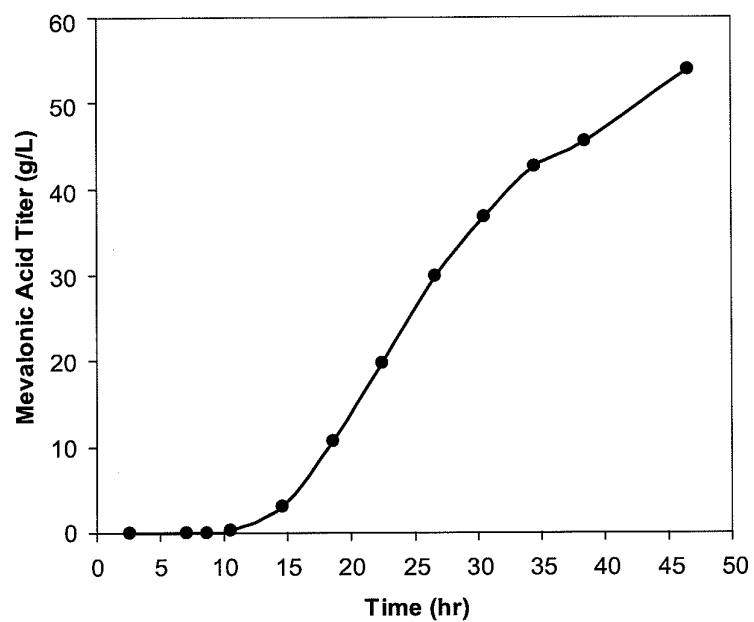
Figure 61B

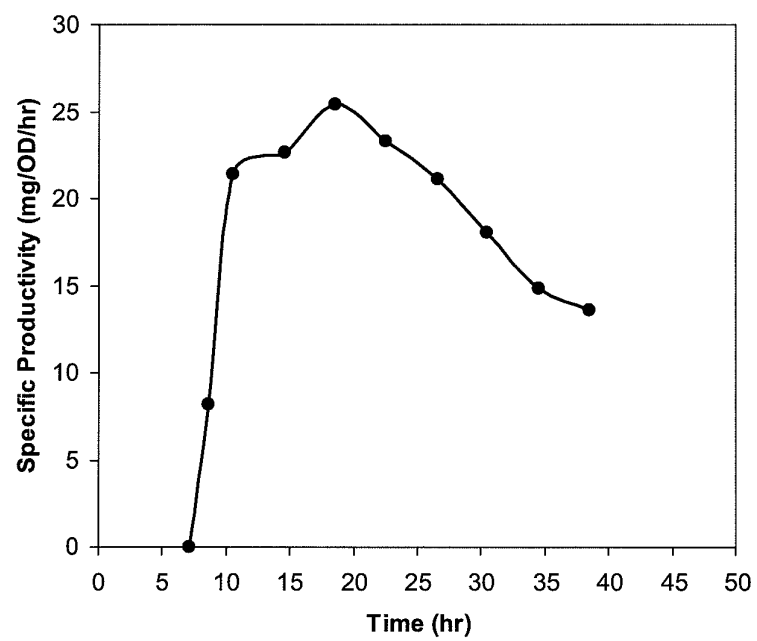
Figure 61C

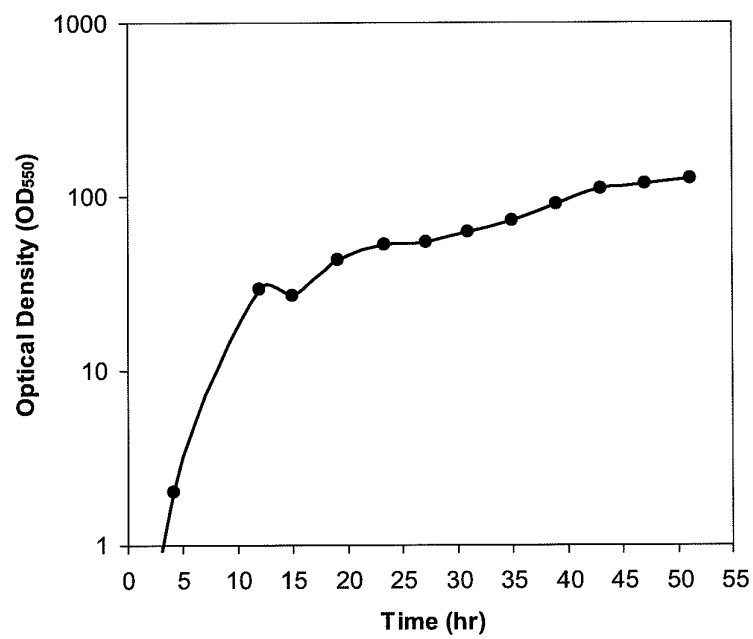
Figure 62A

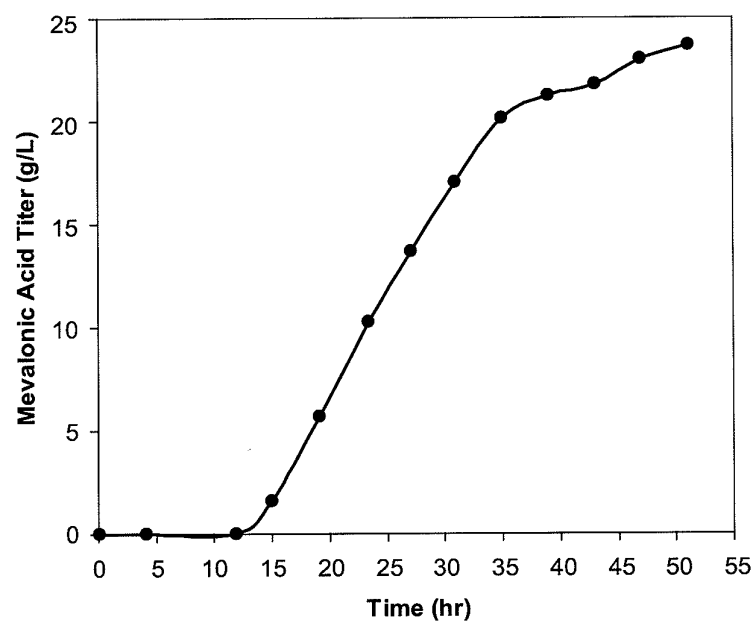
Figure 62B

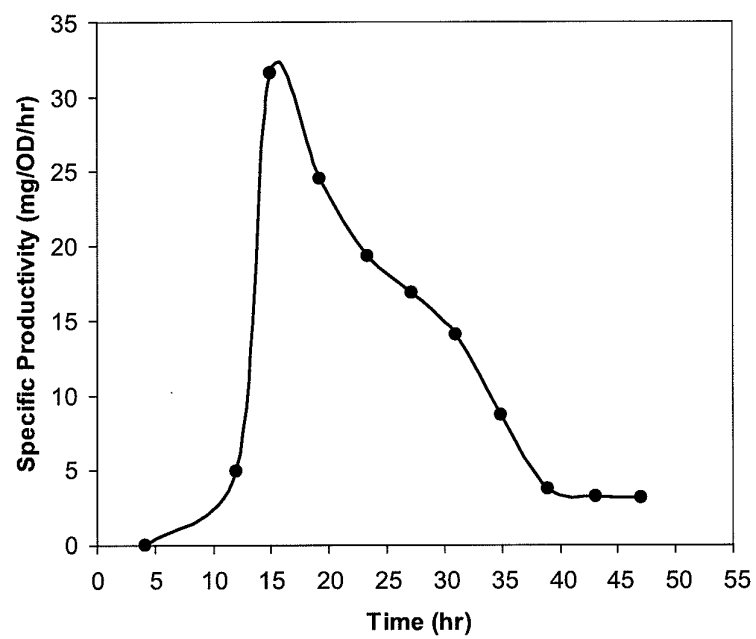
Figure 62C

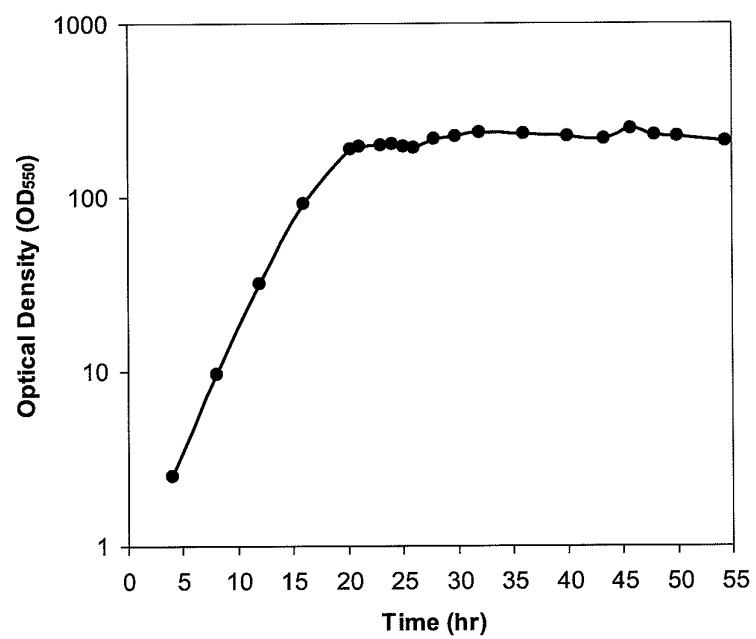
Figure 63A

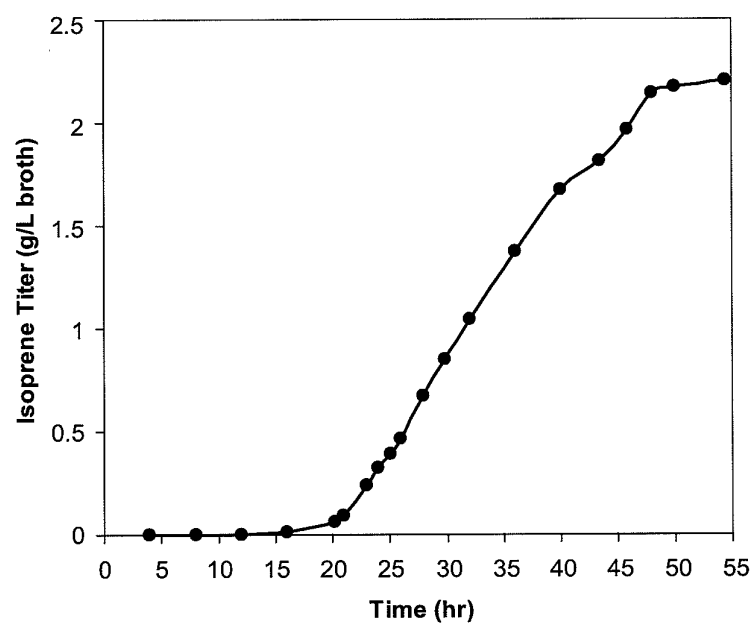
Figure 63B

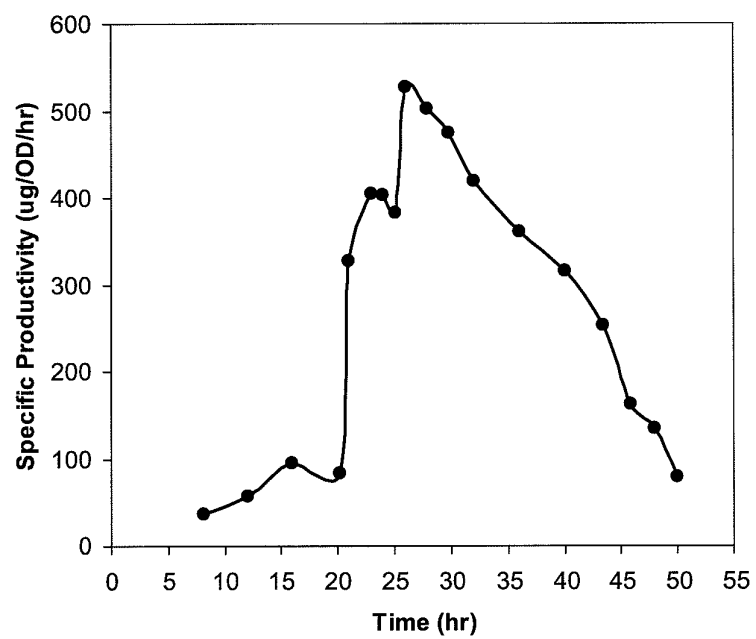
Figure 63C

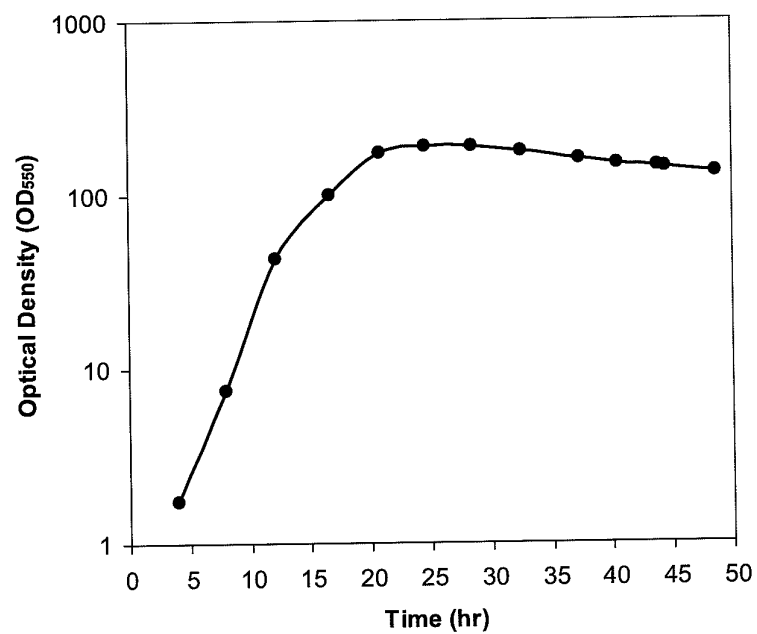
Figure 64A

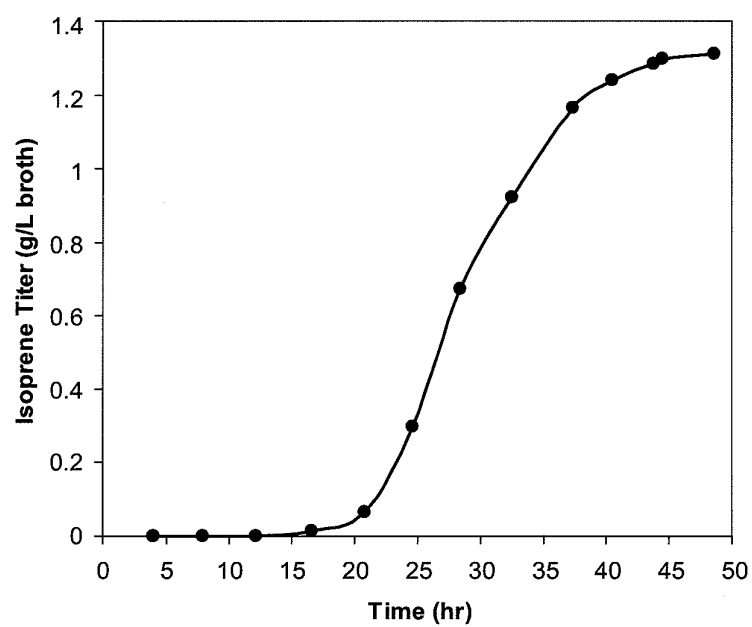
Figure 64B

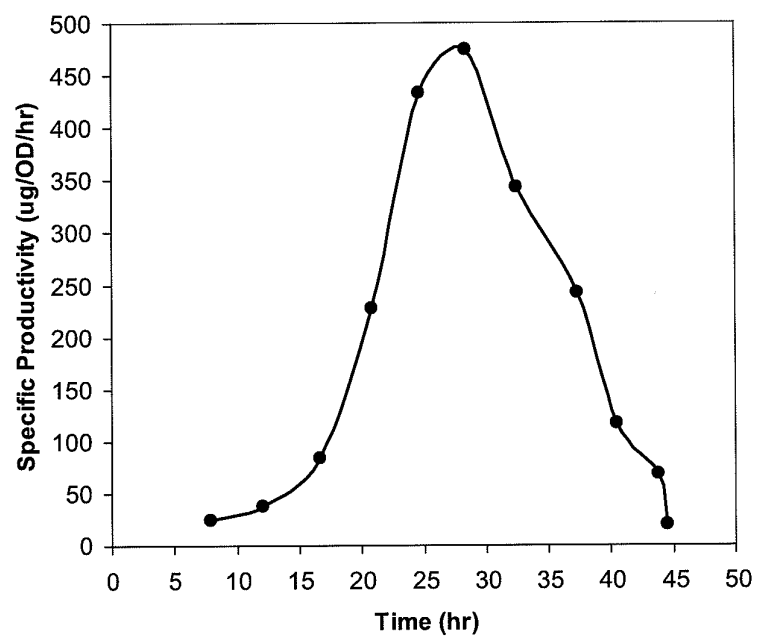
Figure 64C

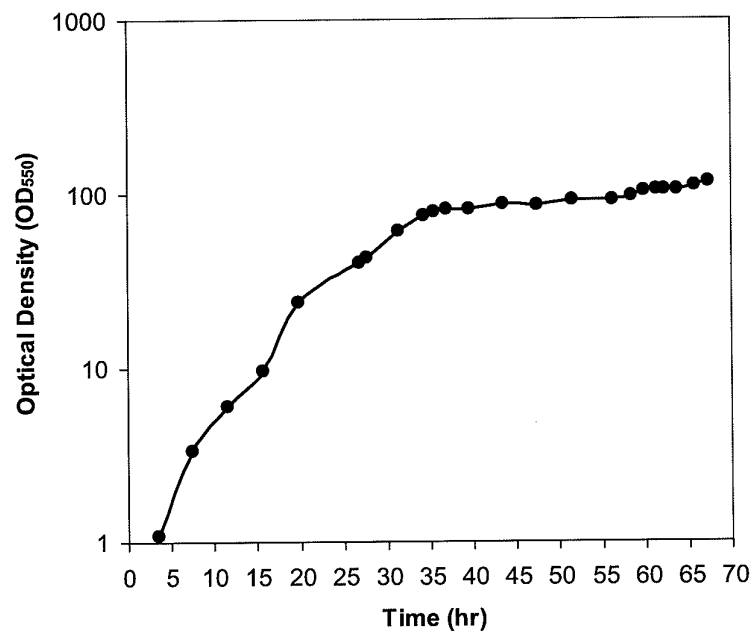
Figure 65A

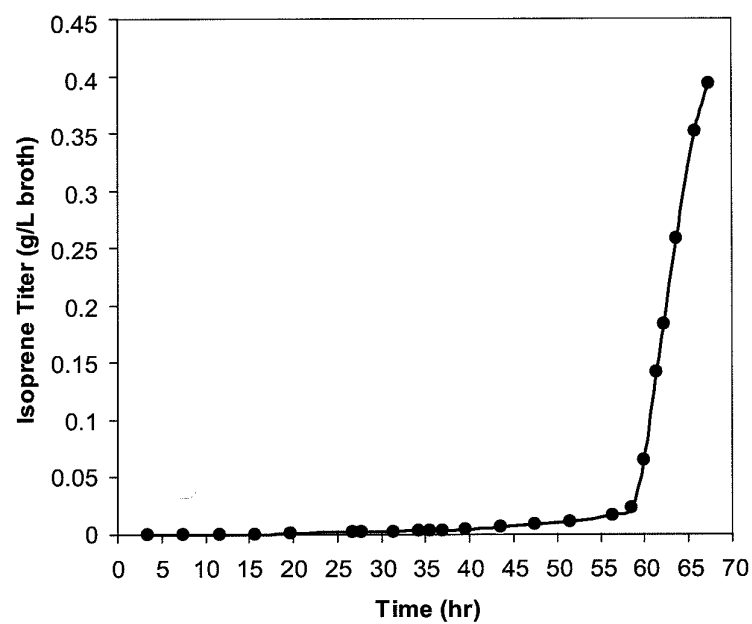
Figure 65B

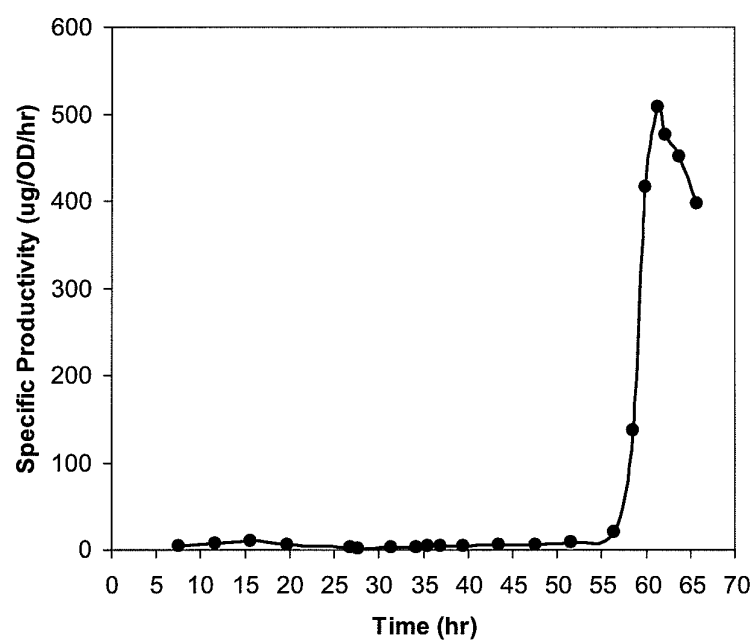
Figure 65C

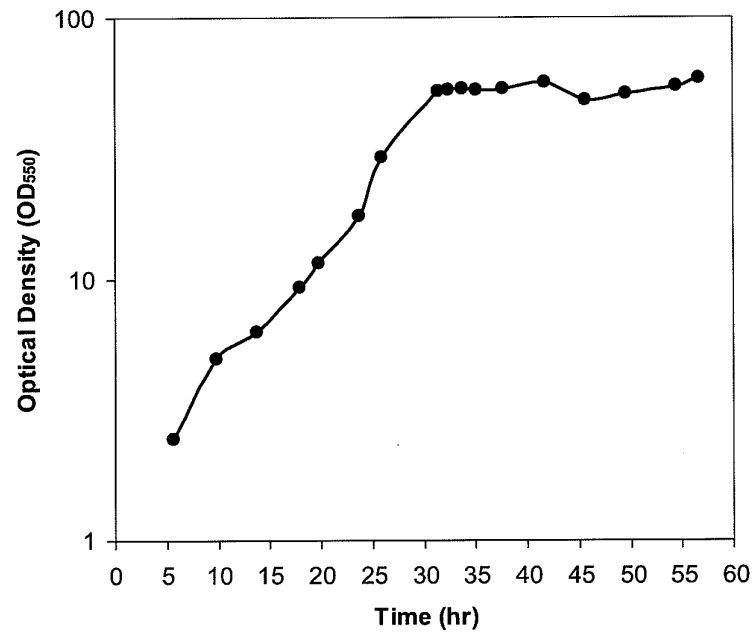
Figure 66A

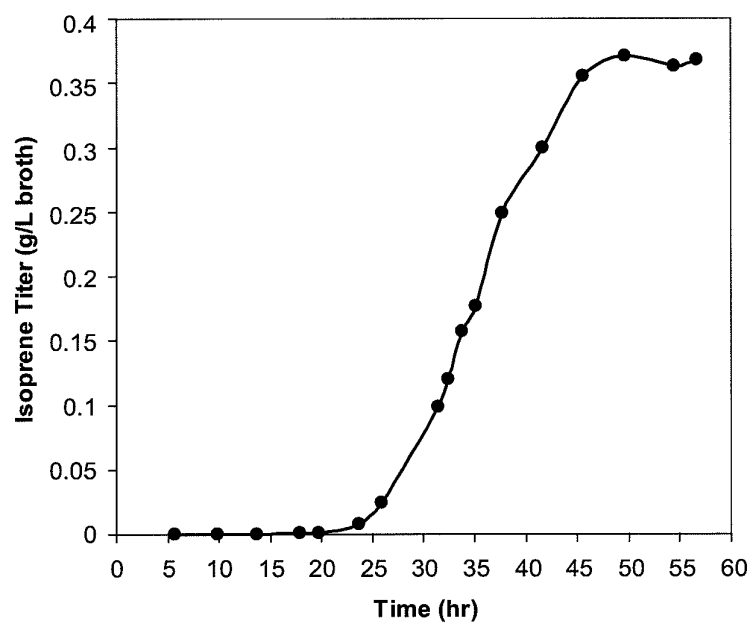
Figure 66B

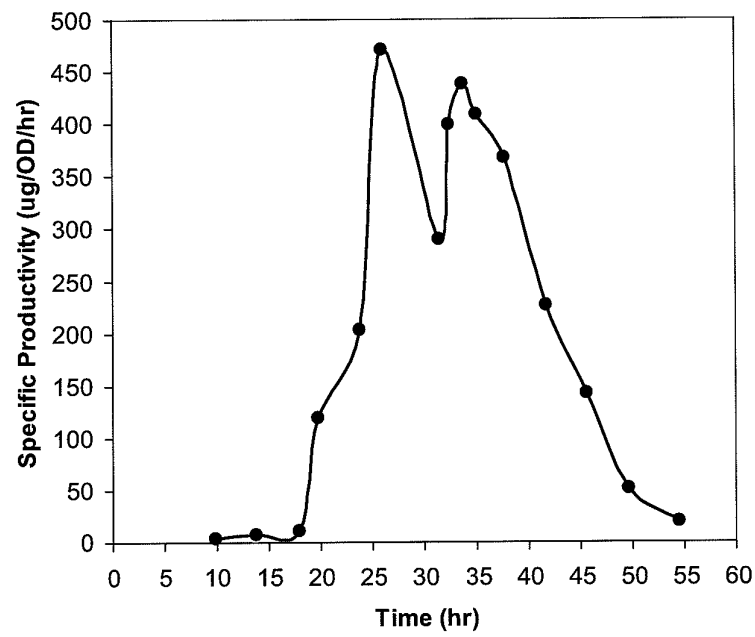
Figure 66C

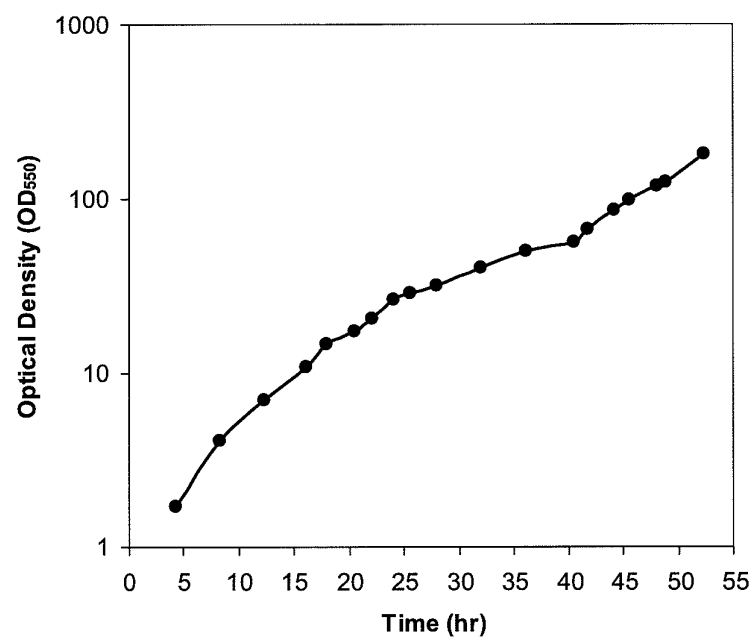
Figure 67A

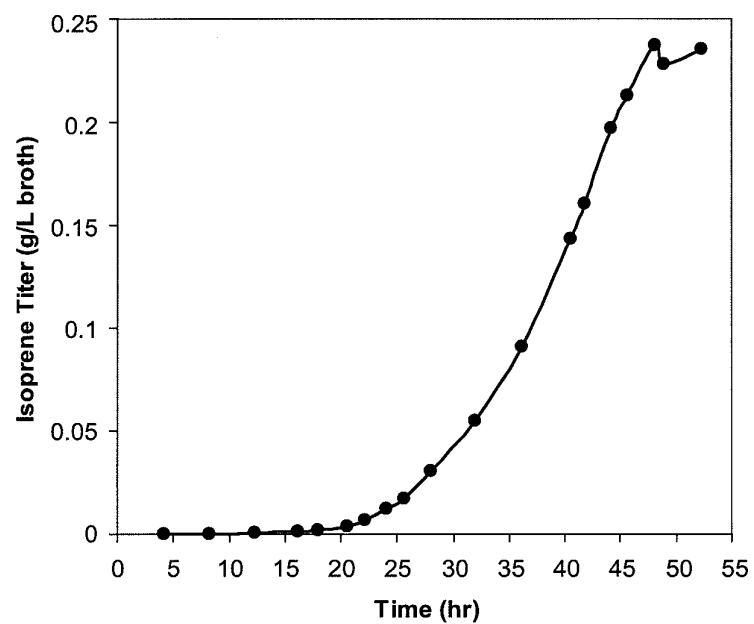
Figure 67B

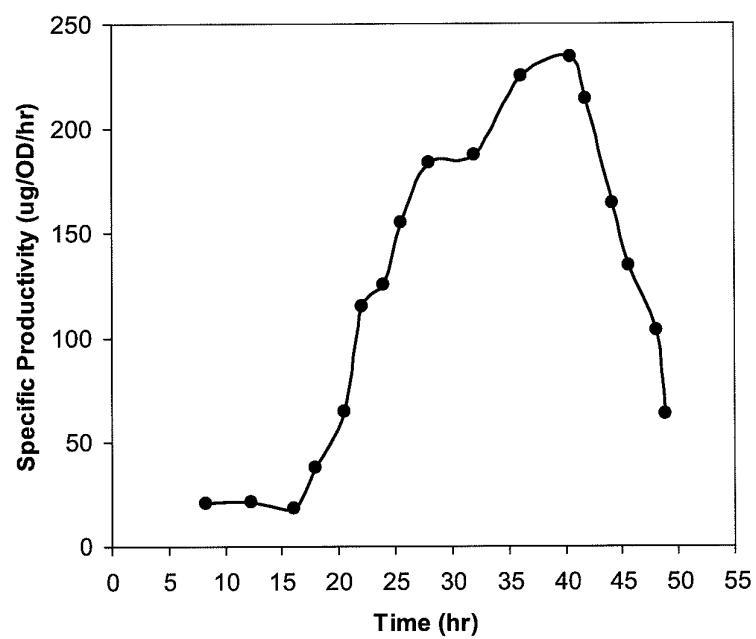
Figure 67C

Figure 68

Isoprene in air at 40°C	
Isoprene in 21%O2/79%N2	
Isoprene in 17%O2/83%N2	
Isoprene in 16%O2/84%N2	
Isoprene in 15%O2/85%N2	
Isoprene in 14%O2/86%N2	
Isoprene in 13%O2/87%N2	
Isoprene in 12%O2/88% N2	
Isoprene in 11%O2/89%N2	
Isoprene in 10%O2/90%N2	
Isoprene in 9%O2/91%N2	
Isoprene in 8%O2/92%N2	
Isoprene in 7%O2/93%N2	
Isoprene in 6%O2/94%N2	

Figure 69

4 % water and Air		
4%H2O/21%O2/75%N2		
4%H2O/17%O2/79%N2		
4%H2O/16%O2/80%N2		
4%H2O/15%O2/81%N2		
4%H2O/14%O2/82%N2		
4%H2O/13%O2/83%N2		
4%H2O/12%O2/84%N2		
4%H2O/11%O2/85%N2		
4%H2O/10%O2/86%N2		
4%H2O/9%O2/87%N2		
4%H2O/8%O2/88%N2		
4% H2 O / 7 % O 2 / 8 9 % N 2		
4%H2O/6%O2/90%N2		

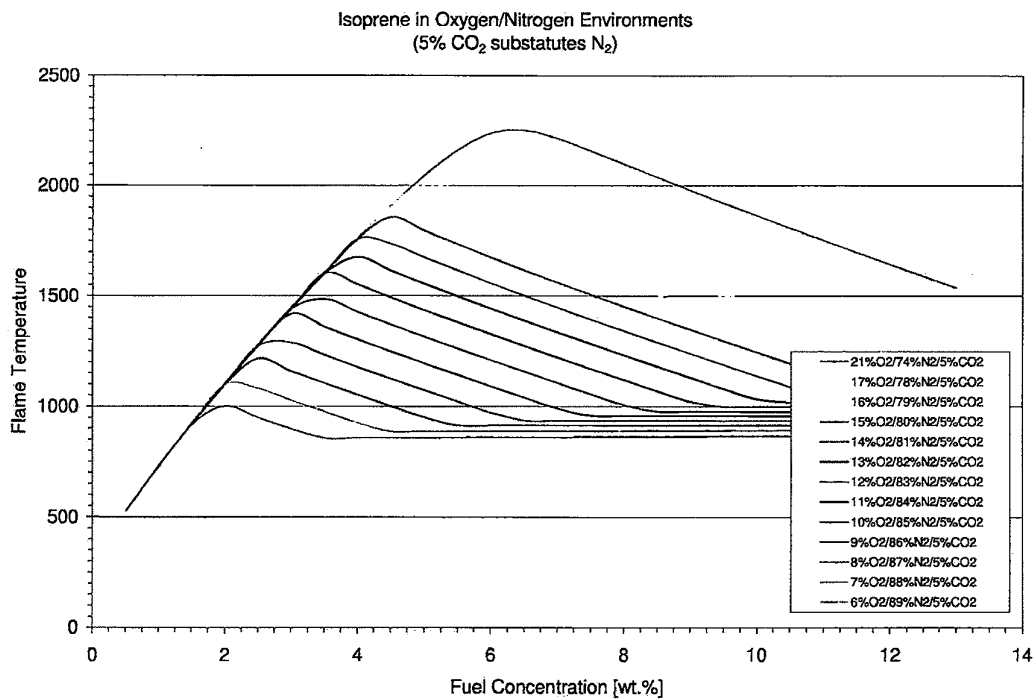
Figure 70

Figure 71

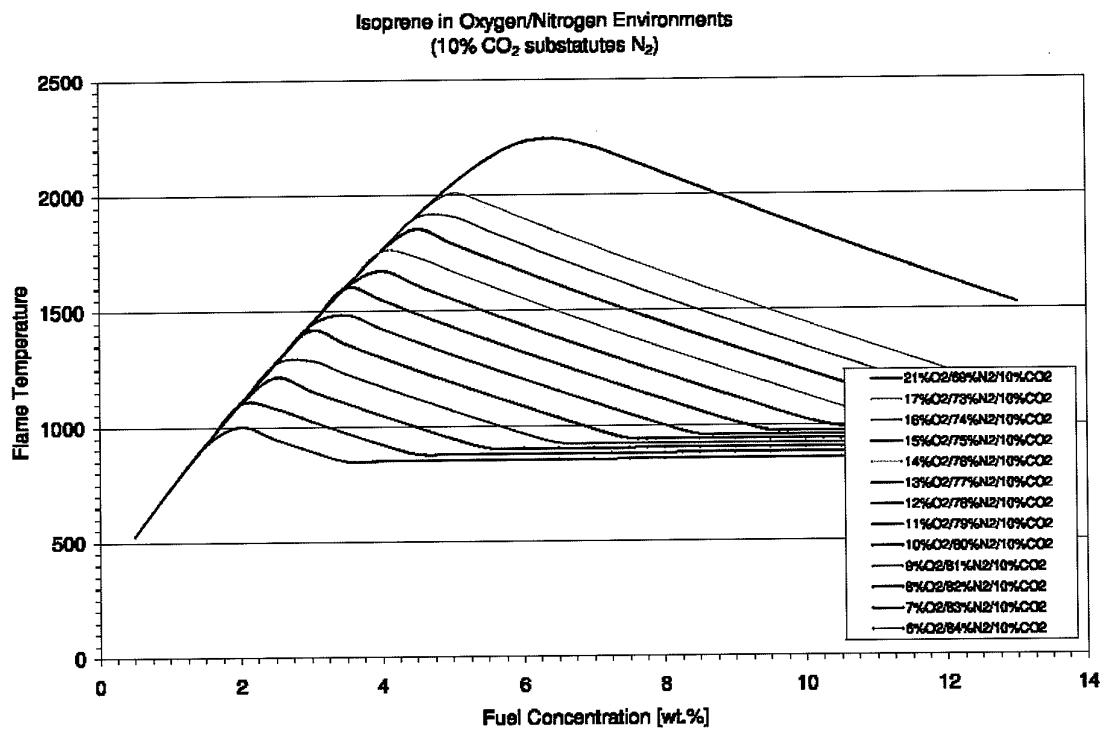


Figure 72

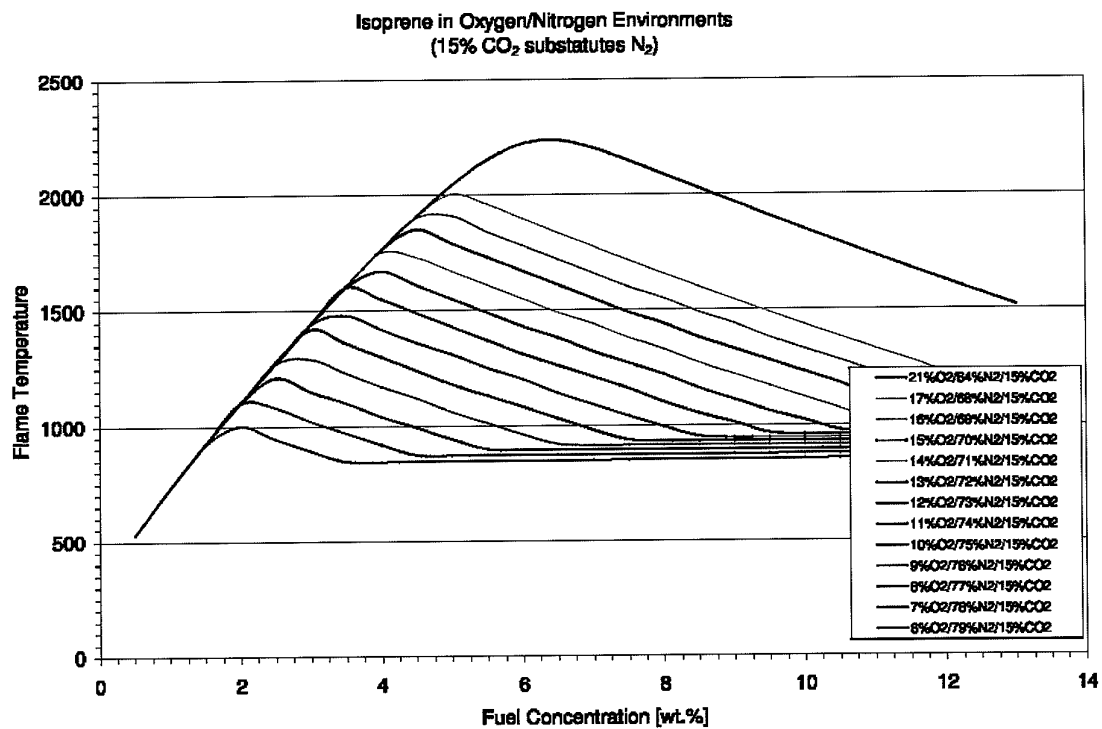


Figure 73

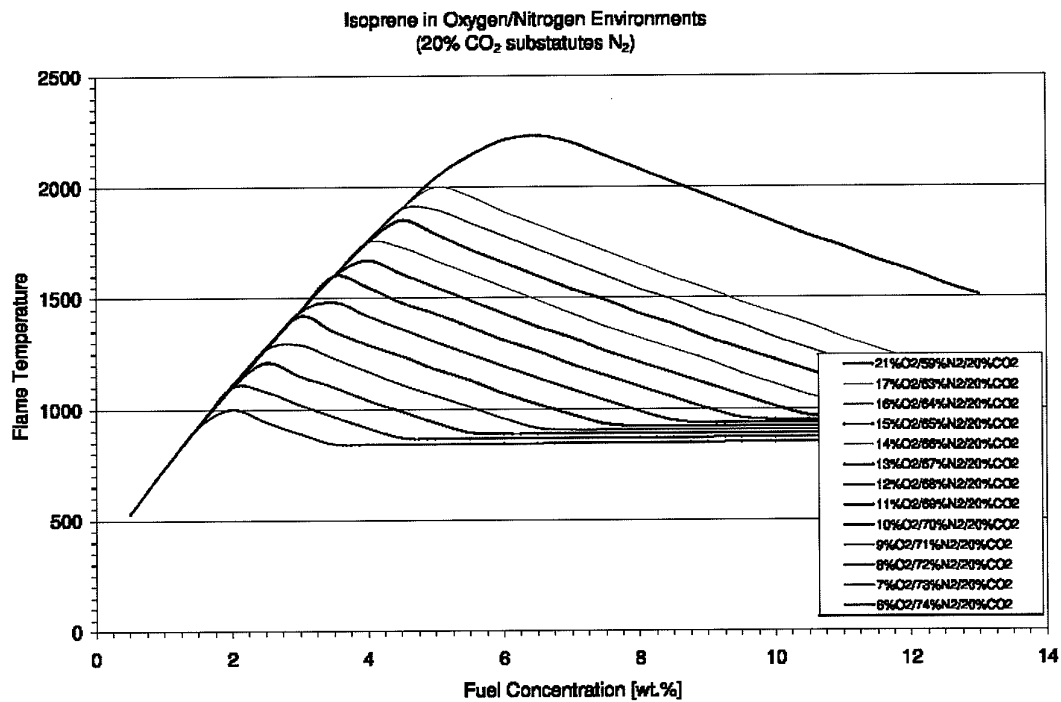


Figure 74

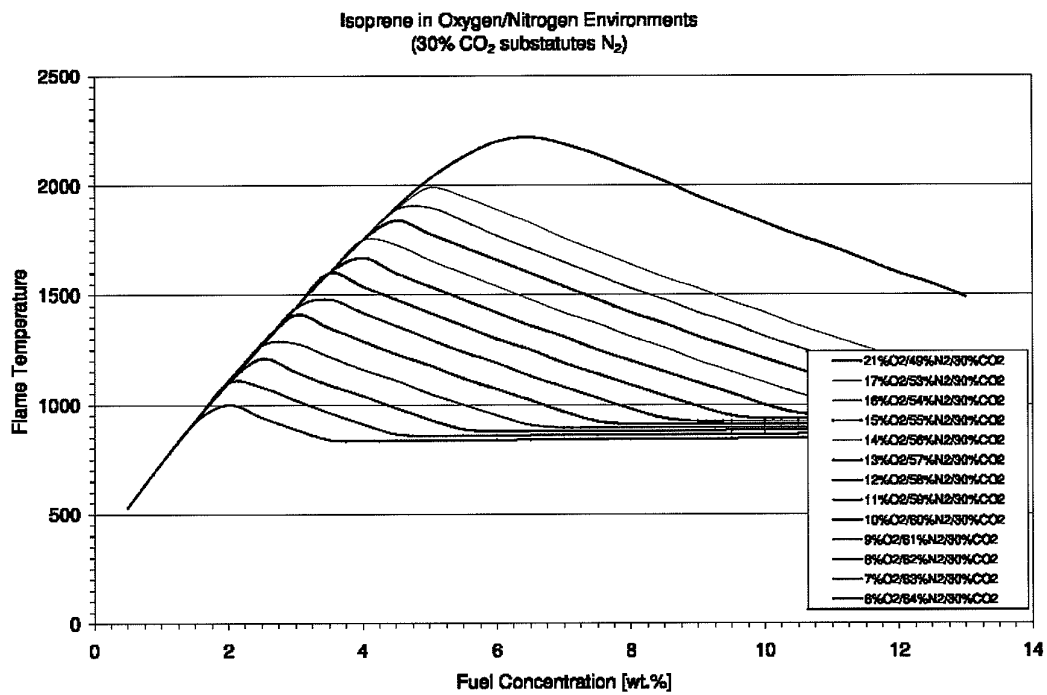


Figure 75A

Concentration at Deflagration																		
Fuel Makeup		Molar Concentration based on 100g of sample																
Oxidizer Makeup		Volumetric Concentrations based on ideal gas law																
Fuel Conc.	Oxidizer Conc.	Isoprene (wt. %)	H ₂ O (wt. %)	O ₂ (wt. %)	N ₂ (wt. %)	Isoprene (mole)	H ₂ O (mole)	O ₂ (mole)	N ₂ (mole)	Total (mole)	Isoprene (vol. %)	O ₂ (vol. %)	N ₂ (vol. %)	H ₂ O (vol. %)				
3.10	96.90	100	0	12	88	4.56	0.00	36.34	304.54	345.44	1.32	10.52	88.16	0.00				
3.10	96.90	100	0	13	87	4.56	0.00	39.37	301.08	345.01	1.32	11.41	87.27	0.00				
3.10	96.90	100	0	14	86	4.56	0.00	42.39	297.62	344.57	1.32	12.30	86.37	0.00				
3.10	96.90	100	0	15	85	4.56	0.00	45.42	294.16	344.14	1.32	13.20	85.48	0.00				
3.10	96.90	100	0	16	84	4.56	0.00	48.45	290.70	343.71	1.33	14.10	84.58	0.00				
3.10	96.90	100	0	17	83	4.56	0.00	51.48	287.24	343.28	1.33	15.00	83.68	0.00				
3.10	96.90	100	0	21	79	4.56	0.00	63.59	273.40	341.55	1.33	18.62	80.05	0.00				
3.50	96.50	100	0	11.1	88.9	5.15	0.00	33.47	306.39	345.01	1.49	9.70	88.81	0.00				
4.40	95.60	100	0	12	88	6.47	0.00	35.85	300.46	342.78	1.89	10.46	87.65	0.00				
5.50	94.50	100	0	13	87	8.09	0.00	38.39	293.63	340.10	2.38	11.29	86.33	0.00				
6.60	93.40	100	0	14	86	9.71	0.00	40.86	286.87	337.44	2.88	12.11	85.01	0.00				
7.60	92.40	100	0	15	85	11.18	0.00	43.31	280.50	334.99	3.34	12.93	83.73	0.00				
8.50	91.50	100	0	16	84	12.50	0.00	45.75	274.50	332.75	3.76	13.75	82.49	0.00				
9.60	90.40	100	0	17	83	14.12	0.00	48.03	267.97	330.11	4.28	14.55	81.18	0.00				
13.50	86.50	100	0	21	79	19.85	0.00	56.77	244.05	320.67	6.19	17.70	76.11	0.00				

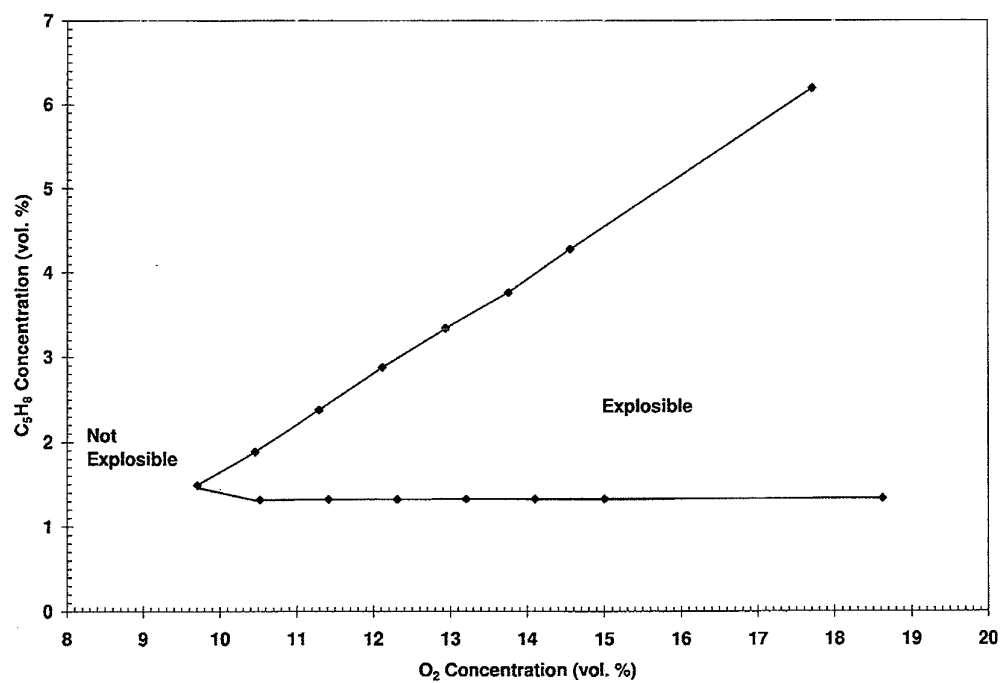
Figure 75B

Figure 76A

Concentration at Deflagration														
		Fuel Makeup	Oxidizer Makeup			Molar Concentration based on 100g of sample					Volumetric Concentrations based on ideal gas law			
Fuel Conc. (wt.%)	Oxidizer Conc. (wt.%)	Isoprene (wt. %)	H ₂ O (wt. %)	O ₂ (wt. %)	N ₂ (wt. %)	Isoprene (mole)	H ₂ O (mole)	O ₂ (mole)	N ₂ (mole)	Total (mole)	Isoprene (vol. %)	O ₂ (vol. %)	N ₂ (vol. %)	H ₂ O (vol. %)
3.252	96.748	100	4	12	84	4.78	21.50	36.28	290.24	352.81	1.36	10.28	82.27	6.09
3.274	96.726	100	4	13	83	4.81	21.49	39.29	286.72	352.33	1.37	11.15	81.38	6.10
3.290	96.710	100	4	14	82	4.84	21.49	42.31	283.22	351.86	1.38	12.02	80.49	6.11
3.288	96.712	100	4	15	81	4.84	21.49	45.33	279.77	351.43	1.38	12.90	79.61	6.12
3.286	96.714	100	4	16	80	4.83	21.49	48.36	276.33	351.01	1.38	13.78	78.72	6.12
3.284	96.716	100	4	17	79	4.83	21.49	51.38	272.88	350.58	1.38	14.66	77.84	6.13
3.276	96.724	100	4	21	75	4.82	21.49	63.48	259.08	348.87	1.38	18.19	74.26	6.16
3.500	96.500	100	4	11.5	84.5	5.15	21.44	34.68	291.22	352.49	1.46	9.84	82.62	6.08
4.200	95.800	100	4	12	84	6.18	21.29	35.93	287.40	350.79	1.76	10.24	81.93	6.07
5.300	94.700	100	4	13	83	7.79	21.04	38.47	280.72	348.03	2.24	11.05	80.66	6.05
6.400	93.600	100	4	14	82	9.41	20.80	40.95	274.11	345.28	2.73	11.86	79.39	6.02
7.400	92.600	100	4	15	81	10.88	20.58	43.41	267.88	342.74	3.18	12.66	78.16	6.00
8.500	91.500	100	4	16	80	12.50	20.33	45.75	261.43	340.01	3.68	13.46	76.89	5.98
9.400	90.600	100	4	17	79	13.82	20.13	48.13	255.62	337.71	4.09	14.25	75.69	5.96
13.300	86.700	100	4	21	75	19.56	19.27	56.90	232.23	327.95	5.96	17.35	70.81	5.87

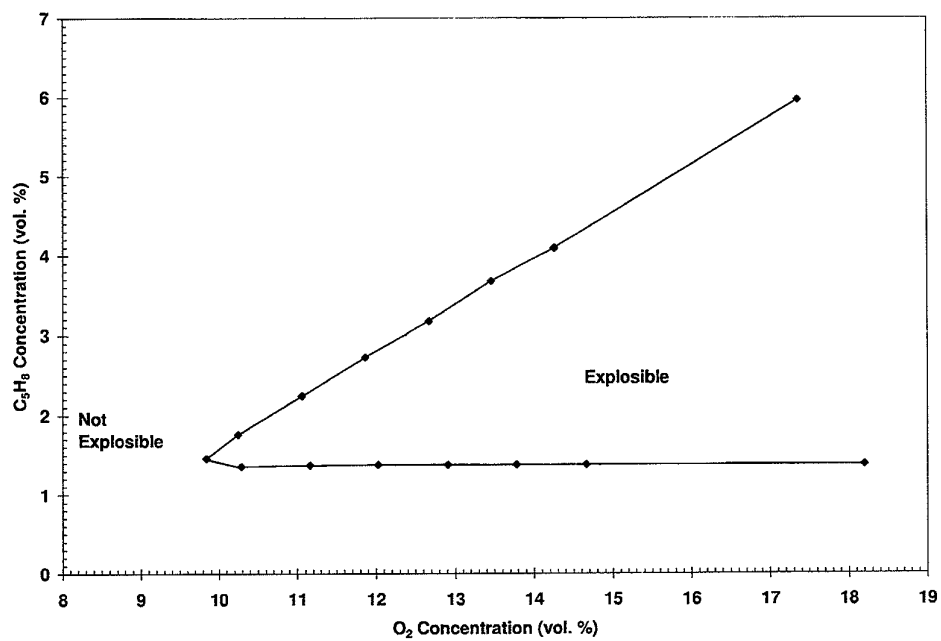
Figure 76B

Figure 77

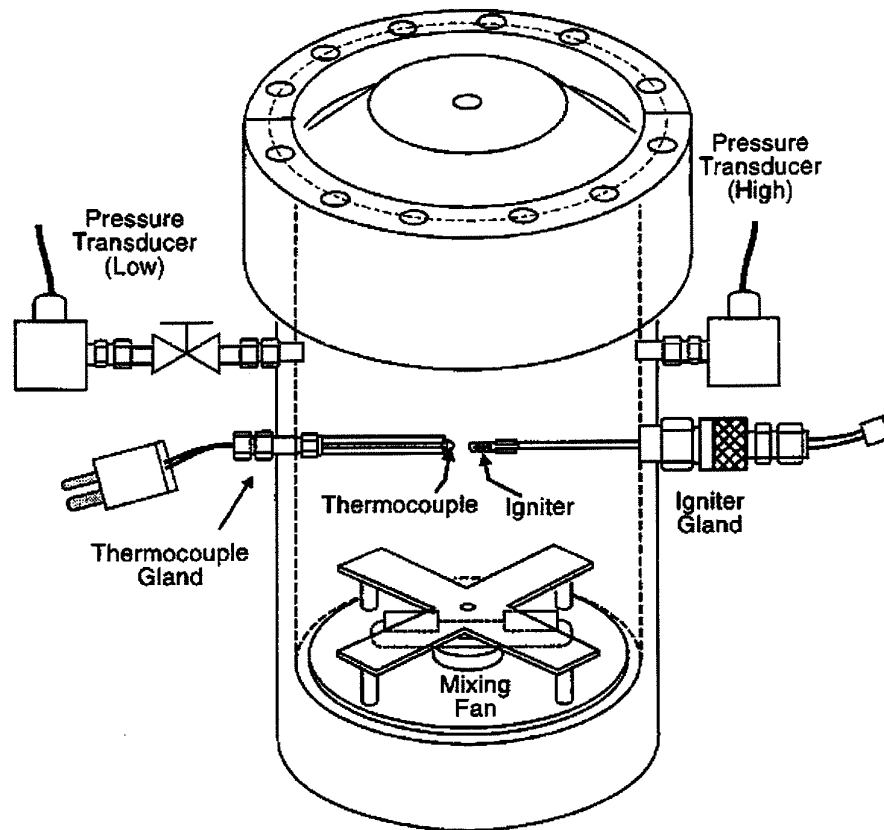


Figure 78A

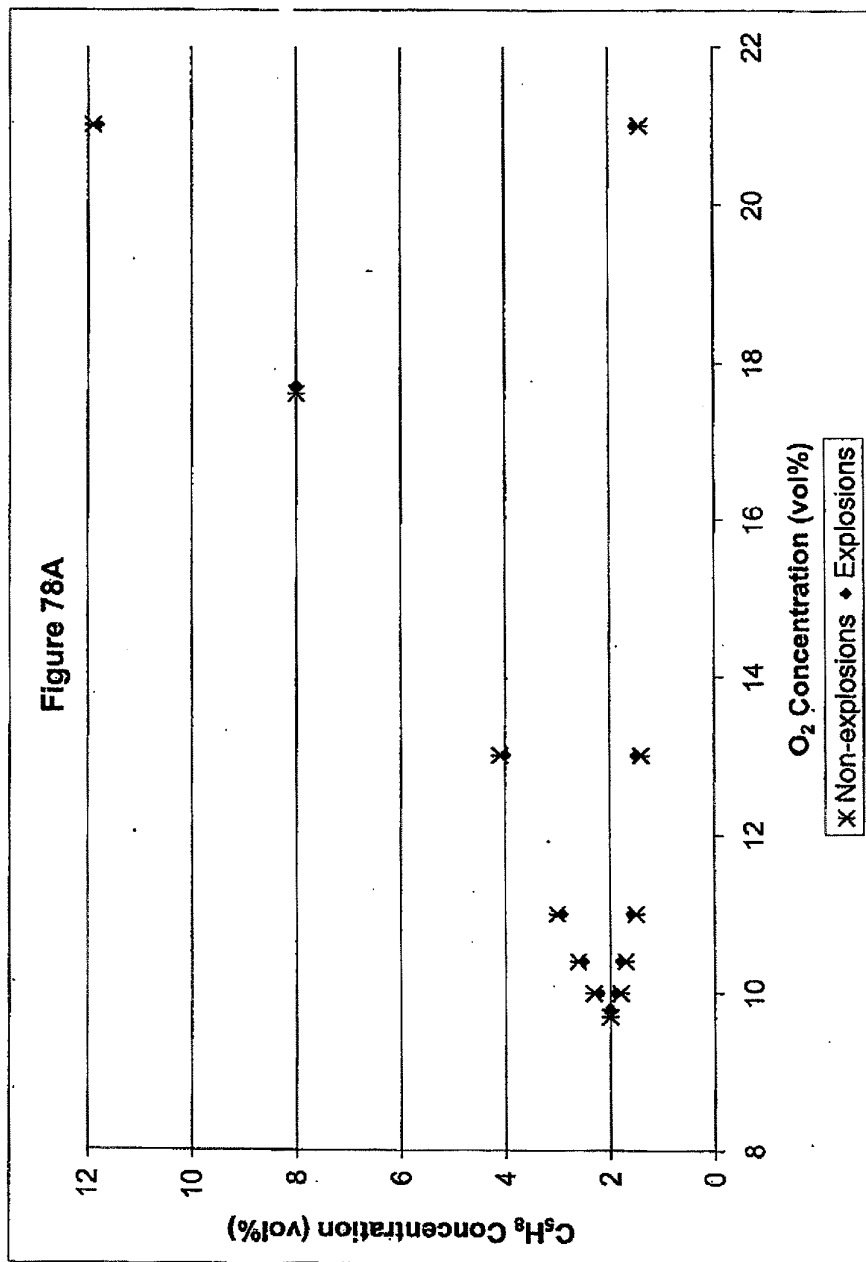


Figure 78B

Explosions		Non-explosions	
O ₂ Concentration	C ₅ H ₈ Concentration	O ₂ Concentration	C ₅ H ₈ Concentration
(vol. %)	(vol. %)	(vol. %)	(vol. %)
21.0	1.5	21.0	1.4
13.0	1.5	13.0	1.4
11.0	1.6	11.0	1.5
10.4	1.8	10.4	1.7
10.0	1.9	10.0	1.8
9.8	2	9.7	2
10.0	2.2	10.0	2.3
10.4	2.5	10.4	2.6
11.0	2.9	11.0	3.0
13.0	4.0	13.0	4.1
17.7	8.0	17.6	8.0
21.0	11.8	21.0	11.9

Figure 78C

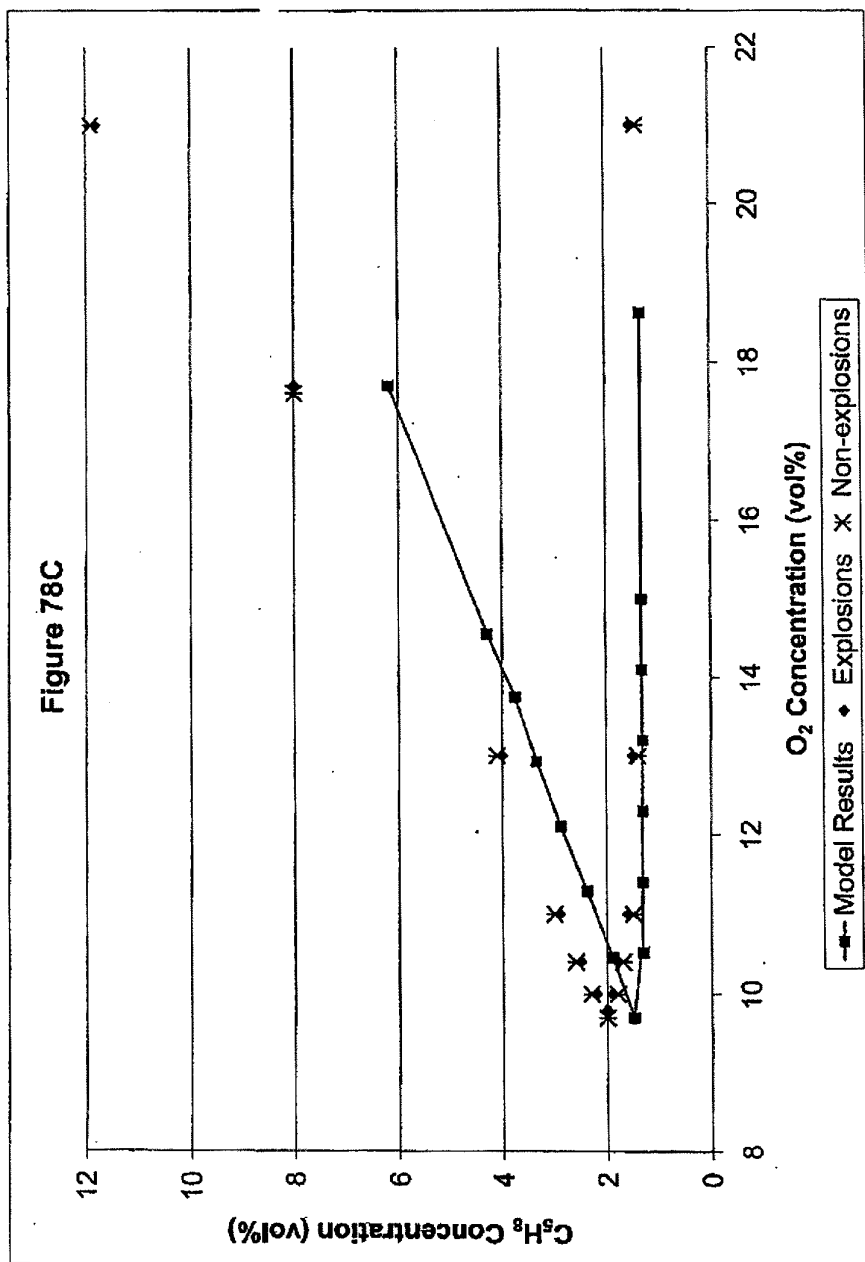


Figure 79A

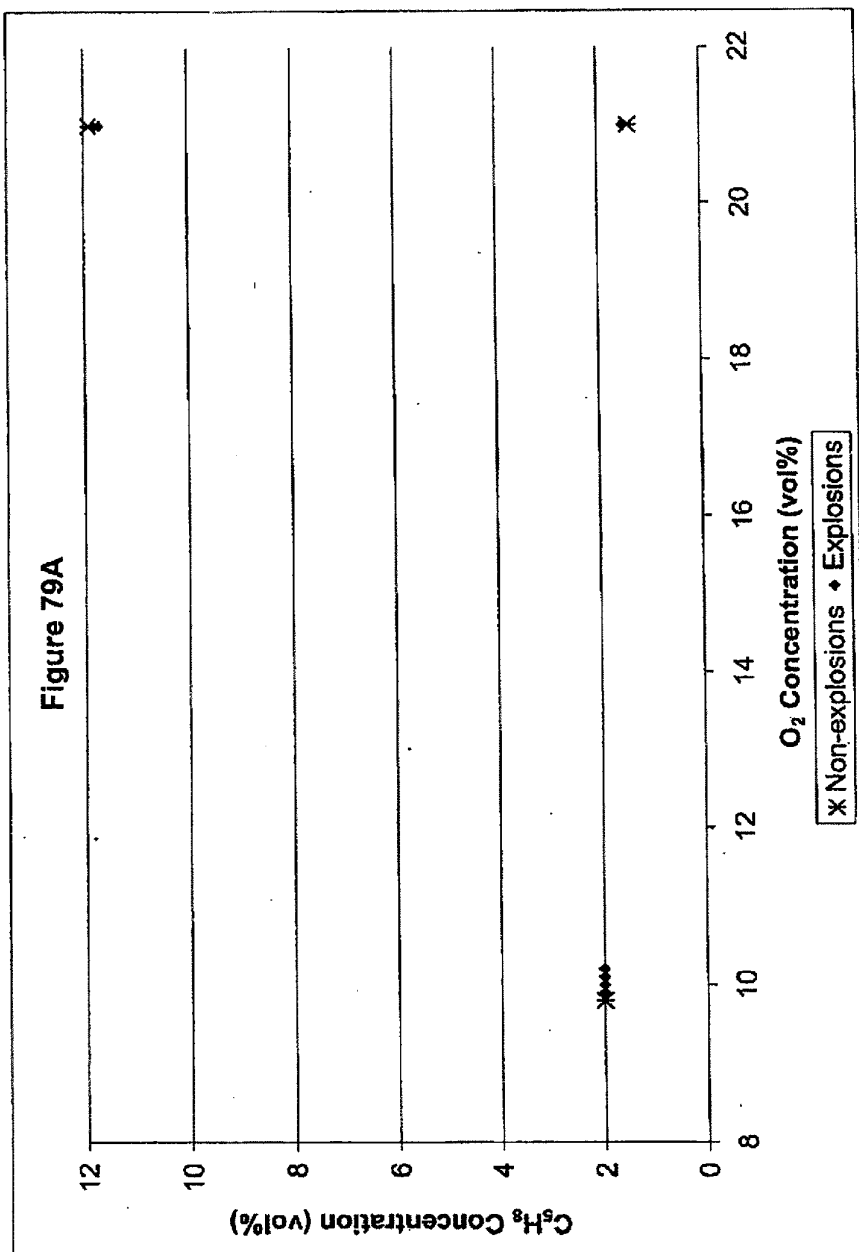


Figure 79B

Explosions		Non-explosions	
O ₂ Concentra tion	C ₅ H ₈ Concentra tion	O ₂ Concentra tion	C ₅ H ₈ Concentra tion
(vol. %)	(vol. %)	(vol. %)	(vol. %)
21.0	11.7	21.0	11.9
21.0	11.8	21.0	11.9
21.0	11.8	21.0	11.9
21.0	1.5	21.0	1.4
21.0	1.5	21.0	1.4
10.2	2.0	21.0	1.4
10.1	2.0	9.8	2.0
10.0	2.0	9.8	2.0
9.9	2.0	9.8	2.0

Figure 79C

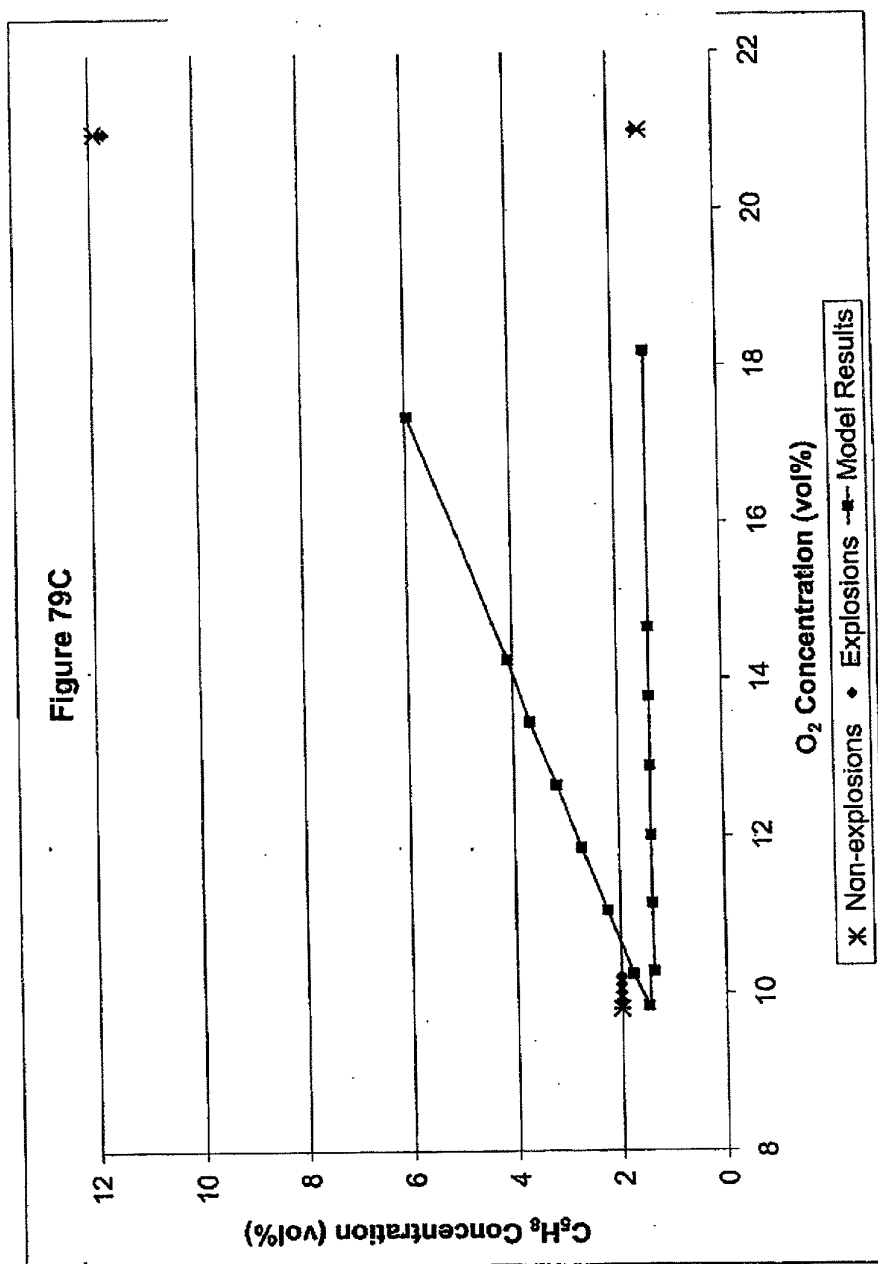


Figure 80A

TEST SERIES 1

Test	Data File Name	Temp °C	Initial Pressure bara	Partial Pressures			Concentrations			Result	Pex bara
				C ₅ H ₈ mbar	N ₂ mbar	O ₂ mbar	C ₅ H ₈ vol. %	N ₂ vol. %	O ₂ vol. %		
1	T11120700	40	1.012	12	787	213	1.2	77.8	21.0	Non-Explosion	1.05
2	T11120701	40	1.016	16	787	213	1.6	77.5	21.0	Explosion	5.5
3	T11120702	40	1.015	14	788	213	1.4	77.6	21.0	Non-Explosion	<1.02
4	T11120703	40	1.014	15	786	213	1.5	77.5	21.0	Non-Explosion	<1.02
5	T11120704	40	1.014	15	786	213	1.5	77.5	21.0	Explosion	4.31
6	T11120705	40	1.017	18	785	214	1.8	77.2	21.0	Explosion	5.47
7	T11120706	40	1.014	15	786	213	1.5	77.5	21.0	Explosion	4.51
8	T11120707	40	1.014	14	787	213	1.4	77.6	21.0	Non-Explosion	<1.02
9	T11120708	40	1.014	14	787	213	1.4	77.6	21.0	Non-Explosion	1.05
10	T11120709	40	1.015	102	700	213	10.0	69.0	21.0	Explosion	1.45
11	T11120710	40	1.014	102	699	213	10.1	68.9	21.0	Explosion	1.39
12	T11120711	40	1.014	106	695	213	10.5	68.5	21.0	Explosion	1.34
13	T11120712	40	1.014	113	688	213	11.1	67.9	21.0	Explosion	1.29
14	T11120713	40	1.014	122	679	213	12.0	67.0	21.0	Non-Explosion	<1.02
15	T11120714	40	1.014	117	684	213	11.5	67.5	21.0	Explosion	1.32
16	T11120715	40	1.014	120	681	213	11.8	67.2	21.0	Non-Explosion	1.08
17	T11130700	40	1.014	120	681	213	11.8	67.2	21.0	Explosion	1.09
18	T11130701	40	1.014	121	680	213	11.9	67.1	21.0	Non-Explosion	1.07
19	T11130702	40	1.015	121	681	213	11.9	67.1	21.0	Non-Explosion	1.06
20	T11130703	40	1.015	121	681	213	11.9	67.1	21.0	Non-Explosion	1.07
21	T11130704	40	1.015	30	853	132	3.0	84.0	13.0	Explosion	1.61
22	T11130705	40	1.014	36	846	132	3.6	83.4	13.0	Explosion	1.28
23	T11130706	40	1.014	39	843	132	3.8	83.1	13.0	Explosion	1.12
24	T11130707	40	1.015	41	842	132	4.0	83.0	13.0	Explosion	1.09
25	T11130708	40	1.014	42	840	132	4.1	82.8	13.0	Non-Explosion	1.06
26	T11130709	40	1.015	42	841	132	4.1	82.9	13.0	Non-Explosion	1.06
27	T11130710	40	1.014	42	840	132	4.1	82.8	13.0	Non-Explosion	1.05
28	T11130711	40	1.014	15	867	132	1.5	85.5	13.0	Non-Explosion	1.03
29	T11130712	40	1.014	16	866	132	1.6	85.4	13.0	Explosion	4.81
30	T11130713	40	1.014	15	867	132	1.5	85.5	13.0	Explosion	4
31	T11130714	40	1.014	14	868	132	1.4	85.6	13.0	Non-Explosion	1.03
32	T11130715	40	1.014	14	868	132	1.4	85.6	13.0	Non-Explosion	<1.02
33	T11130716	40	1.014	14	868	132	1.4	85.6	13.0	Non-Explosion	1.03
34	T11130717	40	1.015	20	883	112	2.0	87.0	11.0	Explosion	1.7
35	T11130718	40	1.014	28	874	112	2.8	86.2	11.0	Non-Explosion	1.08
36	T11130719	40	1.014	28	874	112	2.8	86.2	11.0	Non-Explosion	1.08
37	T11130720	40	1.014	28	874	112	2.8	86.2	11.0	Explosion	1.13
38	T11130721	40	1.015	29	874	112	2.9	86.1	11.0	Non-Explosion	1.08
39	T11130722	40	1.014	29	873	112	2.9	86.1	11.0	Explosion	1.1

Figure 80B

Test	Data File Name	Temp °C	Initial Pressure bara	Partial Pressures			Concentrations			Result	Pex bara
				C ₅ H ₈ mbar	N ₂ mbar	O ₂ mbar	C ₅ H ₈ vol. %	N ₂ vol. %	O ₂ vol. %		
40	T11130723	40	1.014	30	872	112	3.0	86.0	11.0	Non-Explosion	1.08
41	T11130724	40	1.014	30	872	112	3.0	86.0	11.0	Non-Explosion	1.05
42	T11130725	40	1.014	30	872	112	3.0	86.0	11.0	Non-Explosion	1.05
43	T11130726	40	1.014	15	887	112	1.5	87.5	11.0	Non-Explosion	<1.02
44	T11130727	40	1.014	15	887	112	1.5	87.5	11.0	Non-Explosion	<1.02
45	T11140700	40	1.014	16	886	112	1.6	87.4	11.0	Non-Explosion	<1.02
46	T11140701	40	1.014	17	885	112	1.7	87.3	11.0	Explosion	1.81
47	T11140702	40	1.014	16	886	112	1.6	87.4	11.0	Explosion	1.54
48	T11140703	40	1.014	15	887	112	1.5	87.5	11.0	Non-Explosion	<1.02
49	T11140704	40	1.015	20	899	96	2.0	88.6	9.5	Non-Explosion	1.05
50	T11140705	40	1.014	20	898	96	2.0	88.6	9.5	Non-Explosion	1.05
51	T11140706	40	1.014	23	890	101	2.3	87.8	10.0	Non-Explosion	1.05
52	T11140707	40	1.015	23	886	106	2.3	87.3	10.4	Explosion	1.19
53	T11140708	40	1.014	25	884	105	2.5	87.2	10.4	Explosion	1.09
54	T11140709	40	1.014	26	883	105	2.6	87.1	10.4	Non-Explosion	1.05
55	T11140710	40	1.014	26	883	105	2.6	87.1	10.4	Non-Explosion	1.06
56	T11140711	40	1.014	26	883	105	2.6	87.1	10.4	Non-Explosion	1.07
57	T11140712	40	1.014	20	889	105	2.0	87.7	10.4	Explosion	1.21
58	T11140713	40	1.014	17	892	105	1.7	88.0	10.4	Non-Explosion	1.04
59	T11140714	40	1.014	18	891	105	1.8	87.9	10.4	Explosion	1.21
60	T11140715	40	1.014	17	892	105	1.7	88.0	10.4	Non-Explosion	1.03
61	T11140716	40	1.014	17	892	105	1.7	88.0	10.4	Non-Explosion	1.03
62	T11140717	40	1.014	21	890	103	2.1	87.8	10.2	Explosion	1.1
63	T11140718	40	1.014	21	891	102	2.1	87.9	10.1	Explosion	1.09
64	T11140719	40	1.014	21	892	101	2.1	88.0	10.0	Explosion	1.09
65	T11140720	40	1.014	22	891	101	2.2	87.9	10.0	Explosion	1.1
66	T11140721	40	1.014	23	890	101	2.3	87.8	10.0	Non-Explosion	1.06
67	T11140722	40	1.014	23	890	101	2.3	87.8	10.0	Non-Explosion	1.08
68	T11140723	40	1.014	19	894	101	1.9	88.2	10.0	Explosion	1.12
69	T11140724	40	1.014	18	895	101	1.8	88.3	10.0	Non-Explosion	1.06
70	T11140725	40	1.014	18	895	101	1.8	88.3	10.0	Non-Explosion	1.03
71	T11140726	40	1.014	18	895	101	1.8	88.3	10.0	Non-Explosion	1.04
72	T11140727	40	1.014	20	895	99	2.0	88.3	9.8	Non-Explosion	1.08
73	T11140728	40	1.014	20	895	99	2.0	88.3	9.8	Explosion	1.1
74	T11140729	40	1.014	20	896	98	2.0	88.4	9.7	Non-Explosion	1.06
75	T11140730	40	1.014	20	896	98	2.0	88.4	9.7	Non-Explosion	1.08
76	T11140731	40	1.014	20	896	98	2.0	88.4	9.7	Non-Explosion	1.07
77	T11140732	40	1.014	81	761	172	8.0	75.0	17.0	Non-Explosion	1.04
78	T11140733	40	1.014	81	750	183	8.0	74.0	18.0	Explosion	1.3
79	T11140734	40	1.014	81	754	179	8.0	74.4	17.7	Explosion	1.24
80	T11140735	40	1.014	81	757	176	8.0	74.7	17.4	Non-Explosion	1.03
81	T11140736	40	1.014	81	755	178	8.0	74.5	17.6	Non-Explosion	1.05
82	T11140737	40	1.014	81	755	178	8.0	74.5	17.6	Non-Explosion	1.03
83	T11140738	40	1.014	81	755	178	8.0	74.5	17.6	Non-Explosion	1.03

Figure 81**TEST SERIES 2**

Test	Data File Name	Temp °C	Initial Pressure bara	Partial Pressures				Concentrations				Result	Pex bara
				H ₂ O mbar	C ₅ H ₈ mbar	N ₂ mbar	O ₂ mbar	H ₂ O vol. %	C ₅ H ₈ vol. %	N ₂ vol. %	O ₂ vol. %		
1	T11150700	40	1.014	41	119	641	213	4.0	11.7	63.2	21.0	Explosion	1.33
2	T11150701	40	1.014	40	121	640	213	3.9	11.9	63.1	21.0	Non-explosion	1.07
3	T11150702	40	1.014	41	120	640	213	4.0	11.8	63.1	21.0	Explosion	1.09
4	T11150703	40	1.014	40	121	640	213	3.9	11.9	63.1	21.0	Non-explosion	1.06
5	T11150704	40	1.014	40	120	641	213	3.9	11.8	63.2	21.0	Explosion	1.09
6	T11150705	40	1.014	40	121	640	213	3.9	11.9	63.1	21.0	Non-explosion	1.08
7	T11150706	40	1.014	40	15	746	213	3.9	1.5	73.6	21.0	Explosion	4.68
8	T11150707	40	1.014	41	15	745	213	4.0	1.5	73.5	21.0	Explosion	5.27
9	T11150708	40	1.014	41	14	746	213	4.0	1.4	73.6	21.0	Non-explosion	1.03
10	T11150709	40	1.014	42	14	745	213	4.1	1.4	73.5	21.0	Non-explosion	1.03
11	T11160700	40	1.014	41	14	746	213	4.0	1.4	73.6	21.0	Non-explosion	1.03
12	T11160701	40	1.014	41	20	850	103	4.0	2.0	83.8	10.2	Explosion	1.11
13	T11160702	40	1.014	41	20	851	102	4.0	2.0	83.9	10.1	Explosion	1.11
14	T11160703	40	1.014	41	20	852	101	4.0	2.0	84.0	10.0	Explosion	1.09
15	T11160704	40	1.014	41	20	853	100	4.0	2.0	84.1	9.9	Explosion	1.09
16	T11160705	40	1.014	41	20	854	99	4.0	2.0	84.2	9.8	Non-explosion	1.07
17	T11160706	40	1.014	40	20	855	99	3.9	2.0	84.3	9.8	Non-explosion	1.06
18	T11160707	40	1.014	41	20	854	99	4.0	2.0	84.2	9.8	Non-explosion	1.08

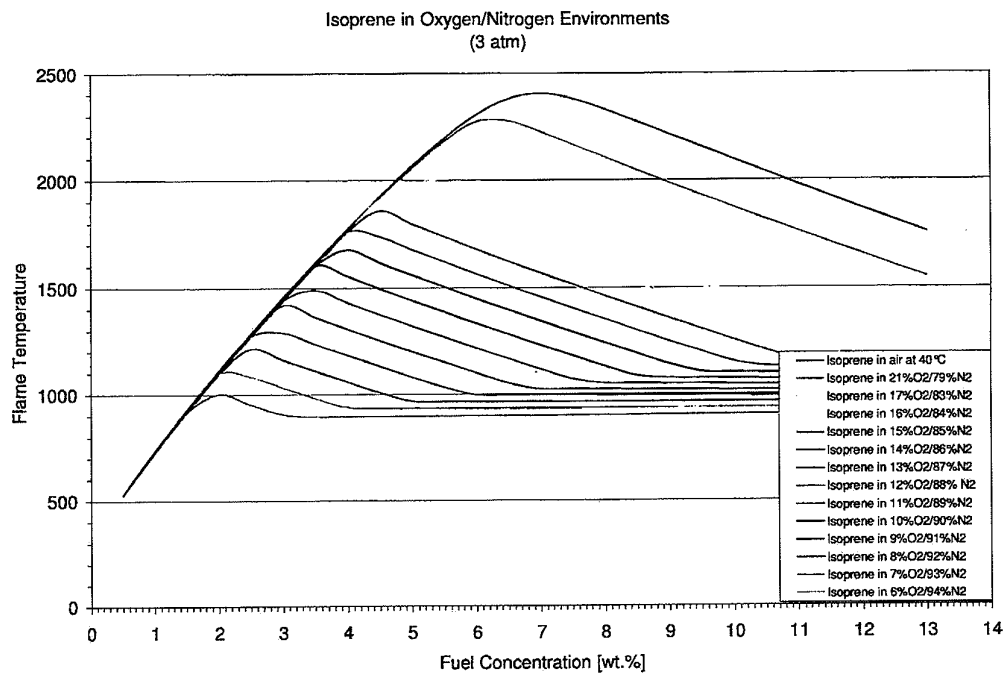
Figure 82

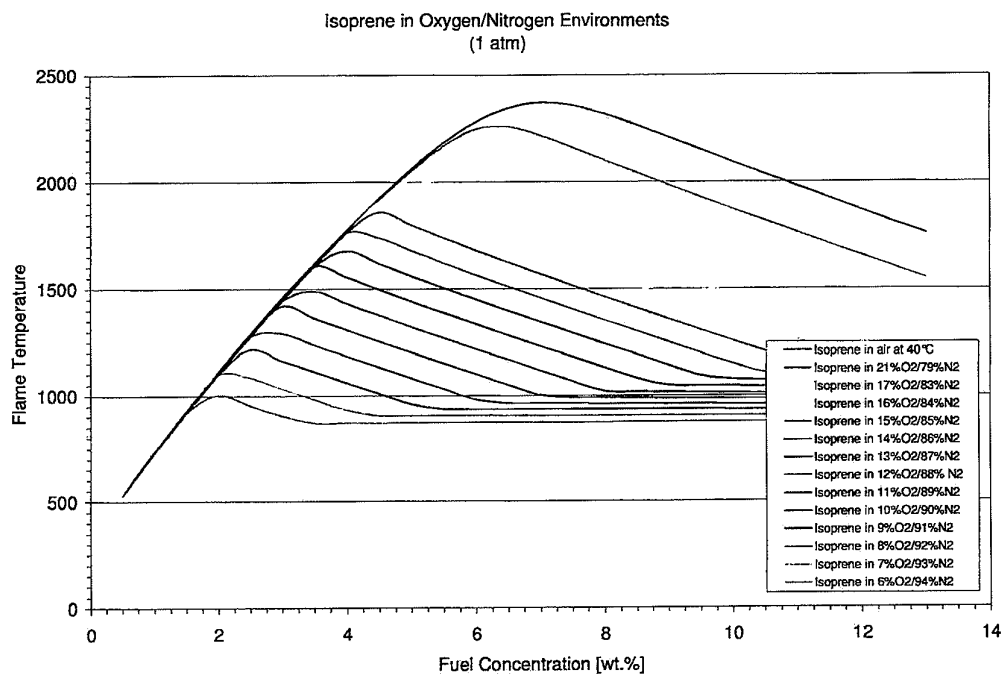
Figure 83

Figure 84

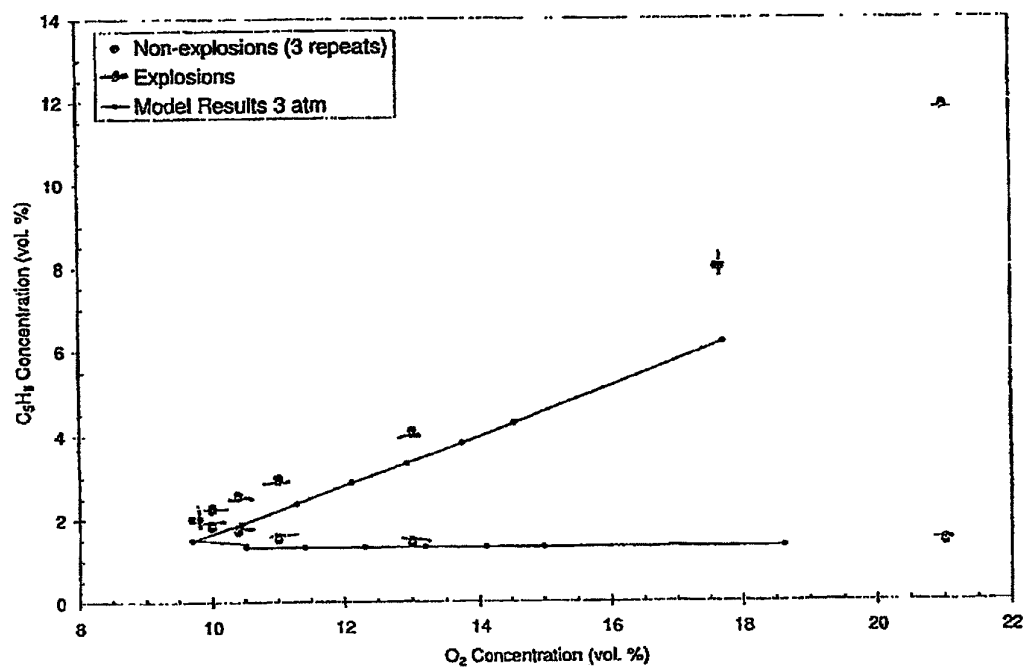


Figure 85

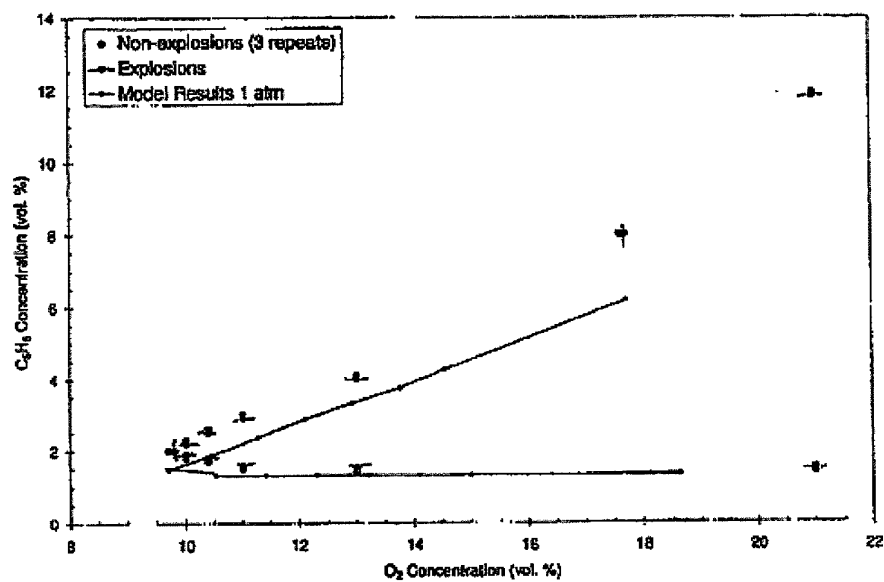
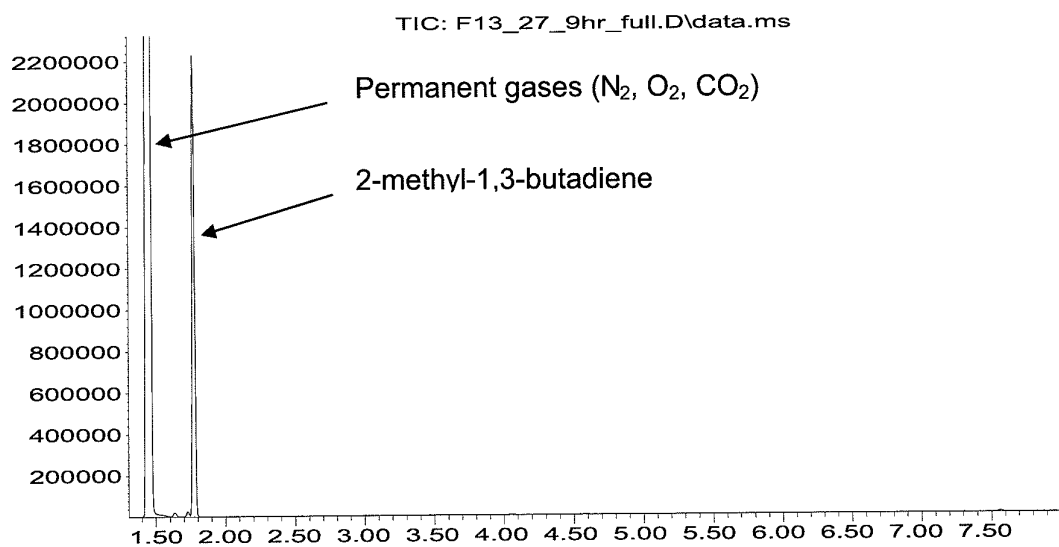


Figure 86A

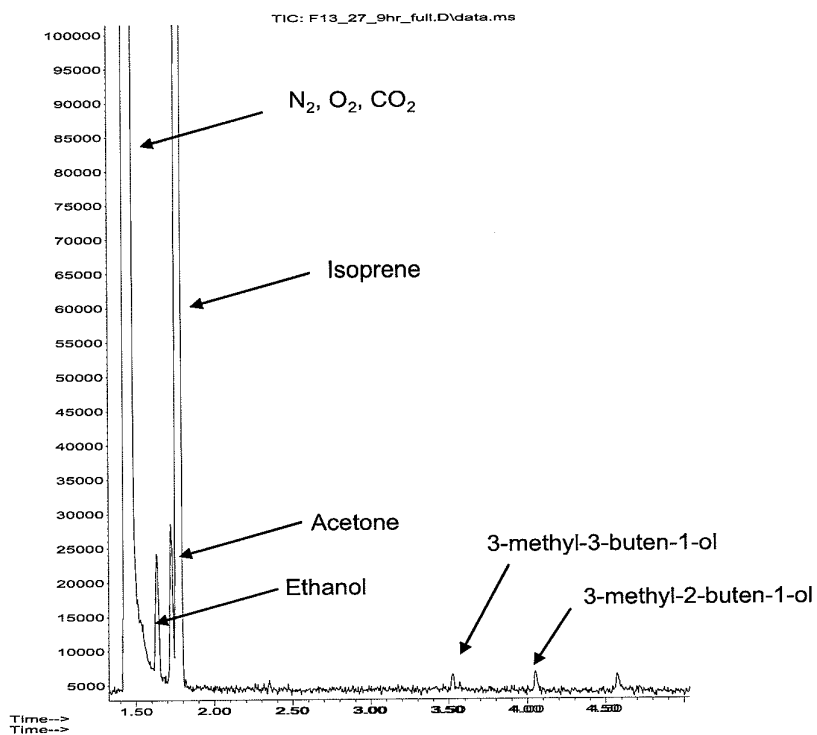
Abundance



Time-->

Figure 86B

Abundance



174/259

Figure 87A

Abundance

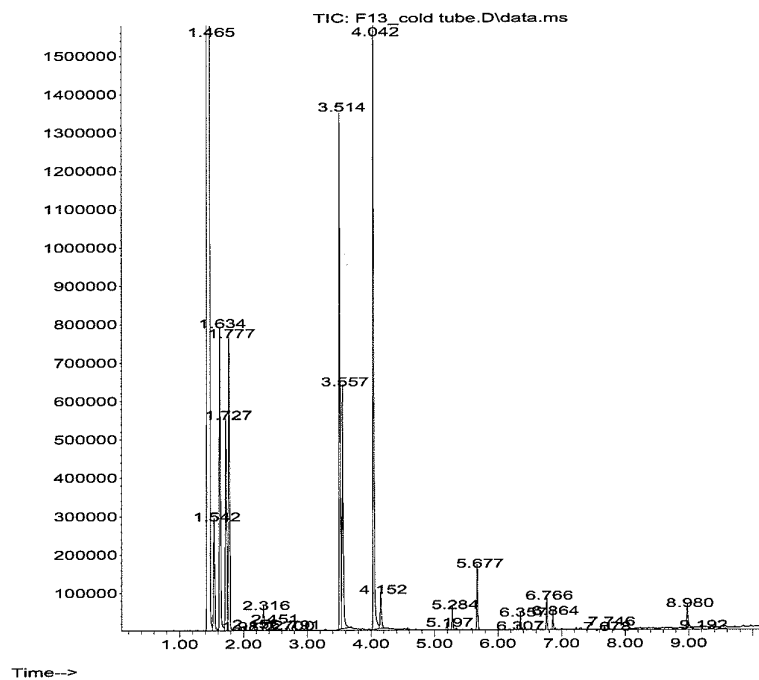


Figure 87B

Abundance

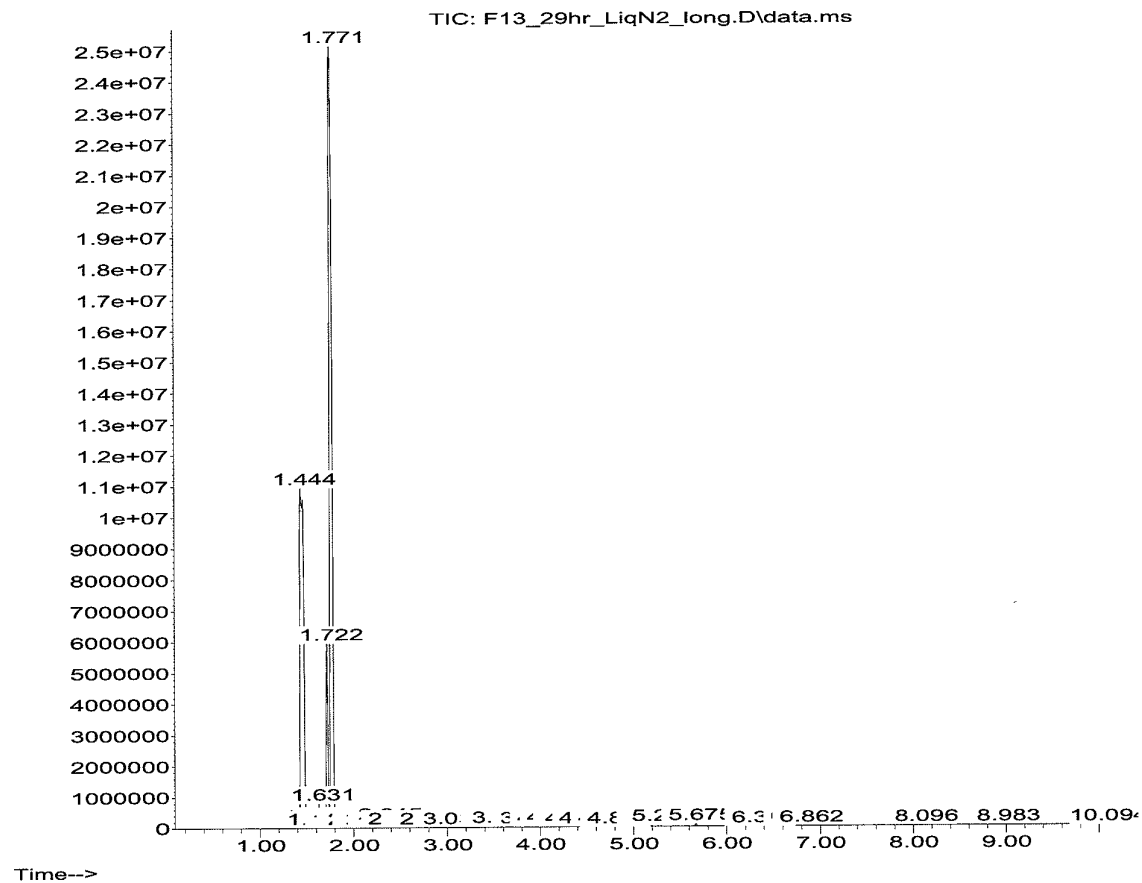
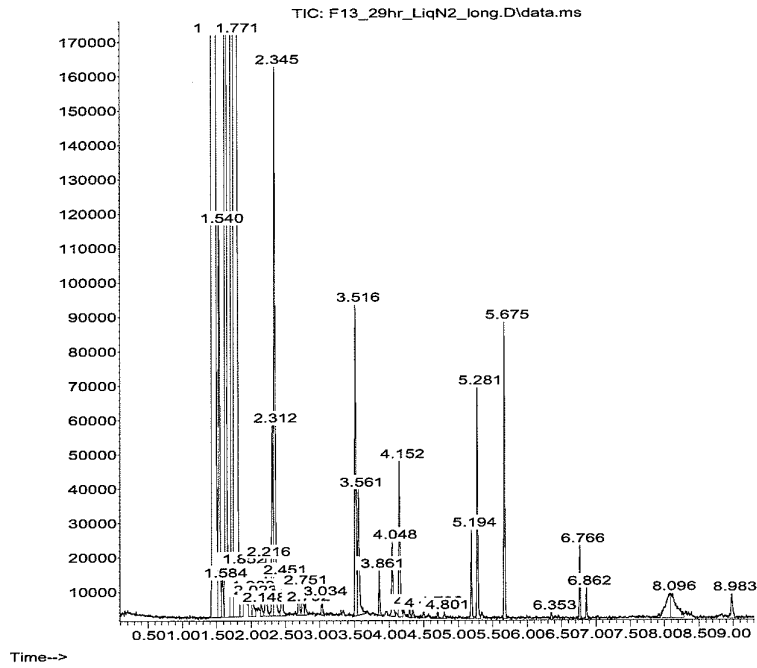
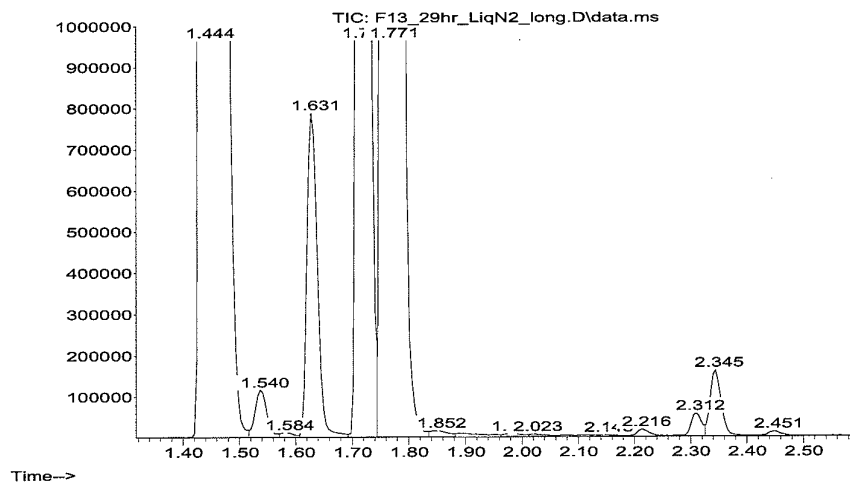


Figure 87C

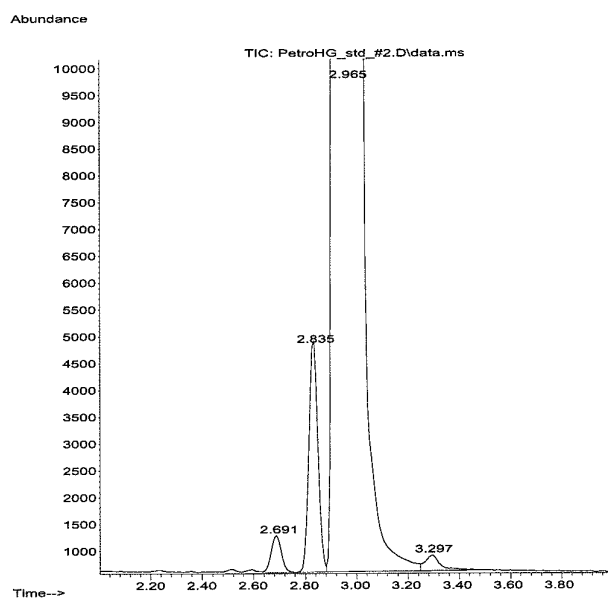
Abundance

**Figure 87D**

Abundance



177/259

Figure 88A

2-methyl-1,3-butadiene standard

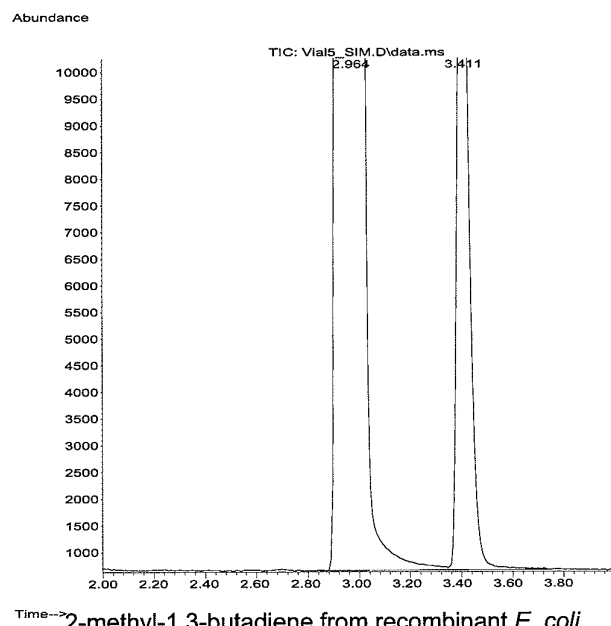
Figure 88B2-methyl-1,3-butadiene from recombinant *E. coli*

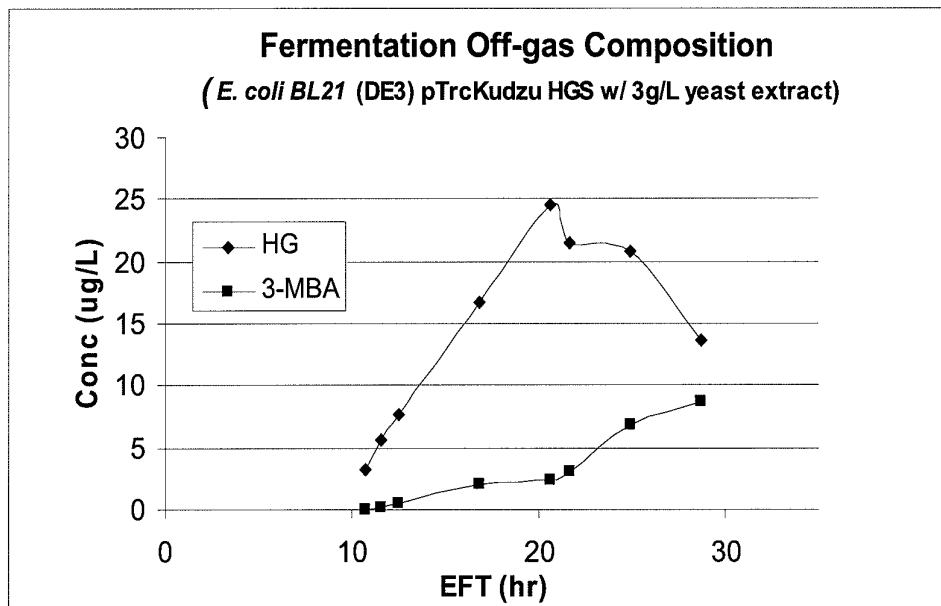
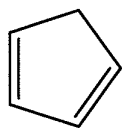
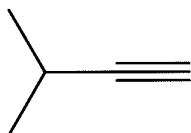
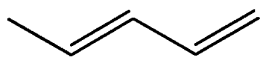
Figure 89

Figure 90

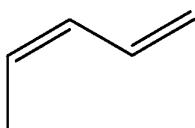
cyclopentadiene



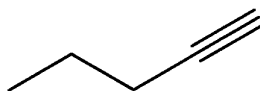
"isopryne" = 3-Me-1-butyne



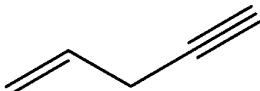
trans-piperylene



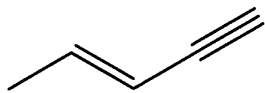
cis-piperylene



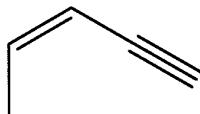
1-pentyne



pent-4-ene-1-yne



trans-pent-3-ene-1-yne



cis-pent-3-ene-1-yne

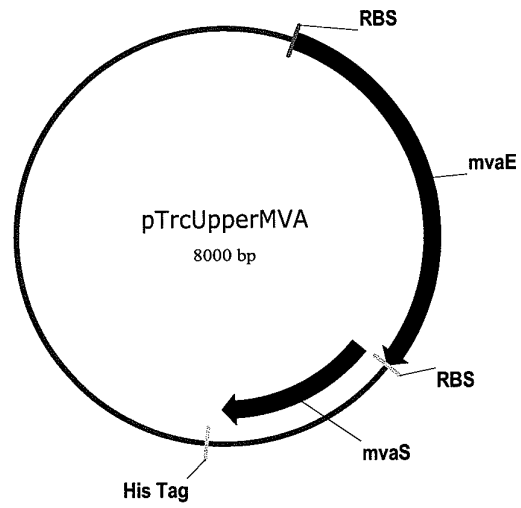
Figure 91

Figure 92A

1-

gtttgacagcttatcatcgactgcacgggtgcaccaatgcttctggcgtaggcagccatcggaagctgtggtatggctgtgcaggtcgta
aatcactgcataatcgtgtcgtcaaggcgactcccgttctggataatgttttgcgccacatcataacggttctggcaaatattctga
aatgagctgttgacaattaatcatccggctcgtataatgtgtggaattgtgagcggataacaatttcacacaggaacagcgccgctgag
aaaaagcgaagcggcactgctcttaacaatttatcagacaatctgtgtggcactcgaccggaattatcgattaactttattatataaaatt
aaagaggtatataatgtatcgattaaataaggaggaataaacatggatccgagctcaggaggtaaaaaacatgaaaacagtagtt
attattgatgcattacgaacaccaattggaaaatataaaggcagcttaagtcaagtaagtccgtagacttaggaacacatgttacaacac
aacttttaaaaagacattccactatttctgaagaaattgatcaagtaacttttgaaatgtttacaagctggaaatggccaaaatcccgac
gacaaatagcaataaacagcgggttctcatgaaatcccgaatgacgggttaatgaggtctgcggatcaggaaatgaaggccgtatttt
ggcgaaacaattgattcaattaggagaagcgggaagtttaattgtcggcgggattgagaatatgtccaagcacctaaattacaacgtttta
attacgaaacagaaaagctacgatgcgccttttctagtagatgatgatggaattaacggatgccttttagtggtaggcaatgggcttaact
gctgaaaatgtggccgaaaagtatcatgtaactagagaaggaagatcaattttctgtacattcacaattaaaagcagctcaagcaca
gcagaagggtatctcgtgacgaaatagccccattagaaatcaggaacgcttgggagaaagatgaagggttcgccttaattcga
gcgttgagaagctaggaaacgcttaaaacagtttttaagaagacggtagtgaacagcagggaatgcatcaaccattaatgatgggctt
ctgctttgattattgcttcacaagaatatgccgaagcacacggcttcttatttagctattatcagacagtggtgaagtcggtattgatcc
agcctatatgggaatttcgccgattaaagccattcaaaaactgttagcgcgcaatcaacttactacggaagaaattgatctgtatgaatca
acgaagcatttgcagcaactcaatcgtgtccaaagagaactggcttaccagaggaaaaggtcaacatttatgtggcggtatttcatt
aggctatgcgattgggtccacaggtgctcgtttattaacgagtttaagttatcaattaaatcaaaaagaaaagaaatagagtggtctt
atgtatcggcggttgcttaggactcgtatgctactagagacctcagcaaaaaaacagccgatttatcaaatgagctctgagga
acgcttggtcttcttctaatgaaggccagatttctgctgatacaaaaaagaattgaaaatacggctttatcttcgagattgccaatcat
atgattgaaaatcaaatcagtgaaacagaagtgcgcatggcggttggttacatttaacagtggacgaaactgattttgtaccaatgg
cgacagaagagccctcagttattcgggctttgagtaatggtgcaaaaatagcacaaggatttaaacagtgatcaacaacgcttaatgc
gtggacaaatcgtttttacgatgttgcatcccgagtcattgattgataaactacaagtaagagaagcgggaagttttcaacaagcagag
ttaagttatccatctatcgtaaacggggcgggcggttaagagattgcaatatctacttttgatgaatcattgtatctgtagcttttagta
gatgttaaggatgcaatgggggcaaatatcgttaacgctatgttggaaggtgtggccgagttgtccgtgaatggtttgaggagcaaaag
attttattcagtttttaagtaattatgccacggagtcggtgttacgatgaaacggctattccagtttcacgtttaagtaagggggagcaatg
gccgggaaattgctgaaaaaattgttttagcttcacgctatgcttcattagatccttatcgggcagtcacgcataacaaggaatcatgaat
ggcattgaagctgtagtttagctacaggaatgatacgcgctgttagcgttctgtcatgcttttgcggtgaaggaaagtcgctacca
aggcttgactagtggacgctggatggcgaacaactaattggtgaatttcagttccgcttgccttagccacgggtggcggtgccacaaaa
gtcttacctaaatctcaagcagctgctgattgttagcagtgacggatgcaaaagaactaagtcgagtagtagcggctgtgtgttggtggcac
aaaatttagcggcggttacgggccttagtctctgaaggaaatcaaaaaggacacatggctctacaagcacgttcttagcgtacggtcg
gagctactggttaagaaggttgaggcagtcgctcaacaattaaaacgtcaaaaaacgatgaaccaagaccgagccatggctattttaat
gatttaagaaaacaataaaggaggttaaaaaacatgacaattgggattgataaaatagttttttgtgcccccttattatattgatgacgg
cactggctgaagccagaatgtagaccctggaaaattcatattggtattgggcaagaccaaatggcggtgaaccaatcagccaagat
attgtgacatttgcagccaatgccgcagaagcgtcttgacaaaagaagataaaggccattgataggtgattgtagggactgagtc
agtatcgatgagtcaaaagcggccgagttgtcttcatcgttttaattggggattcaaccttctgctcgtctttcgaatatcaaggagctgt
tacggagcaacagcaggcttacagttagtaagaatcacgtacgttcatccagataaaaaagtcttggtcgtagcggcagatattgca
aaatatggcttaattctggcggtagcctacacaaggagctggggcggttgcaatgttagttgtagtgaaccgcgcattttggctttaa
aaggagataatgtgatgctgacgcaagatatctatgacttttggcgtccaacaggccaccgctatcctatggtcgtatggtcctttgtcaaac
gaaacctacatccaatttttcccaagctgtggatgaacataaaaaacgaaccggtctgattttgcagattatgatgcttttagcgttccat
attccttacacaaaaatgggcaaaaagccttattagcaaaaatcctcgacaaactgaagcagaacaggaacgaatttttagccggtat
gaagaaagtatcgtatagtcgctgtaggaactgtatacgggttactttatctgggactcatttcccttttagaaaatgaacgactt
taaccgcaggcaatcaaatgggtttattcagttatggttctggtcgtcgtgaattttactggtgaattag

Figure 92B

tagctggttatcaaaatcatttacaanaaactcatttagcactgctggataatcggacagaactttctatcgctgaatatgaagccatgt
ttgcagaaacttttagacacagacattgatcaaacgttagaagatgaattaaaatatagttttctgtattaataataccgttcgtttatcga
aactaagagatctgcagctggtagcatatgggaattcgaagcttgggccgaacaaaaactcatctcagaagaggatctgaatagcgc
gtcgaccatcatcatcatcattgagtttaaacggctcagcttggctgttttggcggtgagagaagattttcagcctgatacagatta
aatcagaacgcagaagcggctctgataaaacagaatttgcctggcgagtagcgcgggtgtccacctgacccatgccgaactcag
aagtgaacgccgtagcgcgatggtagtgtgggtctccccatgcgagagtagggaactgccaggcatcaataaaacgaaaggct
cagtcgaaaagactggcctttcgtttatctgtgttgcgtgtaacgctctcctgagtaggacaaatccgccgggagcggattgaacgt
tgcgaagcaacggcccggagggtggcgggcaggacgcccgcataaactgccaggcatcaataagcagaagccatcctgacg
gatggccttttgcgtttctacaactccttttgttttttctaaatacattcaaatatgtatccgctcatgagacaataaccctgataatgctt
caataatattgaaaaaggagagatgagtattcaacatttccgtgtcgccttattcccttttgcggcattttgccttctgttttgcacc
cagaaacgctggtagaagtaaaagatgctgaagatcagttgggtgcacgagtggtttacatcgaactggatctcaacagcggtaagat
ccttgagagttttgcggcgaagaacgtttccaatgatgagcacttttaaagttctgctatgtggcgcggtattatcccgtgttgacgccc
gcaagagcaactcggctgccgcatacactattctcagaatgacttgggtgagtagtaccagtcacagaaaagcatcttacggatggcat
gacagtaagagaattatgcagtgctgccataaccatgagtataacactgcggccaacttactctgacaacatcggaggaccgaag
gagctaaccgctttttgcacaacatgggggatcatgtaactcgccttgatcgttgggaaccggagctgaatgaagccatacacaacgac
gagcgtgacaccacgatgcctgtagcaatggcaacaacgttgcgcaactattaactggcgaacttacttactgtcttcccggcaaca
attaatagactggatggaggcgataaagtgcaggaccacttctgcgtcggcccttccggctggctgtttattgctgataaatctgga
gccgggtgagcgtgggtctcgcggtatcattgcagcactggggccagatggtaaagccctcccgatcgtatgtattctacacgacgggga
gtcaggcaactatggatgaacgaaatagacagatcgtgagataggtccctactgattaagcattggttaactgtcagaccaagtttact
catatatacttttagattgattaaaacttatttttaattaaaaggatctaggtgaagatcctttttgataatctcatgacaaaatcccttaacgt
gagtttctgttccactgagcgtcagaccccgtagaaaagatcaaaaggatcttcttgagatccttttttgcgcgtaactgtctgttgcaaa
caaaaaaacaccgctaccagcgggtgtgttgcgggatcaagagctaccaactcttttccgaaggtaactggcttcagcagagcgc
agatacacaactactgtccttctagtgtagccgtagttaggccaccactcaagaactctgtagcaccgcctacatacctcgtctgtcta
ctgttaccagtggctgtcgcagtggtgataagctgtgtcttaccgggttgactcaagacgatgttaccggataaggcgacgctg
gggtgtaacgggggttctgtcacacagcccagcttggagcgaacgacctacaccgaactgagatacctacagcgtgagctatgag
aaagcggcacgcttcccgaaggagaaaggcggacaggtatccggtgaagcggcagggtcggaacaggagagcgcacgaggggag
cttccagggggaacgctgtatctttagtctgtcgggttccgacctgtactgagcgtcgtttttgtgatgtcgtcaggggg
gaggagcctatgaaaaaacgacgcaacgcggccttttaccggttctgtgaccttttgcgtccttttgcacatgttcttctgcgtt
ccctgattctgtgataaccgtattaccgctttagtgagctgataccgctcggcgagccgaacgaccgagcgcagcagtgatgag
gaggaagcgggaagagcgctgatcggtattttctcttaccgcatctgtgcggtattttacaccgcatatggtgcactctcagtacaat
ctgctctgatccgcatagttgaagccagtatacactccgctatcgtactgtgactgggtcatggctgcgccccgaccccgcaacacc
cgctgacgcgacctgacggctgtgtctcccggcatccgcttacagacaagctgtgacctgtccgggagctgatgtgtcagagggt
tttaccgctatcaccgaaacgcgcgagcagcagatcaattcgcgcgcgaaggcgaagcggcatgacattacgttgacaccatcgaa
tggtgcaaaactttcgcggtatgcatgtagcggccggaagagagtcattcagggtggtgaatgtgaaaccagtaacgttatacga
gtcgcagagtatgccggtgtctcttcatcagaccgtttccgctggtgaaccaggccagccacgttctgcgaaaacgcgggaaaaag
tggaagcggcgatggcggagctgaattacattccaaccgctggcacaacaactggcgggcaacagtcgttgcgtattggcgttgc
cacctccagtctggccctgcacgcgctgcgcaattgtcgcggcgattaaatctcgcgccgatcaactgggtgccagcgtggtggt
cgatggtagaacgaagcggcgtcgaagcctgtaagcggcggtgcacaatcttctcgcgcaacgcgtcagtggtgtatcattaacta
tccgctggatgaccaggatgccattgtgtggaagctgcctgactaatgttccggcgttatttctgtatgtcttgaccagacaccatca
acagtattattttcccatgaagacgggtacgcgactggcggtggagcatctggtgcattgggtcaccagcaaatcgctgttagcgg
gcccattaagtctgtctcggcgctctgcgtctggctggctggcataaatactcactcgaatcaaatcagccgatagcggaaagg
aaggcgactggagtgccatgtccggttttcaaaaaccatgcaaatgctgaatgagggtcatc

Figure 92C

ttcccactgcgatgctggttgccaacgatcagatggcgctgggcgcaatgcgcgccattaccgagtcgggctgcgcgttggtgcgga
tatctcggtagtgggatacgcgataccgaagacagctcatgttatatcccgccgtcaaccaccatcaaacaggattttgcctgctggg
gcaaaccagcgtggaccgttgctgcaactctctcagggccaggcggtgaagggaatcagctgttggccgtctcactggtgaaaaga
aaaaccaccctggcgcccaatacgcgaaccgcctctccccgcgcgttggccgattcattaatgcagctggcacgacaggttcccgact
ggaaagcgggcagtgagcgcaacgcaattaatgtgagttagcgcgaattgatctg
(SEQ ID NO:86)

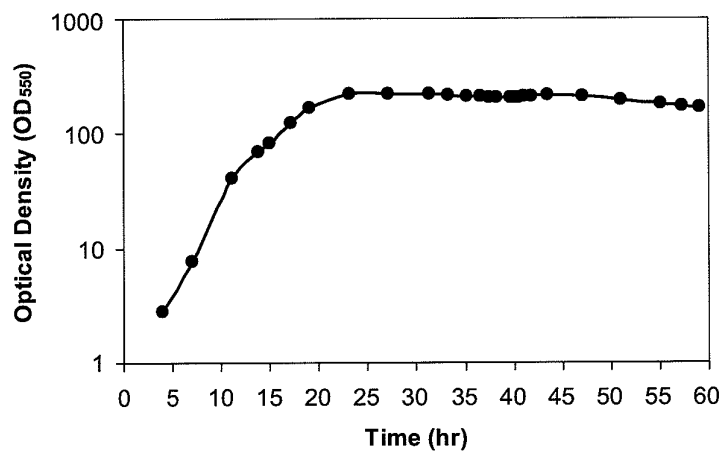
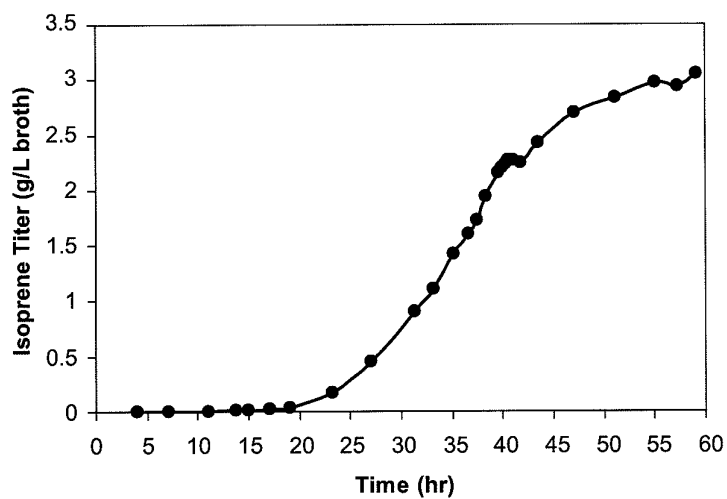
Figure 93**Figure 94**

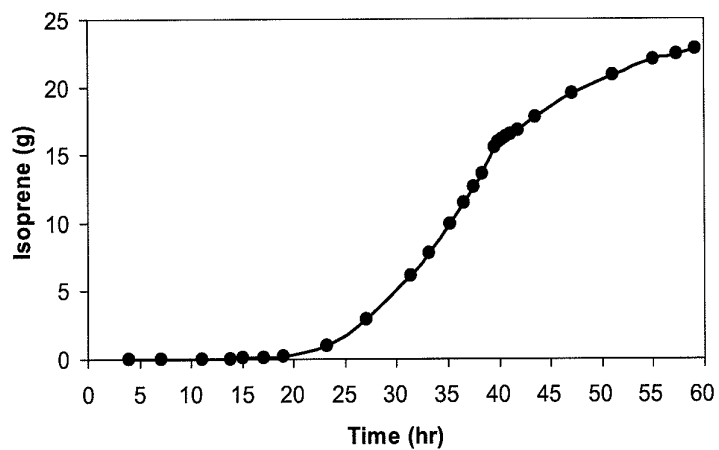
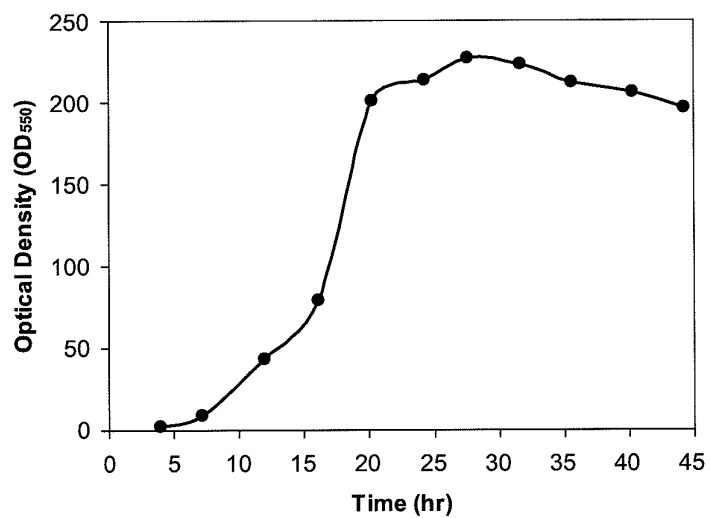
Figure 95**Figure 96**

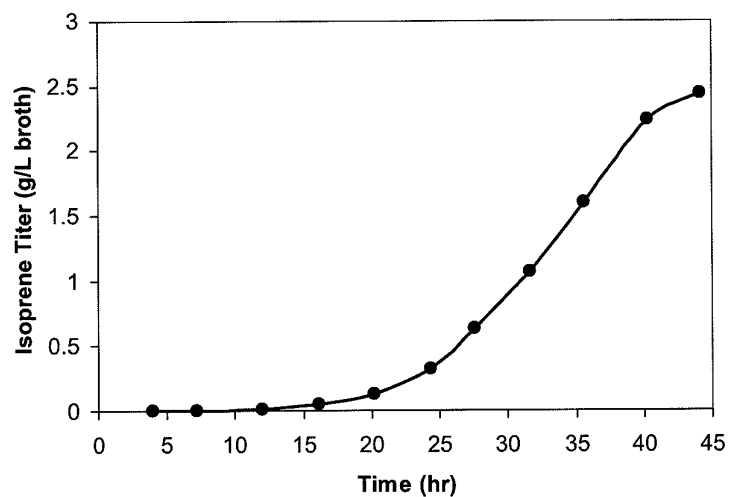
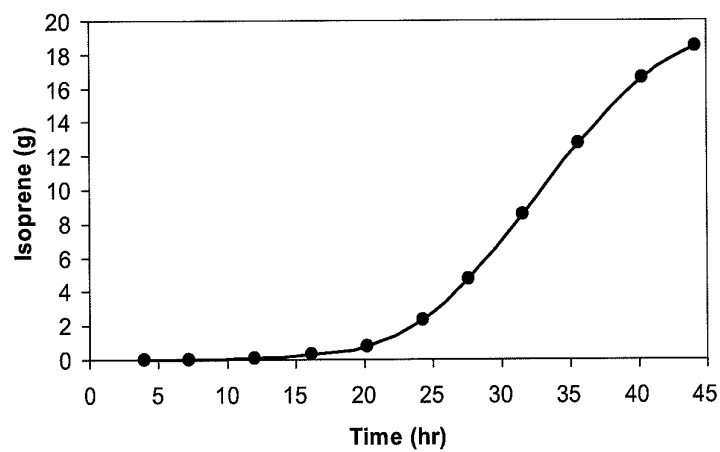
Figure 97**Figure 98**

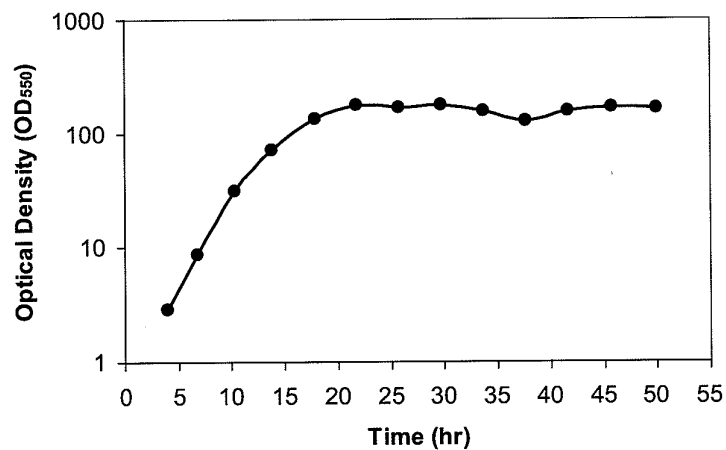
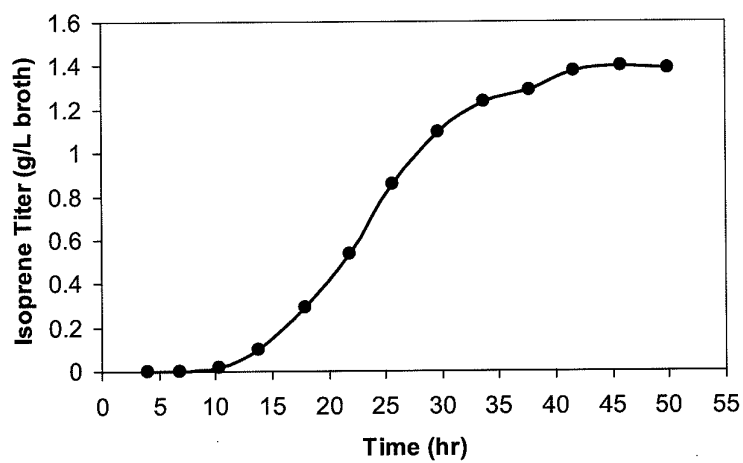
Figure 99**Figure 100**

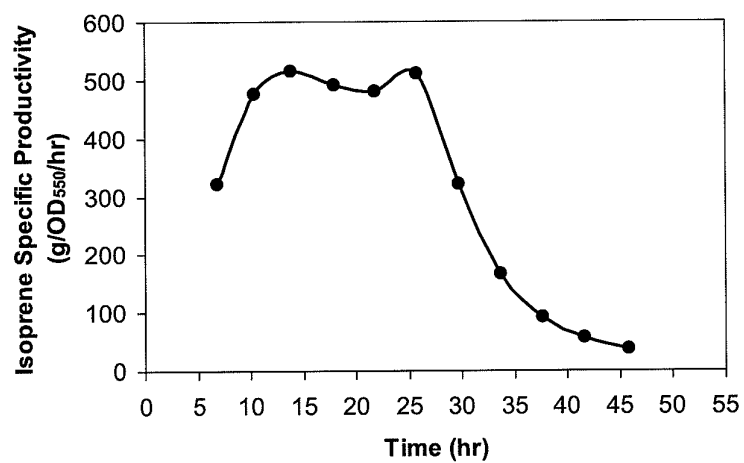
Figure 101

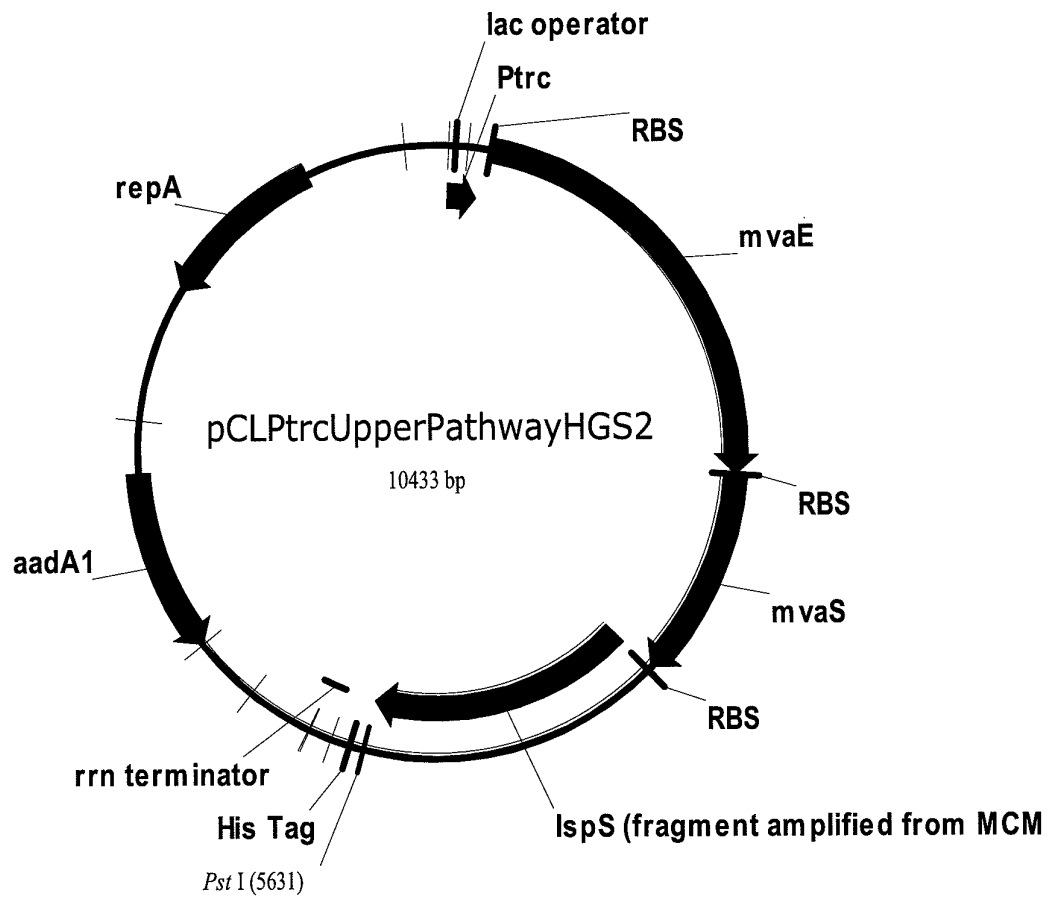
Figure 102

Figure 103A

cccgtcttactgtcgggaattcgcgttgccgattcattaatgcagattctgaaatgagctgttgacaattaatcatccggctcgtataatgt
gtggaattgtgagcggataacaatttcacacaggaacagcgccgctgagaaaaagcgaagcggcactgctcttaacaatttatcaga
caatctgtgtgggcactcgcaccggaattatcgattaaactttattataaaaaattaaagaggtatataatgtatcgattaaataaggaggaa
taaaccatggatccgagctcaggaggtataaaaaacatgaaaacagtagttattattgtagcattacgaacaccaattggaaaatataaag
gcagcttaagtaagtaagtgccgtagacttaggaacacatgttacaacacaacttttaaaaagacattccactatttctgaagaaattgat
caagtaatctttgaaatgtttacaagctggaatggccaaatcccgacgacaaatagcaataaacagcggttgtctcatgaaattc
ccgcaatgacggtaaatgaggtctgcggatcaggaatgaaggccgttattttggcgaacaattgattcaattaggagaagcgggaagttt
taattgctggcgggattgagaatatgtccaagcacctaattacaacgttttaattacgaaacagaaagctacgatgcgcctttttctagta
tgatgtatgatggattaacggatgcccttagtggtcaggcaatgggcttaactgctgaaaatgtggccgaaaagtatcatgtaactagaga
agagcaagatcaatttctgtacattcacaattaaaagcagctcaagcacaagcagaagggaattcgtgacgaaatagccccattaga
agtatcaggaacgcttgggagaaagatgaagggaatgccctaattcagcgttgagaagctaggaacgcttaaacagtttttaaga
agacgggtactgtaacagcaggggaatgatcaaccattaatgatgggcttctgcttattgattgcttcacaagaatatgccgaagcacac
ggctcttcttatttagctattattcgagacagtggtgaagtcggatttagtcagcctatatgggaatttcgcgattaaagccattcaaaaac
tgttagcgcgcaatcaacttactacggaagaaattgatctgtatgaaatcaacgaagcattgcagcaactcaatcgtggtccaagaga
actggctttaccagaggaaggtcaacatttatggtggcgggtatttcttaggtcatgcgattggtgccacaggtgctcgttttaacga
gtttaagtatcaatataatcaaaaagaaaagaaatattgagtggtcttcttatgtatcgcggtggcttaggactcgtatgctactagaga
gacctcagcaaaaaaaaaacagccgattttatcaaatgagtcctgaggaacgcctggcttcttcttaataagggccagatttctgtgat
acaaaaaagaatttgaaatacggctttatcttcgcagattgccaatcatatgattgaaaatcaaatcagtgaaacagaagtgcgcatgg
gcttggttacatttaacagtggacgaaactgattttgttaccatggcgacagaagagccctcagttattgcggttgagtaattgt
gcaaaaatagcacaaggatttaaacagtgaatcaacaacgcttaatgcgtggcacaatcgtttttacgatgttcagatcccagatcatt
gattgataaactacaagtaagagaagcgggaagttttcaacaagcagagtttaagttatccatctatcgttaaacggggcgccggttaag
agatttgcaatcgtactttgatgaatcattgtatctgtcgtacttttagtagatgttaaggatgcaatgggggcaaatatcgttaacgctat
gttgggaaggtgtggccgagttgtccgtgaatgtttgctggagcaaaaagattttatcagtttttaagtaattatgccacggagtcggtgtt
acgatgaaaacggctattccagtttcacgtttaagtaaggggagcaatggccgggaaattgctgaaaaattgttttagcttcacgctatg
cttcattagatccttatcgggcagtcacgcataacaaaggaatcatgaatggcattgaagctgtagtttttagctacaggaatgatacacg
cgctgttagcgttcttgcgtgcttttgcggtgaaggaaggtcgctaccaaggctgactagtgtgacgctggatggcgaacaactaatt
ggtgaaatttcagttccgcttgccttagccacgggtggcgggtgccacaaaagtcttacctaaatctcaagcagctgctgattgttagcagt
gacggatgcaaaagaactaagtcgagtagtagcggctgtgtgtttggcacaaaatttagcggcgttacgggccttagctctgaaggaat
tcaaaaaggacacatggctctacaagcacgttcttagcgatgacggctcgagctactggtaaagaagttgaggcagtcgtcaacaatt
aaaacgtcaaaaaacgatgaaccaagaccgagccatggctattttaaatgatttaagaaaacaataaaggaggtaaaaaaacatgacaa
ttgggattgataaaattagttttttgtcccccttattatattgatatgacggcactggctgaagccagaatgtagaccctggaaaatttcat
attggtattgggcaagaccaaatggcgggtgaacccaatcagccaagatattgtgacatttgacgccaatgccgcagaagcagatcttgac
caaagaagataaaggaggccattgatgtgtgattgtcgggactgagtcagatcgtatgagtcacaaagcggccgagttgtcttatcatcg
tttaattgggattcaacctttcgtcgtctttcgaatcaaggaagctgtttacggagcaacagcaggcttacagttagctaagaatcacg
tagccttatcatccagataaaaaagcttggctgtagcggcagatattgcaaaatattgcttaaatcttgccggtgagcctacacaaggag
ctggggcggttgcaatgttagtgtagtgaaccgcgcattttggctttaaagaggataatgtgatgctgacgcaagatatctatgactttt
ggcgtccaacagggccaccgctatcctatggtcgtatggtcctttgtcaaacgaaacctacatccaatcttttcccaagtctgggtgaaca
taaaaaacgaaccggtcttgattttgcagattatgatgcttttagcgttccattatccttacacaaaaatgggcaaaaaagccttattagcaaa
aatctccgacaaactgaagcagaacaggaacgaattttagcccgttatgaagaagtatcgtctatagtcgtcgcgttaggaaacttgat
acgggttcactttatctgggactatttcccttttagaaaatgaacgactttaaccgcaggcaatcaaatgtttattcagttatggtctgg
tgctgtcgtgaatttttactggtgaattagtagctggttatcaaaatcatttcaaaaaagaaactcatttagcactgctggataatcggaca
gaactttctatcgtgaatatgaagccatgtttgcagaacatttagacacagacattgatcaaacgtta

Figure 103B

gaagatgaattaaaaatagatatttctgtattataataaccgttcgttctatcgaaactaaagatctgcatcctgcattcgcccttaggaggt
aaaaaaacatgtgtgcgacctcttctcaatttactcagattaccgagcataattcccgtcgtccgcaaactatcagccaaacctgtggaatt
tcgaattcctgcaatccctggagaacgacctgaaagtggaaaagctggaggagaaaagcgaccaaaactggaggaagaagttcgtgca
tgatcaaccgtgtagacacccagccgctgtccctgtgagctgacgacgatgtgcagcgctgggtctgacctacaaatttgaaaaa
gacatcattaaagccctggaaaacatcgtactgtgagcgaacaaaaagaacaaatctgacctgcacgcaaccgctctgtcttccgt
ctgctgcgtcagcacggttctgaggttctcaggatgtttttagcgtttcaaggataaagaaggtggtttagcgggtgaactgaaaggtg
acgtccaaggcctgtgagcctgtatgaagcgtcttacctgggttctgaggggtgagaacctgctggaggaggcgctacctttccatca
cccacctgaagaacaacctgaaagaaggcattataccaaggttcgagaacaagttagccacgccctggaactgccatcaccagc
gtctgcacctgtgtaggacgctgtgttctggataatacgaaccgaaagaaccgcatcaccagctgtgtgtagctggcgaagct
ggattttaacatggtacagacctgcaccagaaagagctgcaagatctgtcccgtgtgtggaccgagatggcctggctagcaaactg
gatttttacgcgaccgctgatggaagtttatttctgggcactgggtatggcgccagacccgcagtttggtgaatgtcgaaagctgtta
ctaaatgtttggtctggtgacgatcatcgtacgtgtatgacgtttatggcactctggacgaactgcaactgttcaccgatgtgtagag
cgctgggacgttaacgtattaaacacctgcggactatatgaaactgttttctggcactgtacaacaccgttaacgacacgtctattc
tattctgaaagagaaaggtcataacaacctgtctatctgacgaaaagctggcgtgaactgtgcaaagcctttctgcaagaggcgaatg
gtccacaacaaaattatcccgttttctccaaagtacctggaaaacgccagcgtttctctccgggtgtagcgctgtggtggccgtcttac
tttccgtatgccagcagcaggaagacatctccgaccacgcgtgcgttccctgaccgacttccatggtctggtgcgttctagctgcgtta
tctccgctgtgcaacgatctggccacctctgcggcgagctggaaactggcgagactaccaattctatcattagctacatgcacgaaa
acgatggtaccagcgaggaacaggcccggaagaactgcgtaaactgatcgacgccgaatggaaaaagatgaatcgtgaacgcgtt
agcgactccacctgtctgctaaagcgttcatggaatcgcagtttaactggcacgtgttccactgcacctaccagtatggcgatggt
ctgggtcgccagactacgcgactgaaaaccgcatcaactgtctgtatgacctttccgattaaccagctgtatgtctaaactgc
agctggtaccatatgggaattcgaagcttgggcccgaacaaaaactcatctcagaagagatctgaatagcgcgctgacatcatcat
catcatcattgagtttaacggtctccagcttggctgttttggcggtatgagagaagatttcagcctgatacagattaaatcagaacgcga
agcggctgataaaacagaatttgcctggcgagtagcgcggtgtcccacctgaccccatgccgaactcagaagtgaaacgccgt
agcgccgatggtatgtgtgggtctcccatgcgagagtagggaactgccagggcatcaataaaacgaaaggctcagtcgaaagactg
ggcctttcgtttatctgttgttgcgtgaacgctctcctgagtaggacaaatccggggagcggtttgaacgttgcgaagcaacgg
cccgagggtggtggggcaggaccccgcataaactgccaggcatcaataaagcagaaggccatcctgacggatggcctttttgcg
tttctacaaactcttttgttttttttaataacattcaaatatgtatccgctcatgagacaataacctgataaatgcttcaataatctggcgt
atagcgaagaggcccgaccgatcgcccttcccaacagtgcgcagcctgaatggcgaatggcgctgatgcggtatttttctcttacg
catctgtgcggtatttccacaccgatatggtgcactctcagtaaatctgtctgtatgccgcatagttaagccagccccgacaccgccaa
caccgctgacgagcttagtaagccctcgtagatttaattgaggatgttgcgattacttcgccaactattgcgataacaagaaaaagcc
agccttcatgatatactcccaatttgttagggcttattatgcacgcttaaaaataaaaagcagacttgacctgatgttggctgtgag
caattatgtgcttagtgcatctaacgcttgagtttaagccgcgcggaagcggcgtcggctgaacgaattgttagacattatttgcgact
accttggtgatctgcctttcacgtatggacaaattcttcaactgatctgcgcgagggccaagcgatcttcttcttccaagataagc
ctgtctagcttcaagtatgacgggtgatactgggcccggcaggcgctccattgccagtcggcagcgacatccttcggcgcgattttgc
cggttactgcgtgtaccaaatgcgggacaacgtaagcactacatttcgtcatcgcagccagtcggcgcgagttccatagcgtt
aagggttcatttagcgctcaatagatcctgttcaggaaaccgataaagagtttctccgccgctggacctaccaaggcaacgctatgtt
ctcttgcctttgtcagcaagatagccagatcaatgtcgatcgtggctggctcgaagataacctgcaagaatgtcattgcgtgccattctcca
aattgcagttcgcttagctggataacgccacggaatgatgtcgtcgtgcacaacaatggtgacttctacagcgcggaatctcgtc
tctccagggggaagccgaagtttccaaaaggtcgttgatcaaaagctgcgcggtgtttcatcaagccttacggtcaccgtaaccagcaaa
tcaatatcactgtgtggttcaggcccatccactgcggagccgtacaatgtacggccagcaacgtcggttcgagatggcgctcgat
gacgccaaactacctctgatagttagtcgatacttcggcgatcaccgctccctcatgatgttaactttgttttagggcgactgcctgtg
cgtaacatcgttgcgtctccataacatcaaacatcgaccacggcgtaacgcgcttgcgttggat

Figure 103C

gcccaggcatagactgtacccccaaaaaacagtacataacaagccatgaaaaccgccactgcgccgttaccaccgctgcgttcgggtca
agggtctggaccagttgcgtgagcgcatacgtacttgcatfacagcttacgaaccgaacaggcttatgtccactgggttcgtgccttcac
ccgtttccacgggtgtgctgcacccggcaaccttgggcagcagcgaagtcgaggcatttctgtcctggctggcgaacgagcgaaggtt
tcggctccacgcacgtcgcaggcattggcggtccttgctgttcttacggcaaggtgctgtgcacggatctgccctggcttcaggagatc
ggaagacctcggcgctgcggcgcttgcgggtggtgctgacccggatgaagtgggtcgcacccctgggtttctggaaggcagcagcatc
gtttgtcggccagcttctgtatggaacgggcatgcggatcagtgagggttgcgaactgcgggtcaaggatctggatttcgatcacggca
cgatcatcgtgcgggagggaagggtccaaggatcgggccttgatgttaccgagagcttggcaccagcctgcgcgagcagggg
aattaattcccacgggtttgtgcccgaacgggctgttctggtgtgctagttgttatcagaatcgagatccggcttcagccgggttg
ccggctgaaagcgtatttctccagaattgccatgattttccacgggaggcgtcactggctcccgtgtgtcggcagcttgcattc
ataagcagcatcgctgtttcaggctgtctatgtgtgactgttgagctgtaacaagtgtctcaggtgttcaatttcattgttctagtgtt
tactggtttcacctgttctattagggtgtacatgctgttcattgtcgtatctgttcattggtgaacagcttgaatgcacaaaaactc
gtaaaagctctgatgtatctatctttttacacgggtttcctgtgcatatggacagtttcccttgatatgtaacggtgaacagttgttactt
ttgtttgttagcttgatgcttcactgatagatacaagaccataagaacctcagatccttccgtatttagccagtatgttctagtgtgttc
gtgtttttgctgagccatgagaacgaaccattgagatcatacttacttgcactcactcaaaaatttgcctcaaaactggtgagctgaat
tttgcagttaaagcatcgtgtagtgttttcttagccgttatgtaggtaggaatctgatgaatggtgtgtgttttgcaccattcattttat
ctggtgttctcaagtcggttacgagatccattgtctatctagttcaactggaaaatcaacgtatcagtcggcgccctcgttatcaacc
accaatttcattgtctgaagtgtttaaacttacttattgttcaaaaccttggtaagccttttaactcatggtagtattttcaagcatt
aacatgaactaaatcatcaaggctaattctatatttgcctgtgagtttctttgtgttagttctttaataaccactcataaatcctcataga
gtatttttcaaaaagacttaacatgttccagattatatttgaatttttaactggaaaagataaggcaatatcttctactaaaaactaatt
ctaattttcgttgagaactggcagattgttccactggaaaatcctaaagccttaaccaaaggattcctgattccacagttctcgtc
agctctctggtgcttttagctaatacaccataagcattttccctactgatgttcacatctgagcgtattggtataagtgaacgataccgtccg
ttcttctctgtagggttttcaatcgtggggtgagtagtgcacacagcataaaattagcttggttcagctccgttaagtcatagcgacta
atcgctagtctatttgccttgaaaacaactaattcagacatacatctcaattggtctaggtgattttaatcactataccaattgagatgggctag
tcaatgataaattactagtccttttcttgcgtgtggttatctgtaattctgtagaccttgcgtgaaaactgttaattctgtagacctct
gtaaattccgtagacctttgtgtgtttttttgttatattcaagtgtgtataattatagaataaagaaaataaaaaaagataaaaagaata
gatcccagccctgtgtataactcactacttttagtcagttccgcagttattacaaaaggatgtcgcaaacgctgtttgctcctctacaaaacag
accttaaaacctaaaggcttaagtagcacctcgaagctcgggcaaatcgctgaatattcctttgtctccgacctcaggcacctgag
tcgctgtcttttctgacattcagttcgtgcgtcacggctcggcagtgaaatgggggtaaatggcactacaggcgcttttatggattc
atgcaaggaaactaccataatacaagaaaagcccgtcacgggtctcagggcggtttatggcggtctgctatgtgtgtctatctgact
tttgcgttcagcagttcctgcctctgattttccagcttgaccacttcggattatcccgtgacaggtcattcagactggctaatgcacccag
taaggcagcggtatcatcaacaggctta

(SEQ ID NO:87)

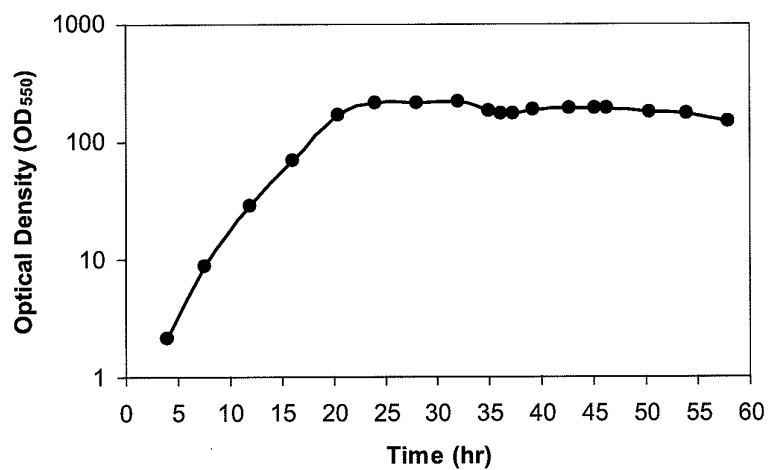
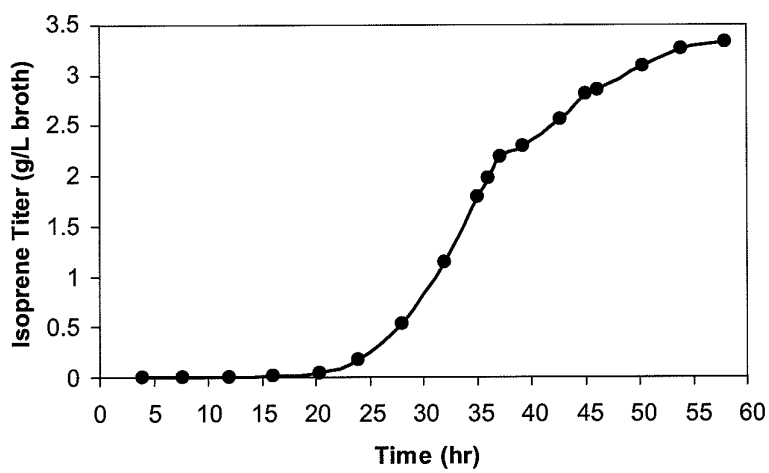
Figure 104**Figure 105**

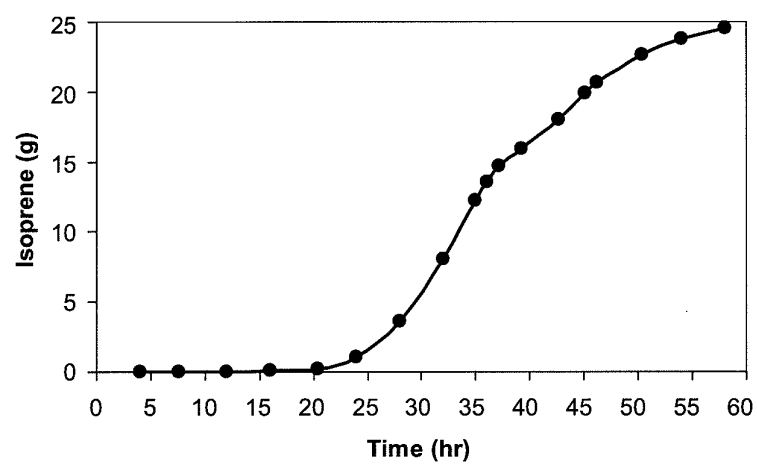
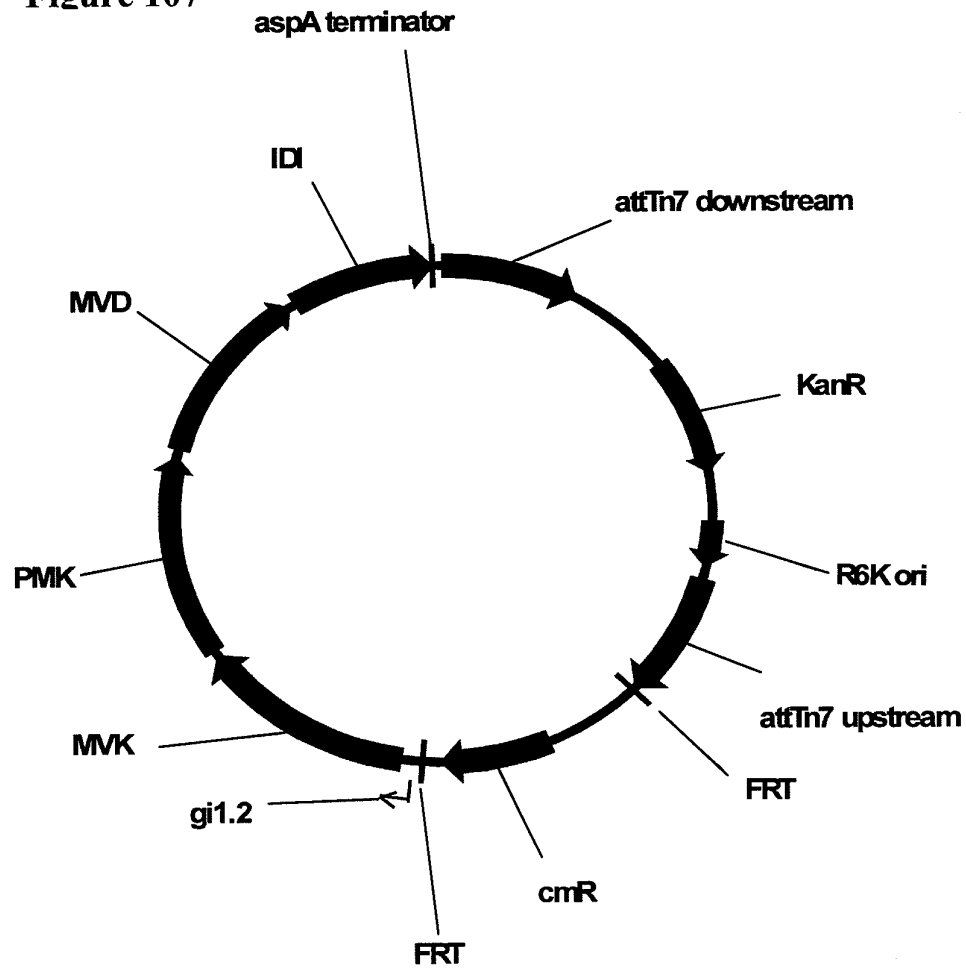
Figure 106

Figure 107

MCM330 - FRT-cm-FRT-gi1.2-KKDyI at attTn7

10356 bp

Figure 108A

1-

caagaaaaatgccccgttacgcaggcatccatttactcaaccgtaaccgattttgccaggttacgcggctggtcaacgtcgggtgc
ctttgatcagcgcgacatggttaagccagcagctgcagcggaaacgggtgtagaagatcgggtgcaatcacctctccacatgcggcatctcg
atgatgtgcatgttatcgctacttacaacccgcacctgatcggcgaagacatacaactgaccgccacgcgcgaacttcttcaatgt
tggatttcagttttccagcaattcgttgttcgggtgcaacaacaataaccggcatatcggcatcaattagcggcagcggaccgtttcagtt
cgccagcagcgttaggttcagcgtgaatgtaagagatcttcaactcaatgccttccagcgcgattgggtactgatcgccacggc
ccaggaacagcgcgtgatgtttgtcagagaaatcttctgccagcgttcaatgcgtttgtcctgagacagcatctgctcaatacggctcg
cagcgcctgcagaccatgcacgatgtcatgttcaatggaggcatccagaccttcaggcgagacagcttccaccagcatcaacagc
acagttaactgagtggtgaatgctttagtggatgccacgccgatttctgtaccgcgttggtcattagcggccagatcggattcgcgcacca
gagaagaacccggaacgttacagattgccagtgaaaccaaggtaaccagctcttctgacagacgcaggccagccagggatccgcg
gtttccagactgtgacacgatcgcccttccaacagttgcgcagcctatagctacggcagtttaaggtttacacctataaaagagaga
gccgttatcgtctgtttgtggatgtacagagtataattatgacacgccggggcgcaggtggtgatccccctggccagtgacgctgtct
gtcagataaaagtctccgtgaactttaccgggtggtgcatacggggatgaaagctggcgcagtgatgaccaccgatatggccagtgctc
cggtctccgttatcggggaagaagtggctgatctcagccaccgcgaaaatgacatcaaaaacgccattaacctgatgttctggggaatat
aatgtcagggcatgagattatcaaaaaggatcttcacctagatcctttcacgtagaaagccagtcgcgagaaacgggtcgtgaccccgga
tgaatgtcagctactgggtatctggacaagggaacgcaagcgcaagagagaagcaggtagcttgcagtggttaccatggcgat
agctagactggggcggtttatggacagcaagcgaaccggaattgccagctggggcgccctctgtaaggttgggaagccctgcaaaag
taaatggatggcttctcgcgcgaaggatctgatggcgaggggatcaagctctgatcaagagacaggatgaggatcgtttcgcag
attgaacaagatggattgcacgcaggttctcggcgcttgggtggagaggtattcggctatgactgggcacacagacaatcggct
gctctgatcccgctgttccggctgtcagcgcagggcgcccggttcttttgcagaccgacctgtccggtgcccgtgaatgaactgc
aagacgaggcagcgcggctatcgtggctggccacgacggcgcttcttgcgcagctgtgctcgcagctgtgactgaagcgggaagg
gactggctgtctattggcggaagtgcggggcaggtatcctgtcatctcaccttgcctcgcgagaaagtatccatcaggtgatgca
atggcgggctgcatacgttatccggctacctgcccattcaccaccaagcgaacatcgcacgcagcagcagctactcggatgg
aagccggtctgtcagcaggtatgtgacgaagagcatcaggggctcgcgccagccgaactgttcgccaggctcaaggcgagca
tgcccagcggcgaggatctcgtgacccatggcgatgcctgttgcgaatatcatggtggaatggccgcttttctggattcatcg
actgtggccggctgggtgtggcgaccgctatcaggacatagcgttggctaccctgatattgctgaagagcttggcgcgcaatgggc
tgaccgcttctcgtgctttacggtatcgccgctcccattcgcagcgcacgccttctatcgcttctgacgagttcttgaattattaac
gttacaatttctgatcggtatttctcttacgcatctgtgcggtatttcacaccgcatacaggtggcacttttcggggaaatgtgcgcg
gaacccctatttgtttttttaaatacattcaaatatgtatccgctcatgagacaataaccctgataaatgctcaataatgacagtgagg
agggccaccatggccaagttagcagtgccgttccggtgtcaccgcgcgcagctgcgggagcggctcagttctggaccgaccg
gctcgggttctccctagtaacggccgcaagtgtgtggaattcaggcagttcaacctgttgatagctactaagctctcatgtttcacg
tactaagctctcatgtttaacgtactaagctctcatgtttaacgaactaaaccctcatggctaactactaagctctcatggctaactactaa
gcctctcatgtttcacgtactaagctctcatgtttgaacaataaaattaataatcagcaactaaatagcctctaaggttttaagtttataag
aaaaaaaagaatatataaggcttttaagcttttaaggtttaacgggttgggacaacaagccagggatgaacgcactgagaagcccttag
agcctctcaaaagcaattttcagtgacacaggaacacttaacggctgacagcctgaattctgcagatatctgttttccactctcgtcacttt
cgccaggtagctgggtgaagacgaaggaagtcccggagccatctgcgcggcgctactacagcaatgttttgaaggcagtttcagacc
ggattcagtttggcagtggttcatcatccacttctgattttgccaggtagatgtcgcggagggttttaccatccagcaccagttcgcca
gacttcagccctggaatgttaacgccagcaccacgcccaatcacggctgggaactggaacagaccttctgagccagttttctcgtc
agacagcggcgcgctcagaggcaccaaaatcaacggtattagcgataatctgttttacgccaccgggaagaaccgataccctggtatgtaa
ctttattaccggttcttctgtgtaagtgtcagcccatttggcatacaccggcgaggggaaggttgacctgcacctgtcaggttctctg
caaacacagagaaagcactcatcgataaggtcgggcgacaacagttgcgacgggtgtacgcataacttcataatgtctcctgggag
gattcataaagcattgtttgttggtacgagaagcgaataaggacaacaggtgacagttatatgtaaggaatatgacagtttatgacaga
gagataaagtcttcagctgatttaataagcgttgatattcagtcattacaacattaataacg

[illegible]

Figure 108C

gggattaactttatggatgggcgatattaagaatggttcagaaacagtaaaactgggtccagaaggtaaaaaattggatgattcgcataatg
ccagaaaagcttgaataatatacagaactcgcacatgcaaattctagatttggatggactatctaaactagatcgcttacacgagactca
tgacgattacagcgcacagatatttgagtccttgagagggaatgactgtacgtgtcaaaagtatcctgaaatcacagaagttagagatgca
gttgcacaattagacgttctttagaaaaataactaaagaatctggtgccgatacgaacctcccgtacaaactagcttattggatgattgc
cagaccttaaaaggagttcttacttgcttaatacctggtgctggtggttatgacgccattgcagtgattactaagcaagatgttgatcttagg
gctcaaacgcctaagtacaaaagattttctaagggtcaatggctggatgtaactcaggctgactggggtgttaggaaagaaaaagatccg
gaaactatcttgataataacttaaggtagctgcatgcagaattcgcccttaaggaggaaaaaaaatgaccgtttacacagcatccgtt
accgcacccgctcaacatcgcaacccttaagtattgggggaaaaaggacacgaagtgaatctgccaccaattcgtccatatcagtgac
tttatcgcaagatgacctcagaacgttgacctctgcggctactgcacctgagttgaacgcgacactttgtggttaattggagaaccacac
agcatcgacaatgaaagaactcaaaattgtctgcgcgacctacgccaaatgaaggaatggaatcgaaggacgcctcatggcca
cattatctcaatgaaactccacattgtctccgaaataactttctacagcagctggttagcttctccgctgctggcttgcattggt
ctctgcaattgctaagtataccaattaccacagtcactcagaaatatctagaatagcaagaaaggggtctggttcagctttagatcgtt
gttggcggtacagtggtcctgggaaatgggaaaagctgaagatggtcatgattccatggcagtaacaatcgacacagctctgactgg
cctcagatgaaaagcttgtcttagttgtagcgcgatattaaaaaggatgtgagttccactcagggtatgcaattgaccgtggcaacctccg
aactatttaagaaagaattgaacatgtcgtaccaaaagatttgaagtcacgtgtaagccattgtgaaaaagatttcgccacctttgca
aaggaaacaatgatggattccaactcttccatgccacatgttggactcttccctccaatattctacatgaatgacactccaagcgatca
tcagttggtgccacaccattaatcagttttacggagaaacaatcgttcatacacgttgcaggtccaaatgctgtgtgtactacttag
ctgaaaatgagtcgaaactcttgcattatctataaattgttggctctgttctggtgggacaagaaatttactactgagcagcttgaggc
ttcaaccatcaattgaatcatctaactttactgcacgtgaattggatcttgagttgcaaaaggatgttgccagagtatttaactcaagtgc
gttcaggcccaagaagaacaaacgaatcttgcattgacgcaagactggtctaccaaaggaataagatcaattcgtgcacgccttag
gaggtaaaaaaaatgactgccgacaacaatgtagtgccttggtgcagtatctagttacgccaattagtgcaaaacaaacacctg
aagacattttggaagagtttctgaaattattccattacaacaagacctaatcccgatctagtgagacgtcaaatgacgaaagcggaga
aacatgttttctggtcatgatgaggagcaaatlaagttaatgaatgaaaattgtattgtttggattgggacgataatgctattggtccggt
accaagaaaagttgtcatttaattgaaaatattgaaaagggtttactacatcgtgcattctccgtcttattttcaatgaacaagggtgaattactt
ttacaacaaagagccactgaaaaataactttccctgatcttggactaacacatgctgctctcatccactatgtattgatgacgaattaggt
tgaagggttaagctagacgataagattaaggcgctattactgcggcggtgagaaaaactagatcatgaattaggtattccagaagatgaa
actaagacaaggggttaagttcacttttaaacagaatccattacatggcaccaagcaatgaacctggggtgaacatgaattgattaca
tcctattttataagatcaacgctaaagaaaacttgactgtcaacccaaacgtcaatgaagttagagactcaaatgggtttcaccaaatgatt
tgaanaactatgttctgacccaagttaacagtttacgcttgggttaagattatttgcgagaattacttattcaactgggtgggagcaattagat
gacctttctgaagtggaaaatgacaggcaaatcatagaatgctataacaacgcgtctacaataaaaaaggcacgtcagatgacgtgc
ctttttcttggggcc

(SEQ ID NO:90)

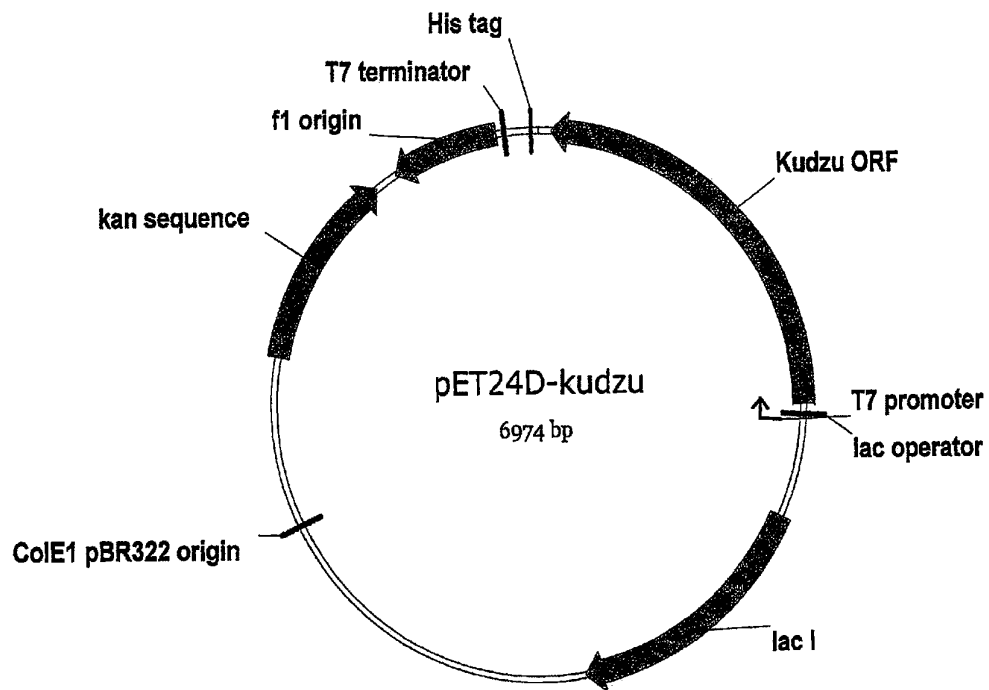
Figure 109

FIGURE 110A

1-

gtgcgccgcaagcttctgacggagctcgaattcggatccctgcagtttagacatacatcagctggttaatcgggaaagggtcaatcag
cagcagtttgatcggttttcagtcgcgtagctggtggcgaccagaccatcgccatactggtagggtgagtgaggaaacacgtgccatgtt
aactgcgatttccatgaacgctttaggcagcaggggtggagtcgtaacgcgttcacgattcatcttttccattcggcgtcagtcagttac
gcagttcttcggggcctgttctcgtggtaccatcgtttctgcatgtagctaatgataaattggtagtcctgccacgttccagctccg
ccgcagagggtggccagatcgttcacaggcggagataacgcagctagaacgcaccagaccatggaagtcggtcagggaacgcag
cgcgtggtcggagatgtcttctcgtgctggcatacggaaaagtaagacggcgccagcagcgtacaccggaggaggaacgcgtgg
cgttttccaggtacttggaagccgggataattttgtgtggaccatttcgctcttgcaaaaggcttgcacagttcacgccagctttt
cgtcagatagacaggtgttatgacctttctttcagaatagaataggacgtgtcgttaacggtgtgtacagtccaggaaacacagtt
tcatatagtcggcagggtgttaatagcgttaacgtcccagcgtctacagcatcggtaacagttgcagttcgtccagagtgccataaa
cgtcatacacgtcatcgtatgctgcaccagaccaaacatttttagtaaacgctttgcgacattcacaaactcggggtctggcgccatacc
cagtgcccagaataaacttccatcagcggtcgcgtacaaaatccagtttctagccaggcccatctcgttccaccagcgggacaga
tcttgcagctctttctgggtgcagggtctgtacctgttaaaatccagcttcgagtcaccagcagcagctggtgatgcggttcttctggttcg
tatttatccaggaaacacgtgcctccagacgggtgcagacgctggtgataggcagttccagggtcgtggctcactgttctgcaacctg
gtattaatgccttcttcaggtgttcttcaggtgggtgatggaaaaggtagcgcctcctccagcaggttctcacctcgaacccaggta
agacgttcatacagggtcagcagcgttggacgtcacctttcagttcaccgctgaaaccaccttcttatccttgaacgcctcaaaaacat
cctgagaacctcgaacacgtgtgacgcagcagacggaaagacagagcgttgcgtgcaggtcagatttgttcttttcttctgtcca
gcagtacgatgtttccagggtttaatgatgtcttttcaaattttaggtcagaccaggcgtgcacatcgtcgtatcagctccagcag
gacagcgggtggtgtctacacggtgatcagcgaacttcttctccagtttggctcgttcttctccagcttttccacttcaggtcgt
tctccagggtggtgcaggaattcgaattccacaggttggctgatgttgcggaacgacgggaattatgctcggtaatctgagtaattg
agaagaggctgcacacatggtatatctcttcttaaagttaaacaataattttctagagggtgaattgtatccgctcacaaatccctatagt
gagtcgtattaatttcgcggtgatcagatctcgtatcctacgccggacgcatcgtggccggcatcaccggcgccacaggtgcggttgc
tggcgctatatcgcgacatcaccgatggggaagatcgggctgccacttcgggctcatgagcgttcttctggcggtgggtatggtgg
caggccccgtggcggggggactgttggcgccatctccttgcacacattccttgcggcggtggtcgaacggcctcaacctact
actgggtgcttctctaatgcaggagtcgataaggagagcgtcagatcccgacaccatcgaatggcgcaaaccttctcgggtat
ggcatgatagcggcggaagagagtaattcagggtggtgaatgtgaaaccagtaacgttatagatgctgcagagatgcccgtgtct
cttatcagaccgttcccgctgtgtgaaccaggccagccagtttctgcgaaaacgcgggaaaaagtggaaagcggcgatggcgaggc
tgaattacattcccaaccgctggcacaacaactggcgggcaaacagtcgttgcgtgattggcgttgcacctccagcttggccctgcac
gcgcccgtcgaattgtcggcggttaaatctcgcgcatcaactgggtgcccagcgtggtgtcgtatggtagaacgaagcggc
gtcgaagcctgtaaagcggcggtgcacaatcttctcgcgaacgcgtcagtggtgatcattaactatccgctggatgaccaggatgc
cattgctgtggaagctgctgactaatgttccggcgttatttctgatgtcttgaccagaccccatcaacagtatttttctccatgaa
gacggtacgcgactgggctggagcatctggtcgcattgggtcaccagcaaatcgcgtgttagcgggcccattaaagtctgtctcggc
gcgtctcgtctggtggtggcgtgataaatctcactcgaatcaaatcagccgatagcggaaaggcggaggtgagtgccatgt
ccggttttcaacaacctatgcaatgctgaatgagggtcgttccactgcgtggttgcacgatcagatggcgtggcgca
atgcgcgccattaccgagtcgggctgcgcgttggcggtatctcgttagtggtgatacgcgataaccgaagacgctcatgttat
cccgcgttaaccaccatcaaacaggatttctgcctgctggggcaaacagcgtggaccgcttgcgaactctctcaggccaggcg
gtgaagggaatcagctgttcccgtctcactggtgaaaagaaaaaccacctggcgcccaatagcaaacgcctctccccgcgcgt
tgccgattcattaatgcagctggcacgacaggttcccactggaagcgggcagtgagcgaacgcaattaatgtaagttagctcac
tcattaggcaccggatctcagccgatcccttgagagccttcaaccagtcagctccttccggtggcgcgggcgatgactatcgtc
ccgacttatgactgttcttctatcatgaaactcgtaggacaggtgccggcagcgtctggtgctatttccggcgaggaccgcttctcgt
gagcgcgacgatgctggcctgtcgttgcggtattcgaatcttcacgcctcgtcaagccttctgactggtcccgccaccaaac
gttccggcgagaagcaggccattatcgccggcatggcgccccacgggtgcgcatgatcgtgctcgt

FIGURE 110B

tcgttgaggacccggctaggtggtgggggttccttactggttagcagaatgaatcaccgatacgcgagcgaacgtgaagcgactgct
gctgcaaacgtctgcgacctgagcaacaacatgaatggtcttcggttccgtgttcgtaagcttggaacgcgggaagtcagcgccct
gcaccattatgttccggtatctgcatcgcaggatgctgctggctaccctgtggaacacctacatctgtattaacgaagcgtggcattgacc
ctgagtgttttctctggtcccgcgcacatcaccgccagtgtttaccctcacacgttccagtaaccgggcatgttcatcatcagtaac
ccgtatcgtgagcatcctctctcgtttcatcggtatcattaccccatgaacagaaatcccccttacacggaggcatcagtgaccaaacag
gaaaaaaccccttaacatggcccgctttatcagaagccagacattaacgcttctggagaaactcaacgagctggacgaggatgaac
aggcagacatctgtgaatcgcttcacgaccacgctgatgagctttaccgcagctgcctcgcgcgttctgggtgatgacggtgaaacctct
gacacatgcagctcccggagacgggtcacagcttctgtgaagcggatgcgggagcagacaagcccgtcagggcgctcagcggggt
gttggcggtgtcgggcgagccatgaccagtcacgtagcgatagcggagtgtatactggcttaactatgcggcatcagagcagat
tgtactgagagtgcacatatatgcgggtgtgaaataccgcacagatgcgtaaggagaaaaataccgcatcaggcgcttctccgttctctc
ctcactgactcgtcgctcgttcggtcgtcggcgagcgggtatcagctcactcaaaggcggtatatacgggttaccagaatcagg
ggataacgcaggaaagaacatgtgagcaaaaggccagcaaaaggccaggaaaccgtaaaaggccggttctggcggttttccatag
gtccgccccctgacgagcatcacaaaaatcgacgtcaagtgcaggtggcgaaccgcagagactataagataccaggcggtt
tccccctggaagctcctctgctgctctctgttccgacctgccgttaccggatacctgtccgcttctcccttcgggaagcgtggcg
cttctcatagctcacgctgtaggtatctcagttcgggtgtaggtcgtcgtccaagctgggctgtgtgcacgaacccccgttcagcccg
accgctgcgccttatccggttaactatcgtcttgagtccaaccggtaagacacgactatcgccactggcagcagccactggttaacagg
attagcagagcgaggtatgtaggcggtgtacagagttctgaagtgggtggcctaactacggctacactagaaggacagtatttggatc
tgcgctctgtgaagccagttaccttcgaaaaagagttgtagctcttgatccggcaaaacaaaccaccgctggtagcggtgtttttt
tttgaagcagcagattacgcgcagaaaaaaggatctcaagaagatcctttgatctttctacggggtctgacgctcagtggaacgaaa
actcacgttaagggtatttggatgaacaataaaactgtctgcttacataaacagtaatacaagggtgttatgagccatttcaacggga
aacgtcttcttagccgcgattaaattccaacatggatgctgattatatagggtataaatgggctcgcgataatgtcgggcaatcaggt
gcgacaatctatcattgtatgggaagcccgatgcgccaggtgtttctgaaacatggcaaggtagcgttgccaatgatgttacagat
gagatggtcagactaaactggctgacggaatttatgctctccgaccatcaagcattttatccgtactcctgatgatgcatggttactacc
actgcgatccccgggaaaaacagcattccagggtattagaagaatatcctgattcaggtgaaaatattgtgatgcgctggcagtggtcctgc
gccggttgattcattcctgtttgtaattgtccttttaacagcgatcgcgtatttctcgtcgcagggcgcaatcacgaataacggtt
ggttgatgcgagtgattttagtacgagcgtaatggctggcctgttgaacaagtctggaaagaaatgcataaacttttccattctcaccg
gattcagtcgtcactcatggtgatttctcacttgataaccttattttgacgaggggaaataataggtgtattgatgttgacgagtcggaat
cgcagaccgataccaggatcttgccatcctatggaactgcctcgggtgagttttctccttattacagaacggcgttttcaaaaataggtatt
gataatcctgatatgaataaattgcagttcatttgatgctcgtatgagttttctaaagaattaattcatgagcggatacatatttgaatgtatttag
aaaaataacaaaataggggttcgcgcacatttccccgaaaagtgccacctgaaattgtaaacgttaataattttgttaaaatcgcgttaaat
tttgttaaatcagctcatttttaaccaataggccgaaatcggcaaaatccctataaatcaaaagaatagaccgagataggggtgagtggt
gttccagtttgaacaagagtccactattaaagaacgtggactccaacgtcaaaaggcgaaaaaccgtctatcagggcgatggccact
acgtgaaccatcacctaatacagtttttggggtcaggggtccgtaagcactaaatcgaaccctaaaggagccccgatttagag
cttgacggggaaagccggcgaaacgtggcgagaaagggaagggaagaaagcgaaggagcggcgctagggcgctggcaagtgt
ggcggtcacgctgcgcgtaaccaccacacccgccgcttaatgcgcgtacagggcgctccattcgccaatccgcatatagttcc
tctttcagcaaaaaacccctcaagaccggttagaggcccaagggttatgctagtattgtcagcgggtggcagcagccaactcag
cttctttcgggctttgttagcagccggatctcagtggtggtggtggtggtgctcga

(SEQ ID NO:101)

Figure 111A

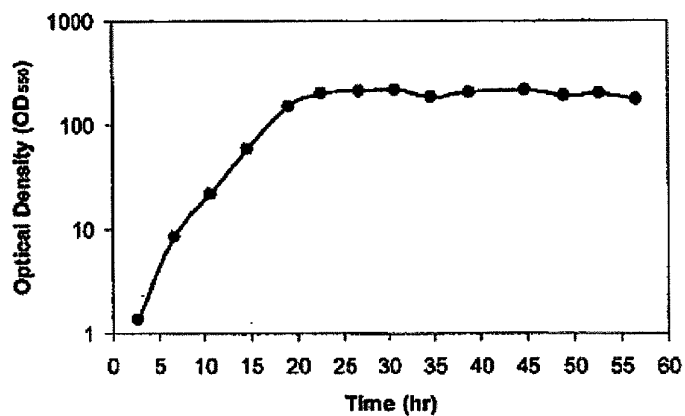


Figure 111B

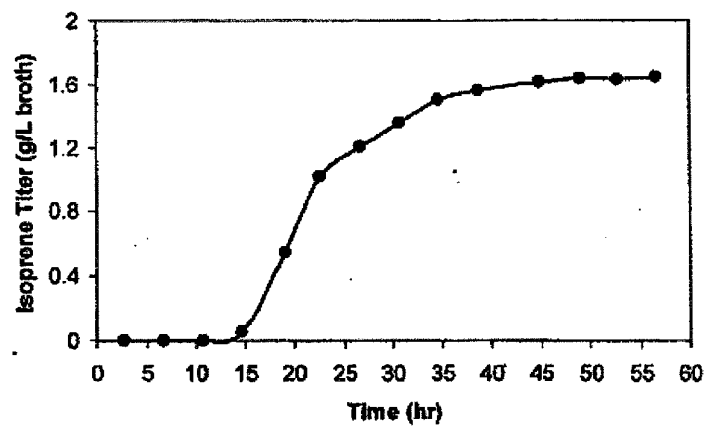


Figure 111C

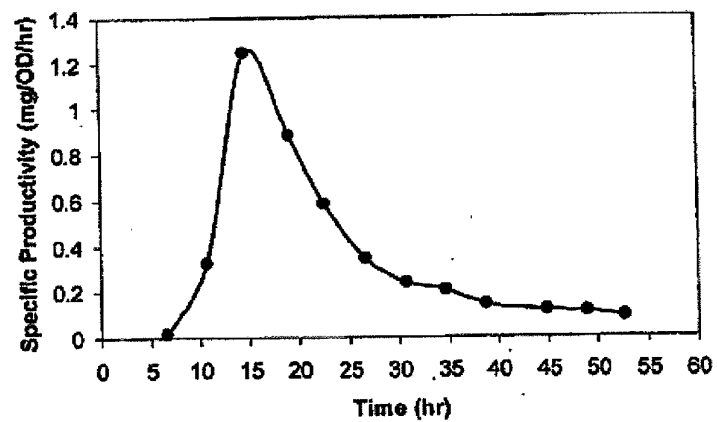


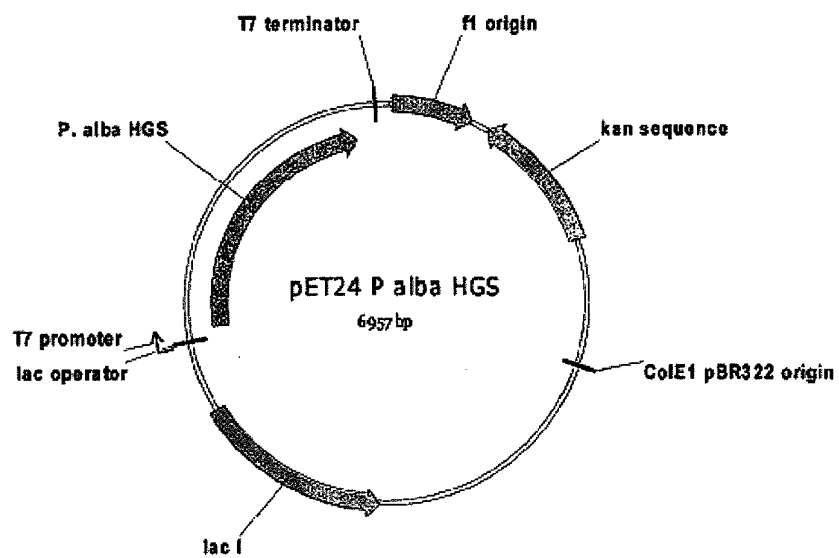
Figure 112

Figure 113A

1-

tggcgaatgggacgcgccctgtagcggcgccattagcgcggcggtgtggtgttacgcgcagcgtgaccgctacacttgccagcgccc
 tagcggccgctcctttcgtttcttcccttctctgcccagctgcggcggtttcccgtaagctctaaatcgggggctccttttaggttcc
 gatttagtgccttacggcaccctgcaccccaaaaacttgattagggtgatgttccacgtatgggccatcgcctgatagacgggttttgcgcc
 ttgacgttgagtgccacgttcttaatagtggactctgttccaaactggaacaacactcaacccctatctcggctatcttttgaftataagggtat
 ttgcccgtttcggcctattggttaaaaaatgagctgatttaacaaaaattaacgcgaatttaacaaaatattaacgtttacaatttcagggtggca
 cttttcggggaaatgtgcgcgggaacccctatttgttttttataataacattcaaatatgtatccgctcatgaattaattcttagaaaaactcatcg
 agcatcaaatgaaactgcaatttattcatatcaggattatcaataacatattttgaaaaagccgtttctglaatgaaggagaaaactcaccgag
 gcagttccataggtggcaagatctgtglatcggtcgcattccgacacgttcccaacatcaatacaacctattaatttccctcgtcaaaaataa
 ggttatcaagtggagaatcaccatgagtgacgactgaalccgggtgagaatggcaaaagtattgcatttcttccagactgttcaaacaggcca
 gccattacgctcgtcatcaaaactactcgcatacaaccacgttattcattcgtgattgcgcctgagcgagacgaaatcgcgcgtcgtgta
 aaaggacaattacaacagggaatcgaatgcaaccggcgaggaacactgcagcgcatcaacaatattttcacctgaatcaggatattcttc
 taatacctgggaatgctgttttccggggatcgagtggtgagtaaccatgcatatcaggagtagcggataaaatgcttgatgtcgggaagag
 gcataaattccgtagccaggttagtctgaccatctcatctgtaacatcattggcaacgctacctttgcatgtttcagaacaactctggcgcat
 cgggcttccatcaaatcgtatagattgtcgcacctgattgcccgcattatcgcgagccatttataccatataaatcagcatccatgttggaa
 ttaacgcggccctagagcaagacgtttccggtgaatatggctataacaccccttgtattactgtttatgtaagcagacaggtttatgttcatga
 ccaaatcccttaacgtgagttttcgttccactgagcgtcagaccccgtagaaaaagatcaaaaggatcttcttgagatccttttttctgcgcgtaa
 tctgctgttgcgaacaaaaaaaccaccgclaccagcgggtgttgggttccggatcaagagctaccaactcttttccgaaggtaactgtgcit
 cagcagagcgcagataccaatactgtccttctagtgtgaccgtagttagggccaccacticaagaactctgtagcaccgcttatacactcgc
 tctgclaatcctgttaccagtggtgtgtgcccagtggtgataagtcgtgttaccgggttgagactcaagacgatagttaccggataagggcca
 gcggctcggcgtaacgggggggtgtgtcacacagcccagcttgagcgaacgacctacaccgaactgagatacctacagcgtgagctat
 gagaagcggccacgcttccgaaggagaaaggcgacaggtatccggtaagcggcagggtcgggaacaggagagcgcacgagggga
 gcttccagggggaacgctgtgtatctttagtctgtcgggttccaccctctgactgagcgtcgtattttgtgatgtcgtcagggggg
 cggagccctatggaaaaacgccagcaacgcggccttttaccggttccgttctgtgccccttttctgtcgtcgttcttccgttaccct
 gattctgttgataaccgtattaccgctttgagtgagctgataccgctcgcgcagccgaacgaccgagcgcagcagcagtcagtgagcag
 gaagcgggaagagcgcctgatgcgggtattttctcttacgcatctgtgcgttatttcaaccgcataatgtgtgcactctcagtacaatctgtct
 gatgccgcatagttaagccagtafacactccgctatcgtacgtgactgggtcatgctgcgccccgacacccgccaacacccgctgacgc
 gccctgacgggctgtgtctcctccggcatccgcttaccagacaagctgtgaccgtctcgggagctgcatgtgtcagagggtttaccgctcatc
 accgaaacgcgcgagggcagctgcggtaaaagctatcagcgtgtgtaagcgaattcacagatgtctgcctgttcatccgctcagctcgt
 ttgagtttctcagaagcgtlaatgtctgtgtcttctgataaagcgggcatgttaaggcggttttttctgtttgttactgatgccctccgtgtaag
 ggggatttctgttcatgggggtaatgataccgatgaaacgagagaggtgctcacgatacgggttactgatgatgaacatgcccggttactg
 gaacgttgtgagggtaaacactggcggtatggtggtgcggggaccagagaaaaatcactcagggtcaatgccagcgtctgttaataca
 gatgtaggtgttccacagggtagccagcagcatcctgcgagtcagatccggaacataatggtgcagggcgctgacttccgcttccagac
 ttacgaaacacggaaacggagaccattatgtgtgtcaggtcgcagacgttttgagcagcagctcgttccaggttcgtcgcgtatcg
 gtgattcattctgtaaccagtaaggcaaccccgccagcctagccgggtcctcaacgacaggagcacgatcatgcccacccgtggggcc
 gccatgcggcgataatggcctgtcttctcggcgaacgtttgtgtggtgggaccagtgacgaaggcttgagcagggcggtgcaagattccg
 aataccgcaagcgacaggccgatcatcgtcgcgtccagcgaagcgggtcctcggcgaatgacccagagcgtgcggcacctgtc
 ctacgagttgcatgataaagaagacagtcataagtgccggcgacgatagtcaccccgccaccgggaaggagctgactgggtgaag
 gctctcaaggcgatcgggtcagatcccggtgcctaagtgagtgactaacttaattgcgttgcgtcactgcccgtttccagtcggga
 aacctgtcgtgcagctgcatatgaatcggccaacgcgcggggagaggcggttgcgtattggcgccagggtgtgttttcttttaccga
 gtgagacgggcaacagctgattgcccttaccgctgcccgtgagagagtgacgcaagcgtccacgctgtgttggccagcaggcga
 aaatcctgtttgatgtgtgtaacggcggtatataacatgagctgtcttgggtatcgtgtatccactaccgagataccgaccaacgcgc
 agcccgactcgttaattggcgcgcatgtgcggcagcgcctatgagctgttggcaaccagcatcgcagtggaacgatgccctcatcagc
 atttcatggtgtgtgaaaaccggacatggcactccagtcgcttcccggttcgctatcggtgaatttgattgcgagtgagatatttatccag

Figure 113B

ccagccagacgcagacgcgccgagacagaacttaatgggcccgtaacagcgcgatttgcctgacccaatgcgaccagatgctccac
gcccagtcgcgtaccgtcttcattgggagaaaaataacacgttgatgggtgctggtcagagacacaaagaaataacgccggaacattagtc
aggcagcttcacagcaatggcatcctggtcatccagcggtatgtaatgatcagcccactgacgcgttgccgagaaagattgtgaccgc
cgctttacaggtctgcagccgcttcgttctaccatcgacaccaccacgctggcaccagtgatcgccgagatttaacgcgcgacaa
ttitcgacgcgcgcgtgcagggccagactggagggtggcaacgccaatcagcaacgactgtttgcccgccagtggtgtgacacgcggttg
gaatgtaattcagctccgccatcgccgcttcacattttcccgcttttcgcagaaacgtgctgacctgttcaccacgcgggaaacggtct
gataagagacaccggcatactctgcgacatcgataacgttactggttcacattcaccacctgaattgactctctccggcgctatcatgc
cataccgcgaaagggtttgcgccattcgatggtgctcggtgacgtcctccttatgcgactcctgcattaggaagcagcccagtagta
gggtgaggccgttgagcaccgccgccgaaggaaatggtgcatgcaaggagatggcgcccaacagtcctccggccacggggccttgcca
ccataccacgcgcgaaacaagcgtcatgagcccgaaaggcgagccgatctcccatcggtgatgtcgcgatataggcgccagca
accgcacctgtggcgccggtgatgcccggccacgatgcgtccggcgtagaggatcgagatctcgatcccgcgaaattaatacgaactacta
taggggaattgtgagcgggataacaattccctctagaataattttgttaacttaagaaggagatacatatgctgttagcgtgtccaccg
aaaatgtgtctttaccgaaactgaaccgaagctcgtcgttctgcgaactacgaacctaacagctgggactatgattacctgctgtctccga
cacggacgagtcacatcgaagtatacaaaagacaaagcgaanaagctggaagccgaagtctgcgcgagattataacgaaaaagcagaat
ttctgacctgtggaactgattgacaacgtccagcgcctggcggtgggttaccgtttcagagtcgatatccgtgggtgcgctggatcgtctc
ttctccggcgctcgtgatgcccgaacaaagactccctgcacgggtacggcactgtcttccgtctgctgcgtcaacacgggtttgaggttctc
aggaaagcgttcagcggcttcaaaagaccaaaacggcaactcctggagaacctgaaggaaagatacaagctatcctgagccgtacgagg
ccagcttctggtctggaaggcgaanaacatcctggacgagcgaagggtttcgaatctctcatctgaaagaactgtctgaagaaaagatc
ggtaaaagagctggcagaacagggtgaaccatgcaactgcaactgcacgtcgtactcagcgtctggaagcagtatggtctatcgag
gcctacgtaaaaaggagcgcgaatcagggtctgctggagctggcaattctgattacaacatgatccagctctgataccagcgtgatct
gcgtgaaacgtccggttggtggcgtcgtgtgggtctggcgaccaaactgcacttgcctgacccgctgattgagagcttctactgggccg
tgggtgtagcattcgaaccgaatactccgactgccgtaactccgtcgaaaaatgtttcttctgtaaccattatcgacgatactacgatgat
acggcaccctggacgaactggagctgttactgatgcagttgagcgttgggacgtaaacgccatcaacgacctgccggattacatgaaact
gtgctttctggtctgtataacactattaacgaaatcgcttacgacaacctgaaagataaagggtgagaacatcctgccgtatctgacaaaagc
ctgggctgacctgtgcaacgctttcctgcaagaagccaagtggcgtgtacaacaaatctactccgaccttgcgactacttcggcaacgcag
gaaatcctctctggcccgctgcaactgggtggttctgcttactcgtctgctgcaagaacattaaaaaggaagatcgaaaacctgcataata
ccatgacacacatctctgctccttcccatatcttccgtctgtgcaatgacctggctagcgcgtctcggaattgctgctgtgaaaccgcaaat
agcgtttctgttacctgcgcactaaaggatctcgaagaactggctaccgaaagcgtgatgaatctgatcgaatgaacctggaaaaagatg
aacaaggaaaaactgggtggtagcctgttcgcaaacggttctggaaccgcgatcaacctggcacgtcaatctcactgcacttatcataa
cggcgacgcgcatactctccggatgagctgacccgcaaacgcgttctgctgtaatacctgaaccgaltctgcccgttgaaacgctaaggat
ccgaattcgagctccgtcgacaagcttgcggccgactcgagcaccaccaccaccactgagatccggctgctaacaagcccgaaa
ggaagctgagttggctgctgccaccgtgagcaataactagcataaaccccttggggcctctaaccgggtcttgaggggtttttgctgaag
gaggaactatccggat

(SEQ ID NO:102)

Figure 114

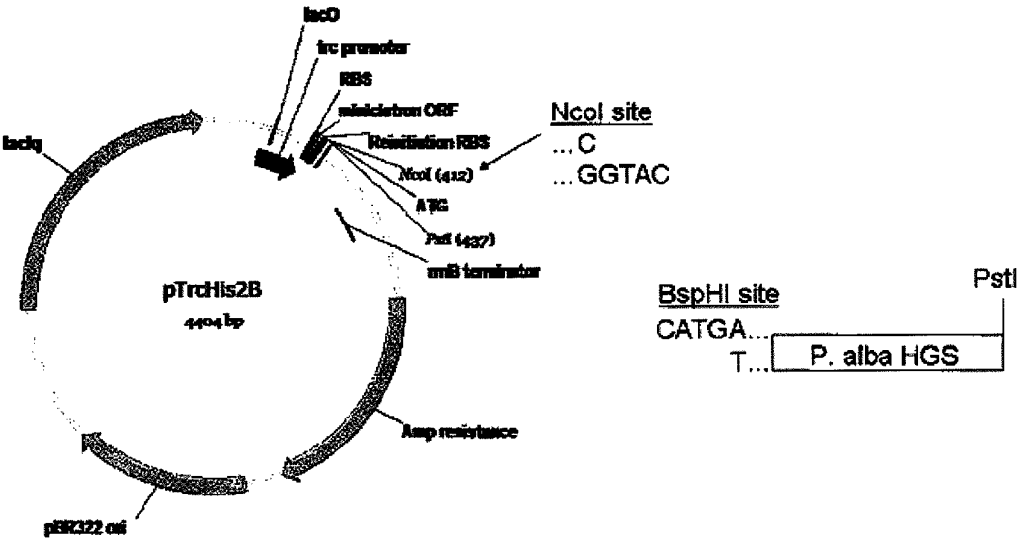


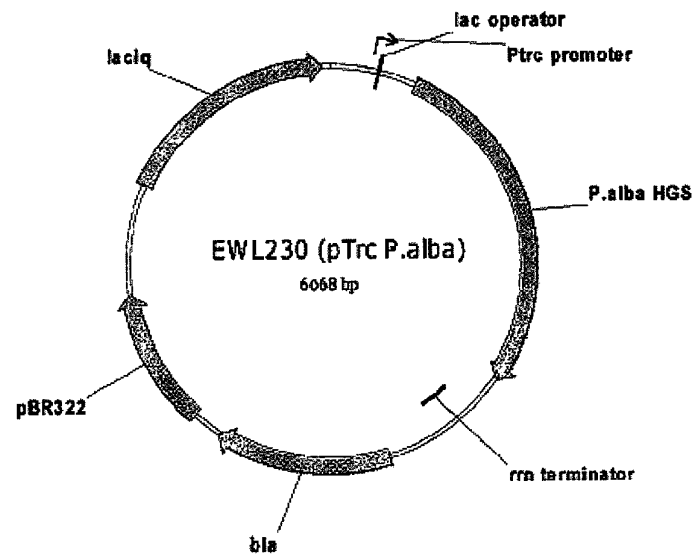
Figure 115

Figure 116A

1-

gtttgacagcttatcatcgcactgcacgggtgcaccaatgcttctggcgctcaggcagccatcggaagctgtggtatggctgtgcaggtcgtataat
cactgcataatcgtgtcgtcctcaaggcgcactcccgttctggataatgtttttgcgccgacatcataacgggttctggcaaatattctgaaatgag
ctgttgacaatlaatcatccggctcgtataatgtgtggaatgtgagcggataacaatttcacacaggaaacagcgccgctgagaaaaagcg
aagcggcactgctcttaacaatttatcagacaatctgtgtgggcactcgaccggaattatcgattaactttattttaaaaaaftaaagaggtatata
attaatgtatcgattaataaggaaggaaataaaccatgagatgtagcgtgtccaccgaaaatgtgtctttaccgaaactgaaccggaagctcgc
tcgttctgcgaactacgaacctaacagctgggactatgattacctgctgtcctccgacacggacgagtcaccatcgaagtatacaaaagacaaag
cgaaaaagctggaagccgaagttcgtcgcgagattaataacgaaaaagcagaatttctgaccctgctggaaactgattgacaacgtccagcgc
cctgggcccgtgggtaccgtttcggagctgatatccgtgggtgcgctggatcgcttcgtttcctccggcggttcgatcggttaaccaagacttcc
ctgcacggtagcggcactgtcttccgtcgtcgtcgaacacgggtttttagggtttcaggaagcgttcagcggcttcaagacaaaaacggc
aacttctcgagaaacctgaaggagatatcaaaagctatcctgagcctgtacgaggccagcttctggctcgtggaaggcgaaacatccctgg
acgaggcggaaggttttcgcaatctctcatctgaaagaactgtctgaagaaaaagatcgtaaaagagctggcagaacaggtgaacctgact
ggaactgccactgcatcgccgtactcagcgtctggaagcagtatgtgtatcgaggcctaccgtaaaaaggaggacgcgaatcagggttctg
ctggagctggcaattctgattacaacatgatccagctgtatataccagcgtgatctgcgtgaacgtcccgttgggtgctgtgtgtgggtctg
gcgaccaaactgcactttgctcgtgaccgctgattgagagcttctactgggcccgtgggtgtgtagcattcgaaccgcaactactccgactgcgc
taactccgtcgcgaataatgttttcttctgaaccattatcgacgatatactacgatgtatatacggcaccctggacgaactggagctgtttactgatgc
agttgagcgttgggacgtaaacgccatcaacgacctgcgggattacatgaacctgtgttcttggctctgtataacactattaaacgaaatcgcc
tacgacaacctgaaagataaagggtgagaacatccgtccgtatctgaccaagcctgggctgacctgtgcaacgctttctcgaagaagcca
agttggctgtacaacaaatctactccgacctttgacgactacttcggcaacgcgatggaatccttcttggcccgtgcaactggtgttcgttta
cttgcgtgtcgtgcagaacattaaaaaggagatcgaaaacctgcgaataacatgatcacatctctcgtcttcccatatcttccgtctg
tgcaatgacctggctagcgcgtctcgcgaaattgcgcgtgtgtgaaaccgcgaatagcgtttctgttacatgcgcactaaagggtatctccgaa
gaactggctaccgaaagcgtgatgaatctgatcgtgatgaacctggaagaaagatgaacaaggaaaaactgggtgtgtagcctgttctgcgaaa
ccgttctgtgaaaccgcgatcaacctggcagctcaatctcactgcacttatacataacggcgacgcgcatacctctccggatgagctgaccc
gcaaacgcgttctgtctgtaatcactgaaccgatttctgcgtttgaacgctaactgcagctgtgtaccatatgggaattcgaagctttctgaac
aaaaactcatctcagaagagatctgaatagcgcgtcgcacatcatcatcatcattgattttaaagggtctccagcttggctgttttggcg
gatgagagaagatttcagcctgatacagattaaatcagaacgcagaagcggctcgtataaaacagaatttgcctggcgcgtagcgcgggt
ggtcccactgaccccatgcggaactcagaagtgaacgcggtagcgcggatggtagtgtgggtctcccatgcgagagtagggaaact
gccaggaalcaataaaaacgaaaggctcagtcgaaagactgggctttctgtttatctgtttgttgcgtgaacgctctcctgagtaggacaa
atccgcccgggagcggattgaacgttgcgaagcaacggcccggagggtggcgggcaggacgcccgcataaaactgccaggcatcaaat
taagcagaaggccatcctgacggatggccttttgcgtttctacaacctttttgtttattttttaaataacattcaaatatgtatccgctcatgaga
caataacctgataaatgtctcaataattgaaaaaggaaagagtatgagtattcaacatttccgtgtcgccttattccctttttcggcattttg
ccttctgtttttgtcaccagaaacgctgtgtgaaagttaaagatgtgaaagatcagttgggtgcacgagtggtgtacatcgaactggatctc
aacagcgtgaagatccttgagagtttctgccccgaagaacgtttccaatgatgagcacttttaaagttctgtatgtggcgcggtattatcccg
tgttgacgcccggcgaagagcaactcggctcggcatacactatttctcagaatgacttgggtgagtactaccagtcacagaaaagcatcttac
ggatggcatgacagtaagagaattatgcagtgctgccataacctgagtgataacactgcggccaacttacttctgacaacgaatcgaggga
ccgaaggagctaacgcgtttttgcacaacatgggggatcatgtaactcgccttgatcgttgggaaccggagcigaatgaagccataccaaa
cgacgagcgtgacaccacgatgctgtagcaatggvaacaacgllgcgcgaactalaaactggcgaactacttactctagcttcccggcaac
aattaatagactggatggaggcggataaagtgcaggaccacttctgcgtcggcccttccggctggctgtgttttctgataaatctggag
ccgggtgagcgtgggtctcgcggatcattgcagcactggggccagatggtaagccctcccgtatcgtatctacacgacggggagtc
ggcaactatggatgaacgaatagacagatcgtgagataggtgctcactgattaagcattgttaactgtcagaccaagtttactatata
cttttagattgatttaaaacttatttttaatttaaaggatctaggtgaagatccttttgataatctcatgacaaaatcccttaacgtgagtttctgt
ccactgagcgtcagaccccgtagaaaagatcaaaagatcttcttgagatccttttttctgcgcgtaatctgtcgttgcacaaaaaaaacca
ccgctaccagcgggtgtttgttgcggatcaagagctaccaactcttttccgaaggtaactggclcagcagagcgagataccaataact
gtccttctagtgtagccgttaggttagccaccacttcaagaactctgtagcaccgcctacataacctcgtctgtaactctgttaccagtggtcgc

Figure 116B

tgccagtgggcgataagtcgtgtcttaccgggtggactcaagacgatagttaccggataaggcgagcggctcgggctgaacgggggggttc
gtgcacacagcccagcttggagcgaacgacctacaccgaactgagatacctacagcgtgagctatgagaaagcggcagcttcccgaag
ggagaaaaggcggacaggtatccggtaagcggcagggctcggaacaggagagcgcaggggagcttcagggggaaacgcctggtat
ctttatagtcctgtcgggttccacctctgacttgagcgtcgatitttgatgctcgtcagggggggcgagcctatggaaaaacgccagca
acgcggccttttacgggttccgttctgtggttctgtcacatgttcttctcgttatccctgattctgtggataaccgtattaccgcct
ttgagtggagctgataccgctcggcagccgaacgaccgagcgcagcagtgagcagggaaagggaagagcgcctgatgcggg
atttctccttacgcatctgtcgggtatttcacaccgcatatggtgcactctcagtaaatctgctctgatccgcatagttaagccagtatacact
ccgctatcgtactgactgggtcatggtgcgccccgacacccgccaacacccgctgacgcgccctgacgggcttctgctccggca
tccgcttacagacaagctgtgaccgtctccggagctgcatgtgcagaggttttaccgctatcaccgaaacgcgcgaggcagcagatca
attcgcgcgcgaaggcgaaggcgcatgatttacgttgacaccatcgaatggtgcaaaaccttccgggtatggcatgatagcggccggaa
gagagtcattcagggttggtgaatgtgaaccagtaacgttatcagatgtcgcagagtatccgggtgtctctatcagaccgttcccgctg
gtgaaccaggccagccacgttctgcgaaaacgcgggaaaaagtggaagcggcgatggcgagctgaattacattcccaaccgcgtggc
acaacaactggcgggcaaacagtcgttgcgtgattggcgttgcacctccagcttgccctgcacgcgccgtcgcaaatgtcgcggcgatt
aaatctcgcgccgatcaactgggtgccagcgtggtggtgtcgaigtgagaacgaagcggcgtcgaaagcctgtaaagcggcggtgcacaa
tcttctcgcgcaacgcgtcagtggtgatcattaactatccgctggatgaccaggatgccattgctgtggaagctgctgcactaatgttccg
gcgttatttctgatgtctctgaccagacacccatcaacagtattatitctccatgaagacggtacgcgactgggctggagcatctgtctgc
attgggtcaccagcaaatcgcgtgttagcgggcccattagttctgtctcggcgcgtctgctggttggctggcataaatatctcactcg
caatcaaatcagccgatagcggaaacgggaaggcgactggagtgccatgtccgggtttcaacaaacctgcaaatgctgaatgagggcac
gttccactgcgatgctgttgcacacgatcagatggcgttggcgcaatgcgcgccattaccgagtcgggctgcgcgttgggtcggat
atctcggtagtgggatacagcgaacgaagacagctcatgttatatcccgccgtcaaccaccatcaaacaggatttccgctgtggggca
aaccagcgtggaccgttctgcaactctctcagggccaggcggtgaagggcaatcagctgttcccgtctcactggtgaaaagaaaaac
caccctggcgcccaatacgaacacgccttctcccgcgcttggccgattcattaatgcagctggcacgacaggttccgacttgaaagc
gggcatgtagcgcaacgaattaatgtgagtagcgcgaattgatctg

(SEQ ID NO:103)

Figure 117

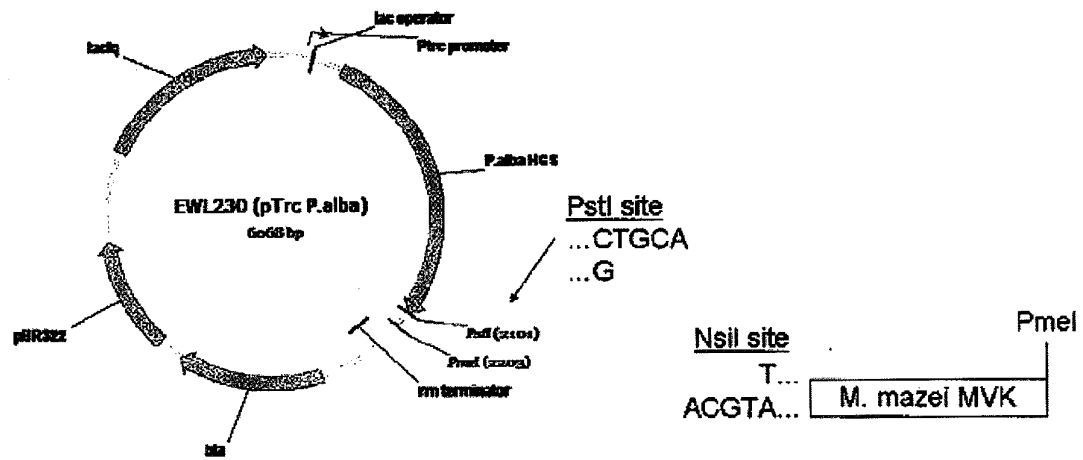


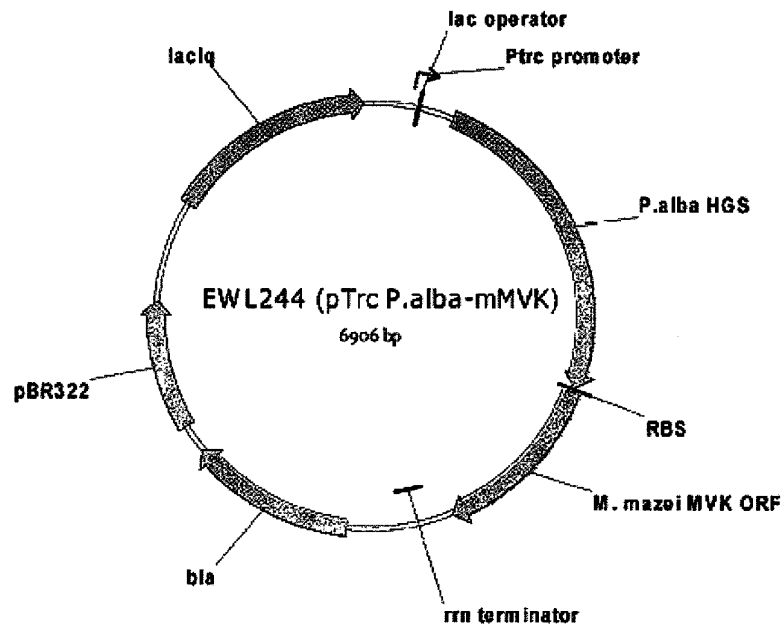
Figure 118

Figure 119A

1-

gtttgacagcttatcatcgactgcacgggtgcaccaatgcttcggtcagggcagccatcggaagctgtggtatggctgtgcaggtcgtaaat
cactgcataatcgtgtgcctcaaggcgcactcccgttctggataatgtttttgcccgcacatcataacggttctggcaaatattctgaatgag
ctgttgacaataatcatccggctctgataatgtgtggaattgtgagcggataacaatttcacacaggaaacagcgccgctgagaaaaagcg
aagcggcactgctctttaacaatttatcagacaatctgtgtgggcactcgaccggaattatcgattaaactttattataaaaaaagaggtatfat
attaatgtatcgattaataaggagggaataaacatgagatgtagcgtgtccaccgaaaatgtgtcttaccgaaactgaaaccgaagctcgc
tcgttctgcgaactacgaacctaacagctgggactatgattacgtgtgtccaccgacacggacgagtcacatgaagtatacaagacaaag
cgaaaaagctggaagccgaagttcgtcgcgagattaataacgaaaaagcagaatttctgacctgctggaactgattgacaacgtccagcg
cctgggctggtgttaccgtttcagctgataccgtgtggtgcgtggtcgttcgttccctccggcggttcgatgcgtaaccaagacttcc
ctgcacgggtacggcactgtcttccgtctgcgcgcaacacgggtttgagggttctcaggaaagcgttcagcggttcaaaagacaaaacggc
aacttctgaggagaacctgaagggaagatacaagctatcctgagccgtgtacgaggccagcttccgtctggaagcgcaaacatccgtg
acgagggcgaaggttttcgcaatctctcatctgaaagaactgtctgaagaaaagatcggttaagagctggcagaacaggtgaacctgact
ggaactgccactgcaicgccgtactcagcgtctggaagcagtatgtgtatcagggcctaccgtaaaaaggaggacgcgaatcaggttctg
ctggagctggcaattctggattacaacatgatccagctgtataccagcgtgtatctgcgtgaacgtcccgttggtggcgctgtgtgggtctg
gcgaccaaaactgcatttgcctgtgaccgctgattgagagcttactggccgtgggtgtagcattcgaaccgcaatactccgactgccg
taactccgtgcgaanaatgttttcttctgaaccattatcgacgatatctacgatgtatagccacctggacgaactggagctgtttactgatgc
agttgagcgttgggacgtaaacgccatcaacgacctgccggattacatgaactgtgttctgtgctgtatataactattaaacgaaatcgcc
tacgacaacctgaaagataaagggtgagaacatcctgccgtatctgaccaaagcctgggtgacctgtgcaacgcttctcgaagaagcca
agtggctgtacaacaaatctactccgacctttgacgacttctggcaacgcatggaatcctcttctggccgctgcaactggtgtctgctta
cttctgctgtcgtgcagaacattaaaaaggaagagatcgaanaacctgcaaaaataccatgacaccatctctcgtcttccatattctccgtctg
tgcaatgacctggctagcgcgtctgcggaattgcgcgtgtgtaaacggcaaatagcgttctgttacctgcgcactaaaggtatctccgaa
gaactggctaccgaaagcgtgatgaatctgatcgatgaacacctggaaaaagatgaacaaggaaaaactgggtggtagcctgttcgcgaaa
ccgttctgtggaaccgcgatcaacctggcacgtcaatctcactgcacttatcataacggcgacgcgcatacctctccgatgagctgacct
gcaaacgcgttctgtctgtaatcactgaaccgattctgcccgtttgaacgctaactgcataaaggagggtaaaaaacatggtatcctgttctgcg
ccgggtaagattacctgttcgggtgaacacgccgtagtttatggcgaaactgcaattgcgtgtgcggtggaactgcgtacctcggttctgcgcg
gaactcaatgactctatcactattcagagccagatcgcccgaccggctctggaattcgaanaagcacccttatgtgtctgcggtaattgagaaa
atgcgcaaaictattctatlaaacggtgttttctgaccgtcgattccgacatcccgggtgggtctccggtctgggttagcagcgcgacgggtactat
cgcgtctattgtgtgcgtgaacgagctgttcgggtttggcctcagcctgcaagaaatcgctaaactggggccacgaaatcgaattaaagtac
aggggtccgcgtcccaaccgatacgtatgtttctaccttcggcgcggtgttaccatcccgaacgtcgaactgaaactccggactg
cggcatgtgtggtggcgtacccggcgtttctcctccaccaaaagagttagtagtaacgtacgtcagctgcgcgaaagctacccggattgat
cgaaccgctgatgaccttattggcaaaatctctctgtatggcgaaacactggttctgtctgcgactacgcatccatcgcccgctgatgaa
cgtcaaccagggtctcctggacgccctggcggttaacatcttagaactgagccagctgatctattccgctcgtgcggcaggtgcgtttggcg
ctaaaatcacgggcgtgcggcggtggtgtatggttgcgtgaccgctccggaaaaatgcaaccaagtggcagaagcggtagcaggc
gttggcggtaaagtactatcactaaaccgaccgagcaaggtctgaaagttagattaaagtctagttaaagttaaacggctccagcttggct
gttttggcggtgagagaagattttcagcctgatacagattaatacagaacgcagaagcggctgtataaaacagaatttgcttggcggcagl
agcgcgggtgtccacctgaccccatgcccgaactcagaagtgaacgcggtagcgcggatggtagtgtgggtctccccatcgagaggt
agggaaactgccaggcatcaataaaacgaaaggctcagtcgaaagactgggcttctgtttatctgtgtgtgtcgggtgaacgctctctgag
taggacaaatccggcgaggcggattgaacgttgcgaagcaacggccggagggtggcgggcaggacggccgcaaaactgccag
gcatcaaatgaagcagaaggccatcctgacggtggtcttttgcgtttctacaaactcttttgttttttctaaatacattcaataatgatccg
ctcatgagacaataacctgataaatgttcaataatattgaaaaaggaagagtagtattcaacatttccgtgtcgccttattccctttttg
cggcattttgccttctgttttgcacccagaacgctggtgaaagttaaagatgctgaagatcagttgggtgcacgagtggttcatcgaa
actggtatcacaacagcggtgaagatccttgagagtttgcggccgaagaacgtttccaatgatgagcattttaaagtctgtatgtggcgcg
gtattatcccgtgttgacggcggaagagcaactcggtcgccgcatactattctcagaatgacttgggtgagttactaccagtcacagaa
aagcatcttacggatgcatgacagtaagagaattatgcagtgctgcataacctgagtgataacactcgggccaacttactctgacaacg

Figure 119B

atcggaggaccgaaggagctaaccgctttttgcacaacatgggggatcatgtaactgccttgatcgttgggaaccggagctgaatgaag
ccataccaaacgacgagcgtgacaccacgatgcctgtagcaatggcaacaacgttgcgcaactattaaactggcgaactacttacttagct
tcccggaacaataatagactggatggaggcgataaagtgcaggaccacttctgcgctcggccctccggctggctgtttattgctgat
aaatctggagccggtgagcgtgggtcgcggtatcattgcagcactggggccagatggtaagccctccgctatcgtattatctacacgac
ggggagtcaggcaactatggatgaacgaaatagacagatcgtgagalaggtgccicactgattaagcattggtaacigtcagaccaagtt
actcatatatacttttagattgatttaaaacttcatttttaattaaaaggatcaggtaggaagatccttttgataatctcatgacaaaaicccctaacgt
gagtttctgctccactgagcgtcagaccccgtagaaaagatcaaaggatcttcttgagatcctttttctgcgcgtaatcgtcgtgctgcaaca
aaaaaacaccgcctaccagcgtgtgtttgttgcggatcaagagctaccaactcttttccgaaggttaactggcttcagcagagcgagat
accaataactgcttcttagttagccgttagtagccaccacttcaagaactctgtagcccgctacatacctcgtctgctaactcctgttac
cagtggtgctgctccagtggcgataagtcgtgttaccgggttgactcaagacgatagttaccggataagcgcgagcgtgcggctgaa
cgggggggttctgtcacacagcccagcttggagcgaacgacctacaccgaactgagatacctacagcgtgagctatgagaagcgccac
gcttcccgaagggaagggcgagcgtatccggtgaagcggcagggctcgaacaggagagcgcacgagggagcttccagggggaa
acgctgtgatactttagtctcgttcgggttccgacactctgacttgagcgtcgaattttgtatgctcgtcagggggcgaggcctatggaaa
aacgccagcaacgcggcccttttaccggttctggccctttgtctggtcctttgtctcacatgttcttctcgttatccctgattctgtggataacc
gtattaccgctttgagtgagctgataccgctcgcgcgagccgaacgaccgagcgcagcagtgagtgagcgaagcgggaagagcg
cctgatgcggtattttctccttacgcatctgtgcggtatttcacaccgcatatggtgcactctcagtacaatctgctctgatgccgatagtaag
ccagatacactccgctatcgttacgtgactgggtcattggctgcgccccgacacccgccaacaccgctgacgcgcctgacgggctgt
ctgtcccgcatccgcttacagacaagctgtgaccgtctccgggagctgcatgtgtcagagggtttaccgicacaccgaaacgcgcga
ggcagcagatcaattcgcgcggaaggcgaaagcgcatgatttacgttgacaccatcgaatgggtgcaaacctttcgcggtatggcatga
tagcggcggaagagagtcattcagggtgtgtgaatgtgaaaccagtaacgttatacgtatgctgcagagtatccgggtgtcttctatcagac
cgtttcccgctgtgtgaaccaggccagccacgttctgcgaaaaacgcgggaaaaagtggaaagcggcgatggcggagctgaattacattcc
caaccgcgtggcacaacaactggcgggcaaacagtcgttctgattggcgttgcacctccagcttggccctgcacgcgcctgcgcaaat
gtcgcggcgattaaatctcgcgcgatcaactgggtgccagcgtgtgtgtgtcgtatggtagaacgaagcggcgtcgaagcctgtaaagcg
gcggtgcacaatcttctcgcgcaacgcgtcagtgggctgatacctaactatccgctggtatgaccaggatgccattgctgtggaagctgcctg
cactaatgttccggcgttatttcttgatgtcttgaccagacacccatcaacagtattatttttcccatgaagacgggtacgcgactggcgctgg
agcatctggctgcatgggtcaccagcaaatcgcgctgttagcggggccattaagtctgtctcggcgctctgcgtctggctggtgctgcata
aatatctcactcgaatcaaattcagccgatacgggaacgggaaggcgactggagtccatgtccggttttcaacaaaccatgcaaatgctg
aatgagggcatcgttccactgcgatcgtgttgcgaacgatcagatggcgctggcgcaatgcgcgccattaccgagtcgggctgcgc
gttgggtcgggatactcggtagtggtgatacagacgataccgaagacagctcatgttatatcccgcgtcaaccacatcaaacaggatttgc
ctgctggggcgaaccagcgtggaccgcttctgcaactctcagggccaggcggtgaaggcgcaatcagctgttcccgtctcactgtgtg
aaaagaaaaaccacctggcgccaataacgcaaacgcctctcccgcggttggccgattcattaatgagctggcagcagaggttccc
gactggaaagcgggcagtgagcgcaacgcaattaatgtgagtagcggaattgatctg

(SEQ ID NO:104)

Figure 120

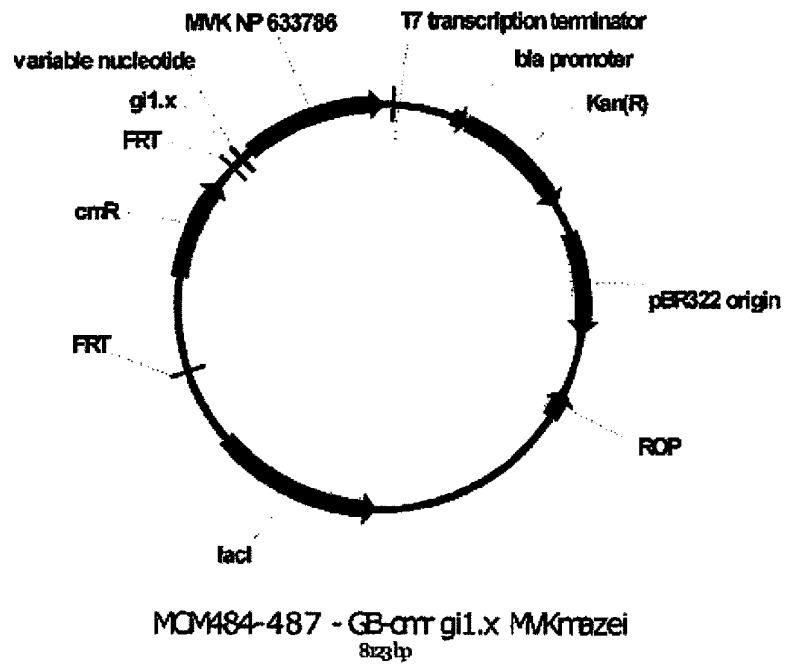


Figure 121A

1-

aaggcgagctcaacgatccggctgctaacaagcccgaaggaagctgagttggctgctgccaccgctgagcaataactagcataacc
ccttggggcctctaaacgggtcttgaggagtttttctgaaaggaggaaactatccggatacccgaaggggccggcagtagccgcat
aaccaagcctatgctacagcatccagggtgacgggtccgaggatgacgatgagcgcatgttagatttatacacggctgactgctgt
agcaatttaactgtgataaactaccgcattaaagcttatcgtatgataagctgtcaaacatgagaattaattcttgaagacgaaagggcctcgtg
atacgcctattttataggitaatgcatgataataatggtttctagacgtcaggtggcacttttcggggaaatgtgcgcggaacccctattgttt
attttctaaatacatccaatatgtatccgctcatgagacaataacccgtgataaatgttcaataatattgaaaaaggaagatgattgaacaa
gatggattgcacgcaggttctccggccgcttggtggagaggtctatcggtatgactgggcacaactgacaatcgctgctctgatccg
ccgtgttccggctgtcagcgagggcgccgggttcttttgcgaagaccgacctgtccgggtccctgaatgaactgcaggacgagcgagc
gcggctatcgtggtggccacgacggcggttcttgcgcagctgtgctcgacgttgcactgaagcgggaagggactggctgctattggg
cgaagtgcggggcaggatctcctgtcatctcaccttgcctcgtccgagaagatccatcatggctgatgcaatgcggcggtgcatacgc
ttagatccggctacctgcccattgcaccaccaagcgaacatcgcacgcagcgggcacgtactcggatggaagccggtcttgcgatcagga
tgatctggacgaagagcatcaggggctcgcgccagccgaactgttgcagggtcaaggcgccatgcccacggcgaggatctcgtc
gtgacacatggcgatgctgcttgcgaatatcatgtggaaatggccgcttttctgattcatcgactgtggccggctgggtgtggcgga
ccgctatcaggacatagcgttggctacccgtgatattgctgaagagcttggcggaatgggtgaccgcttctcgtgctttacgggtatcgc
cgctcccgaattcgacgcgcatcgcttctatcgcttcttgacgagttcttgcagcgggactctgggttgcgaatgaccaccaagcgac
gcctaactgicagaccaagtttactatatacttttagattgatttttaaaacttcatitttaatttttaaaaggatctagggtgaagatccttttgaatact
catgacaaaatcccttaacgtgagttttcttccactgagcgtcagaccccgtagaaaagatcaaaggatcttcttgagatcctttttctgcg
cgtaatctgctgcttgcacacaaaaaaccaccgctaccagcggtgtgttgggttgcggatcaagagctaccaactcttttccgaaggttaact
ggcttcagcagagcgagataccaaaactgtccttctagtgtagccgttaggtccaccacttcaagaactctgtagaccgcctacatac
ctcgtctgctaactcgtttaccagtggctgctccagtggcgataagtcgttcttaccgggttgactcaagacgatagttaccggataag
ggcgacgggtggggtgaacgggggggttctgtcacacagcccagcttgagcggaacgacctacaccgaactgagatacctacagcgtg
agctatgagaaagcgccacgcttccgaaggggagaaagggcgacaggtatccggttaagcgccagggtcggaaacaggagagcgacg
agggagcttccagggggaaacgctgtgatactttatagtcctgtcgggttccaccctctgactgagcgtcgtatgtttgtatgctcgcagg
ggggcgaggcctatggaaaaacgccagcaacgcggccttttacgggttcttgccttttctgctgcttcttgcacatgttcttctgcgtat
ccccgtattctgttgataaccgtattaccgctttgagtgagctgataccgctcgcgcagccgaacgaccgagcgagcgagtcagtgag
cgagggaagcggaagagcgcttgatgcggtatttctcttaccgcatctgtgcggtatttccacccgcaatgggtgactctcagtaaatctgct
ctgatccgcatagtttaagccaggtatatactccgctaactgctacgtgactgggtcatggcgtcgcggccgacacccgcaacacccgctgac
gcgcccgtacgggcttctgctcctccggcatccgcttacagacaagctgtgaccgtctccggagctgcatgtgtcagaggttttaccgctc
atcacggaaacgcgcgaggcagctgcggtaagctcatcagcgtggtcgtgaaagcgattcacagatgtctgcctgttcatccgctccagc
tcgttgagtttctcagaagcgtaagtgtctggcttctgataaagcgggcatgttaaggggcgggttttctctgttgggtcactgatgctcctggt
aagggggatttctgttcatgggggtaatatgataccgatgaaacgagagaggtatgctcacgatacgggttactgatgatgaacatgcccgggtta
ctggaacgttgtgagggttaaacactggcggtatggatgcggcgggaccagagaaaaatcactcaggggtcaatgcagcgcttctgtaat
acagatgtaggtgttccacagggttagccagcagcatcctgcgatgcagatccggaaacataatgggtcagggcgctgacttccgcttcca
gactttacgaacacggaaaccgaagaccattcatgttgttgcctcaggtcgcagacgttttcagcagcagctgccttcacgttgcctcgcgta
tcggtgatttcttctgtaaccagtaaggcaacccccgcagccttagccgggtcctcaacgacaggagcagcatatgcgcacccgtggcc
aggaccaacgctgcccagatgcgcgcgttgcggctgcggagatggcgacgcgatggatatgttctgccaagggttggtttgcgcat
tcacagttctccgcaagaattgattggctccaattcttggagtgtgaatccgttagcgagggtccgcccggcttccattcaggtcaggtggc
ccggtccatgcaccgcgacgcaacgcggggagcagacaaggtataggcgggcgccctacaatccatgccaacccgttccatgtgctc
ggcgaggcgccataaatccggtgacgatcagcggtccaatgatcgaagttaggtgtgtaagagccgcgagcagcttgaagctgtccc
tgatgtcgtcatctacctgctggacagcatggcctgcaacgcgggcatcccgatccgcccgaagcgagaagaatcataatggggaa
ggccatccagcctgcgtcgcgaacgccagcaagacgtagcccagcgctggccgcatccgagcgataatggcctgttctcgcgcg
aaacgttgggtggcgggaccagtgacgaaggcttgagcaggcggtgcaagattccgaataccgcaagcgacaggccgatcatcgtcgc
gctccagcgaaagcggtcctcgcggaaaaatgaccagagcgctgcccgcacctgtcctacaggttgcataaagaagacagtcataag

Figure 121B

tgccgacgacgatagtcatgccccgcgccaccggaaggagctgactgggtgaaggctctcaaggccatcggtcgagatcccgggtgcct
aatgagttagctaaattacattaattgcttgctcactgccgcttccagtcgggaaacctgtcgtgccagctgcattaatgaatcgccca
acgcgcggggagagggcggtttgctattggcgccagggtggtttttttaccagtgagacgggcaacagctgattgcccttaccggcc
tgcccttgagagagttgcagcaagcggtccacgtggtttccccagcagcgcaaaatcctgtttgatggtggttaacggcggtatataac
atgagctgtcttcggtatcgtcgtatcccactaccgagatataccgcaccaacgcgcagccggactcggtaatggcgcgatggcgccag
cgccatctgatcgttggaaccagcatcgagtggaacgatgccctcattcagcatttgcatggtttgtgaaaaccggacatggcactcca
gtcgccttcccgttccgctatcggtgaattgattgcgagtgagatattatgccagccagccagacgcagacgcgggagacagaactta
atggggccgctaacagcgcgattgctggtgacccaatgcgaccagatgctccacgccagtcggtaccgtcttcatgggagaaaataat
actgttgatgggtgtctggtcagagacatcaagaaataacgcgggaacattagtgcaggcagcttccacagcaatggcctcctggtcatcca
ggcgatagttaatgatcagcccactgacgcgttgcgcgagaagattgtgcacgcggcctttacaggcttcgacgcgcttcgtctaccatc
gacaccaccacgctggcaccagttgatcgcgagatttaacgcgcgacaatttgacgcgcgtgcagggccagacttgagggt
ggcaacgcgaatcagcaacgactgtttgccgcagttgttgcacgcggttggaatgtaattcagctccgccatcgccgttccactt
ttcccgcgttttcgagaacggtggtggttccacacgcgggaaacggctcgtataagagacaccggcatalctctgcgacatcgtata
acgttactggttccattcaccacctgaattgactcttctccggcgctatcatgccataccgcgaaagggttttgcgccattcgatggttcc
gggatctgcagctctcccttatgcgactcctgcattaggaagcagcccagtagtaggtgaggccgttgagcaccgcccgcgcaaggat
ggtgcatgcaaggagatggcgcccaacagtcccccggccacggggcctgcccataccacgcggaaacaagcgctcatgagcccg
aagtggcgagcccgatctccccatcggtgagtcggcgatataggcgccagcaaccgcacgtgtggcgccggtgatggcgccacgat
gcgtccgcgtaggagatcgagatctcgtatcccgcaaaftaatcagactactatagggaattgtgagcggataacaattccccttaga
aataattttttaacttaagaaggagataacataaattaaacccactaaaggcgccgcgaagtcttattcttagaaagtataggaa
cttctattaccgggtaggggagggcgcttttcccaaggcagctcgtgagcafcgcttttagcagccccgtgggacttggcgctacacaagt
ggccttggcctcgcacacattccacatccaccggtaggcgccaaccggctccgttcttgggtggcccccttcgcgccaccttccactctcc
cctagtcaggaaagtccccccgccccgcagctcgcgtcgtgcaggacgtgacaaatgaagtagcacgtctcactagctcgtgcagatg
gacagcaccgctgagcaatggaagcggttaggcctttggggcagcgcccaatagcagcttctccttcgcttctgggtcagaggctg
ggaaagggtgggtccggggggcggtcagggcggtcagggcgggggcgccgaaggctcctccggaggcccgccattct
gcacgcttcaaaagcgacgtctgcgcgctgttctccttctcctatcctcgcccttgcacgtcagcagcagctgttgacaatlaacat
cggcatagtatatcgcatagataatcagcaaggtgaggaactaaaccatggagaaaaaatcactggatataccacgttgatatacc
caatggcatcgtaaaagaacattttgaggcatttcagtcagttgctcaatgtacctataaccagaccgttcagctggatattacggccttttaag
accgtaaaagaaaaataagcacaagttttatccggcctttatcacattctgcccgcctgaltgaatgclcatccggaattccgtatggcaatgaa
agacggtgagctggtgatagggatagttacccttgttacaccgttttccatgagcaaaactgaaacgttttcatcgtctggtgagtaatacc
acgacgatttccggcagtttctacacatatactcgaagatgtggcggttacgggtgaaaacctggcctatttccctaaagggtttattgagaat
atgttttctgctcagccaatccctgggtgagtttaccagttttgattaaacgtggccaatattggacaacttcttgcccccgtttaccatgg
gcaaatattatacgaaggcgacaaggtgctgatccgctggcgattcaggttcatatgccgtttgtgatggcttccatgtcggcagaatgc
ttaatgaattacaacgactgcgatgagtgagggcgggggcgtaagcgggactctggggtcgaataaagaccgaccaagcgacgtct
gagagctccctgggaattcgggtaccaataaaagagccttatttcatgatctgtgtgtgtttgtgtgctggcgcggaagttctattcttag
aaagtataggaaactcctcgagccctatagtgagtcgtattagatcgcgccgcgcccctgacaatgccacatcctgagcaataattcaacc
actaallgtagcgggataaacaaggaggttaaaaaaacatgtatcctgttctgcggggtaagatttaccgtgtcgtgtaacacgcgtagt
ttatggcgaaactgcaattgcgtgtgctgggaactgcgtaccctgttctgcgcggaactcaatgactclatcactattcagagccagatcgg
ccgcaccgggtctggaattcgaagaccccttatgtgtcgtggttaattgagaaaaatgcgcaaatctattcctattaacgggtgttttctgaccgt
cgattccgacatccgggtgggtcctgctggttagcagcgagccgttactatcgcgtctattgtgctgctgaacgagctgttcggctttg
gcctcagcctgcaagaaatcgtaaaactggccacgaaatgaaatlaaglacagggtgcccgcgtcccaaccgatactatgttttacc
ttcgcgcggtgtgttaccatcccggaacgtcgcaaaactgaaactccggactcggtgattgtgattggcgataccggcggttttctcctccac
caaagagttagtagtaacgtacgtcagctgcgcgaaagctaccggattgatgaaccgctgatgaccttattggcaaaatctctcgtat
cggcgacaacactggttctgtctggcgactacgcatccatcgccgctgatgaacgtcaaccagggtctcctggacgcccgtggcggttaac
atcttagaactgagccagctgatctattccgtcgtcggcgaggtgcgttttgcgcgtaaaatcacggcgctggcgcggtggtgctgatggt

Figure 121C

tgcgctgaccgctccggaaaaatgcaaccaagtggcagaagcggtagcaggcgctggcggtaaagtgactatcactaaaccgaccgag
caaggtctgaaagtagattaa
(SEQ ID NO:105)

Figure 122A

1-

aaggcgagctcaacgatccggctgctaacaagcccgaaggaagctgagttggctgctgccaccgctgagcaataactagcataacc
ccttggggcctctaacgggtctttaggagtttttctgaaaggaggaaactataccggatatcccgaaggccggcagtagccgcat
aaccaagcctatgcctacagcatccagggtgacgggtccgaggatgacgatgagcgattgtagatttcatacacggtagctgactgcgtt
agcaatfaactgtgataaactaccgcattaaagcttctcatgataagctgtcaaacatgagaattaattctgaagacgaaaggccctcgtg
atacgcctattttatagggttaatgtcatgataataatggtttcttagacgtcagggtggcactttcggggaaatgtgcgggaaccctatttgtt
atttttctaatacatcaataatgtatccgctcatgagacaataaccctgataaatgcttcaataatgtgaaaaaggaagagtagattgaacaa
gatggattgcacgcagggttctccggccgcttgggtggagaggctattcggctatgactgggcacaaactgacaatcggctgctctgatgccg
ccgtgttccggctgtcagcgcaggggcgcccgggttcttttgaagaccgacctgtccgggtccctgaatgaactgcaggacgaggcagc
ggcgctatcgtggctggccacgacggcggttcttgcgcagctgtgtcgaagctgtcactgaagcgggaaggagactggctgctattggg
cgaagtgcggggcaggatctctgtcatctacacctgtctcgtccgagaaggtatccatcatggctgatgcaatgcggcggtgcatacgc
ttgatccggctacctgccattcgcaccacaagcgaaacatcgcacgagcgggcacgtacgcgatggaagccgggtcttctgtcatcagga
tgatctggacgaagagcatcaggggctcgcgcagccgaactgttcgcagggctcaaggcgcgcgatgccgcagggcagggatctcgtc
gtgacacatggcgatgcctgttgcgaatacatgggtgaaaaatggcgcttttctgattcatcgaactgtggccggctgggtgtggcgga
ccgctatcaggacatagcgttggctaccgctgatatgtcgaagagcttggcgcggaatgggtgaccgcttctcgtgttctacggatcgc
cgctcccgattcgcagcgcacgccttctatcgccttctgacgagttcttctgagcgggactctgggttgcgaatgaccgaccaagcgac
gcctaactgtcagaccaagttaactcatatatactttgattgatttaaaacttatttaattaaaaggatctaggtgaagatccttttctgataatc
catgaccaaatacccttaacgtgagtttcttccactgagcgtcagaccccgtagaaaagatcaaggtatcttctgagatcctttttctgcg
cgtaatctgtcgttgcgaacaaaaaaaccaccgctaccagcgggtgtgttgcggatcaagagctaccaactcttttccgaaggtaact
ggcttcagcagagcgcagataccaataactgtccttctagtgtagccgtagttagccaccactcaagaactctgtagaccgcctacatac
ctcgcctctgctaactcgtttaccagtggctgctgcccagtgccgataagctgttcttaccgggttggactcaagacgatattaccggataag
gcgcagcgggtcgggctgaacgggggttctgtcacacagcccagcttgagcgaacgacctacaccgaactgagatacctacagcgtg
agctatgagaaagcgccacgcttcccgaaggagaaaggcgagcaggtatccggttaagcggcagggctcgaacaggagagcgcacg
agggagctccagggggaacgcctgggtatctttagtctgtcgggttccgacctctgacttgagcgtcgtattttgtgatgctcgcagc
ggggcgaggcctatggaaaaacgccagcaacggcgctttttacgggttcttgccttttctgtgaccttttctcacatgttcttctcgtt
ccccgtattctgttgataaccgtattaccgctttagtgagctgataccgctcgcgcagccgaacgaccgagcgcagcgagtcagtgag
cgaggaaaggcgaagagcgcctgatgcgtatttcttctacgcacatctgtgcggtatttcacaccgcaatggtgcacitcagtaaatctgt
ctgatgccgatagttaagccagatatacctccgctatcgtacgtgactgggtcatggctgcgccccgacaccgccaacaccgctgac
gcgcccgtacgggcttctgtctccggcatccgcttacagacaagctgtgaccgtctccgggagctgcagtgctcagagggtttaccgct
atcaccgaaacgcgcgaggcagctcgggtaaagctcatcagcgtgtggaagcgaltcacagatgtctgctgttcatccgcgtccagc
tcgtgagtttctccagaagcgttaatgtctggttctgataaagcgggccatgtaaggcggttttttctgttggctcactgatgctccgtgt
aagggggatttctgttcatgggggttaatgataccgatgaacgagagaggatgtcacgatacgggttactgatgaacatgcccggtta
ctggaacgttgtgagggttaacaactggcggtatggatcgggcgggaccagagaaaaatcactcagggtcaatgccagcgttctgta
acagatgtagggttccacagggtagccagcagcatcctgcgtgagatccggaacataatggtgcaggggcgtgacttccgcttcca
gactttacgaacacggaaaccgaagaccattcatgttgtgctcaggtcgcagacgttttcagcagcagctcgttccactgtcgcgt
tcggtgattcattctgtaaccagtaaggcaaccccgccagcctagccgggttcaacgacagggacgacgatcatgcgacccgtgccc
aggaccaacgctgccgagatgcggcgctgcggctgtgagatggcgacgcgatggatatgttctgccaagggttgggttgcgc
tcacagtctccgcaagaattgattggtccaattcttggagtgtgaaacccgttagcgggtccggcgttccattcagggtcgggtggc
ccggtccatgcaccgcgacgaacgggggagggcagacaagggtataggcgggcgcctacaatccatgccaaccggttccatgtgctc
ggcgaggcggcataaatccggtgacgatcagcgggtccaatgatcgaagttaggtgtgtaagagccgcgagcagccttgaagctgtcc
tgatggtcgtcatctacctgctggacagatggcctgcaacggcggtcatccgatccgccggaagcgagaagaatcataatggggaa
ggccatccagcctcgcgtcgcgaacggcaagacgtagccagcgcgtcggccgatgccggcgataatggcgttctcgcgcg
aaacgttgggtggcgggaccagtgacgaaggcttagcgaggcggtgaagattccgaataccgcaagcgacaggccgatcatcgtcgc
gctccagcgaaagcggtctcgcgaaaaatgaccagagcgtcggcgacctgtctacgagttgcatgataaagaagacagtcataag

Figure 122B

tggcgccgacgatagtcatgccccgcgccaccgggaaggagctgactgggttgaaggctcicaagggcatcggtcgagatccgggtgcct
 aatgagtgagctaaactacataaattgctgttcactgccccgtttccagtcgggaaacctgtcgtgccaagctgcattaagaatcggcca
 acgcgcggggagaggcggttgcgtattggcgccagggtgtgttttctttaccagtgagacgggcaacagctgattgcccttcaccgccc
 tggccctgagagagttgcagcaagcggtccacgctgtgttgcgccagcagggcgaanaacctgttgatggttggttaacggcggggataaac
 atgagctgtcttcggtatcgtctatcccactaccgagataaccgaccaacgcgagcccgagctcggaatggcgcgcatcggccccag
 cgccatctgatcgttggcaaccagcatcgagtgggaaacgatgcccctattcagcatttgcattggtttgtgaaaaccggacatggcactcca
 gtgccttcccgttccgctaicggctgaatttgatgagtgagataattatgccagccagccagacgcagacgcgcggagacagaactta
 atggggcccgtaaacagcgcgatttgcgtgtgacccaatgcgaccagatgtccacgccagctcgctaccgtcttcattgggagaaaataat
 actgttgatgggtgtctgtcagagacatacaagaataacgccggaaacatttagtcaggcgagcttccacagcaatggcatctcgttcacca
 gcggatagttaatgatcagcccactgacgcgttgcgcgagaagattgtgcaccgcccgtttacaggcttcgacgcgcgttcgtctaccatc
 gacaccaccacgctggcaccaggttgatcggcgcgagatttaatcgccgcgacaatttgcgacggcgcgctgcagggccagactggaggt
 ggcaacgccaatcagcaaacgactgtttgccgccagttgtgtgccacgcgggttgggaatgtaaticagctccgccatcgccgcttcacttt
 tcccgcgttttcgcagaanaacgtggctggcctgtgttcaccacgcgggaaacggcttgataagagacaccggcatactctgcgacatcgtata
 acgttactgtttcacattcaccacctgaattgactctcttcccggcgctatcatgccataccgcgaaagggtttgcgcattcgtatggtgtcc
 gggatctcgacgctctcccttatgcgactcctgcattaggaagcagcccagtagtaggttgaggccgttgagcaccgcccgcgaaggaaat
 ggtgcatgcaaggagatggcgcccacagctccccggccacggggcctgccaccatacccacgccgaacaagcgctcatgagcccg
 aagtggcgagccgacttccccatcggtgatgtcggcgatataaggcgccagcaaccgcacctgtggcgccggtgatgcggccacgat
 gcgtccgcgtagaggatcgagatctgatccgcgaanaataacgactcactataggggaaattgtgagcggataacaattccccttaga
 aataatttgtttaactttaagaggagatatacatatgaattaacctcactaaaggcgccgcgaagtctcattcttagaaagtataggaa
 ctctattctaccgggtaggggagcgcttttcccaaggcagcttgagagcatgccttttagcagccccgttggcacttggcgctacacaagt
 ggcccttggccctgcacacattccacatccaccggtagggcgccaaccggctccgttcttgggtgcccccttcgcgccacttccactcctcc
 cctagtcaggaagtcccccccgccccgcagctcgcgtcgtgcaggacgtgacaaaatggaagtagcacgtctcactagtctcgtgcagatg
 gacagcaccgctgagcaatggaagcgggtagggcctttggggcagcgggccaatagcagcttctccttcgcttctggcgctcagaggctg
 ggaaggggttgggtccggggggcgggctcagggggcgggctcagggggcgggggcgcccgaaaggtcctccggaggccccggcaltct
 gcacgcttcaaaagcgacgctgtccgcgctgttctccttccctatctccgggcttttcgacctgcagcagcacgtgttgacaattaatcat
 cggcatagatatcggcatagataatcgcacaaggttaggaactaaaccatggagaaaaaaatcactggatataaccaccggttatatatcc
 caatggcatcgtaaaagaacattttgaggcatttcagtcagttgctcaatgtacctataaccagaccgttcagcttgatattacggccttttaag
 accgtaaaagaaaaataagcacaaagtttatccggcctttattcacattcttgcggcctgaatgaatgtctatccgggaattccgtatggcaatgaa
 agacgggtgagctggtgataggatagttacccttcttacaccgttttccatgagcaaacgtgaacgttttcatcgctcttgagtgatgaatacc
 acgacgatttccggcagtttctacacataattcgcgaagatgtggcggttacggtgaaaacctggcctatttccctaaagggtttattgagaat
 atgttttctgtctcagccaatcccggttgagtttaccagtttttgattaaacgtggccaatatggacaacttcttcgccccggtttaccatgg
 gcaaatattatacgcgaaggcgacaaggtgctgatgccgtggcgattcaggttcacatgcccgttctgtatggtctccatgtcggcagaatgc
 ttaatgaattacaaacagctactgcgatgagtgccagggcgggcgtaagcgggactctgggggttcgaataaagaccgaccaagcgacgtct
 gagagctcccttggcgaaatcgggtaccaataaaaagagctttatttcagatctgtgtgttgggtttgtgtgtgcggcgcggaagtctcattcttag
 aaagtataggaaacttctcgcagccctatagttagtctgattagatcgcgcccgcgcccttgaccatgccacatcttagcaataattcaacc
 actaattgtgagcggalaacaaugyaggttaaaaaaacatggtatcctgttctgcgccgggttaagatttacctgttcgggtgaacacgccgtagt
 ttatgctgaactgcgaattgctgtgtcggttggaactgcgtaccggtgttcgcgcgggaactcaatgacttactattcagagccagatcgg
 ccgcaccggctcgtgatttcgaaaagcaccttattgtgtcgtggtaattgagaaaatgcgcaaatctattctattaaacgggtgttttcttgaccgt
 cgattccgacatccgggttgggtcgggtctgggttagcagcgcgagccgttactatcgctctatttgggtgcgtgaacgagctgttcggctttg
 gctcagcctgcgaagaaatcgctaaactggggccacgaaatcgaaatfaagtagagggtgccgctcccaaccgatacgtatgtttctacc
 ttggcgcgcggtgttaccatccgggaacgtcgcaaatgaaaactccggactcggccattgtgattggcgataccggggttttctcctccac
 caaagagttagtagctaacgtacgtcagctgcgcgaaagctacccggatttgatcgaaaccgtgatgaccttattggcaaaatctctcgtat
 cggcgcaacaactgttctgtctgtggcgactacgcatccatcgccggcctgatgaacgtcaaccagggtctcctggacgccctggcggttaac
 atcttagaactgagccagctgatctattccgctcgtgcggcgaggtgcgtttggcggttaaaatcacggcgcgctggcgcggtgtgtgtatgt

Figure 122C

**tgcgctgaccgctccggaaaaatgcaaccaagtggcagaagcggtagcagggcgtggcggtaaagtgactatcactaaaccgaccgag
caaggtctgaaagtagattaa**
(SEQ ID NO:106)

Figure 123A

1-

aagggcgagctcaacgatccggctgctaacaagcccgaagggaagctgagttggctgctgccaccgctgagcaataactagcataacc
ccttggggcctctaaccgggtcttgaggagtttttgcgtaaggagggaactatatccggataatcccgaaggcccggcagtagccggcat
aaccaagcctatgcctacagcatccagggtgacgggtgacgagtgacgatgagcgacgtttagatttcatacacggcgctgactgcgtt
agcaatttaactgtgataaactaccgcattaaagcttaicgatgataagctgtcaaacatgagaatttaattcttgaagacgaaggggcctcgtg
atacgcctattttataggttaagtcatgataataatggtttcttagacgtcagggtggcacttttggggaaatgtgcgcggaacccctattgttt
atftttctaatacattcaaatatgtatccgctcatgagacaataacccgtataaatgcttcaataattgaaaaaggaagagtagtgattgaacaa
gatggattgcacgcaggttctccggccgcttgggtgagaggctattcggctatgactgggcacaaactgacaatcggctgctctgatgccg
ccgtgttccggctgtcagcgaggggcccgggtcttttgcagaccgacctgtccggtgccctgaatgaactgcagggacgaggcagc
gcggctatcgtggttggccacgacggcggttcccttgcgcagctgtgtcactgaagcgggaaggagactggctgctattggg
cgaagtgcggggcaggtatcctgtcatctcaccttgccttgcggagaaagtatccatcatggctgatgcaatgcggcggtgcatacgc
ttgatccggtacctgccattcaccaccaagcgaacatcgcacgcagcgggcacgtactcggtggaagccggtcttgcgtacagga
tgatctggacgaagagcatcaggggctcgcgcagccgaactgttgcagggctcaaggcgcatgcccgcaggatctcgtc
gtgacacatggcgatgccttgcgaatatcatggttgaaaatggccgttttctgattcatcactgttggccggctgggtgtggcgga
ccgctatcaggacatagcgttggctaccggtgatattgctgaagagcttggcgcgcaatgggtgaccgcttctcgtgtttacgggtatcgc
cgctcccgaatcgacgcgccttctatgccttctgacgagttcttgcagcgggactctggggttcgaatgaccgaccaagcgac
gcctaactgtcagaccaagttaactcatatatactttagattgatttaaaacttatttaatttaaaaggatctaggtgaagatccttttgataatc
catgaccaaatacccttaacgtaggttttcttccactgagcgtcagaccccgtagaaaagatcaaaaggatcttcttgagatcctttttctgcg
cgtaactgtctgttcaaacaacaaaccaccgctaccagcgggtgttgggttgcggatcaagagctaccaactcttttccgaaggtaact
ggcttcagcagagcgagataccaataactgtccttctagttagccgtatgttaggccaccactcaagaactctgtgacccgcctacatac
ctcgtctgtctaactcgtttaccagtggctgtcgcagtgccgataagctgttcttaccgggttggactcaagacgatagttaccggataag
gcgagcgggtcgggtgaacgggggttctgtcacacagcccagcttgagcgaaacgacctacaccgaaactgagatacctacagcgtg
agctatgagaaagcgccacgcttcccgaaggagaaagcgagacaggtatccggttaagcggcagggctcggaaacaggagagcgacg
agggagcttcagggggaaacgcctggtatctttatagtcctgtcgggttccacctctgacttgagcgtcgtattttgtatgctcgcag
ggggcgagcctatggaacacgccaacgcggccttttaccggttcttgccttttctggtccttttgcacatgttttcttctgcgttat
cccctgattctgttgataaccgtattaccgctttgagtgagctgataccgctcgcgcagccgaacgaccgagcgacgagtcagtgag
cgaggaaagcggaagagcgctgatgcgggtattttcttaccgcatctgtgcggtatttcaaccgcaatggtgcactctcagtaacatctgt
ctgatgccgatagtttaagccagtatacactccgctatcgtactgtgactgggtcatggctgcgccccgacaccgccaacaccgctgac
gcgcccgtacgggcttctgtctcctccggcatccgcttacagacaagctgtgaccgtctccggagctgcatgtgtcagagggtttaccgct
atcaccgaacgcgcgagggcagctgcggttaagctatcagcgtggtctgtgaagcgattcacagatgtctgctgttcatccgctcagc
tcgttaggtttctccagaagcgtaagtctgtctgtctgtatgataaagcgggccatgttaaggcggttttttctgttggctactgatgcctcgtgt
aagggggatttctgttcatgggggttaatgataccgagtaaacgagagaggatgtctacgatacgggttactgatgaacatgccgggtta
ctggaacgttgtgagggtaacaactggcggtatggatgcggcgaggacagagaaaaatcactcaggggtcaatgccagcgcttcgtta
acagatgtaggtgttccacagggttagccagcagcatctgcgaltgcagatccggaacataatgtgcagggcgctgacttccgcttcca
gactttacgaaacacggaacccgaagaccattcatgttgtgtcaggtcgcagacgtttgcagcagcagtcgcttccgctcgcgtgta
tcggtgattcattctgtaaccagtaaggcaaccccgccagcctagccgggtcctcaacgacaggagcacgacatcgccacccgctggcc
aggaccaacgctgccgagatgcgcgcgtgcggctgtgagatggcgacgcgatggatagttttgcgaagggttgggttgcgc
tcacagttctccgaagaattgattggctccaattcttggagtgtgaatccgttagcgaggtgccgcggcttccattcaggtcaggtggc
ccggctccatgcaccgcgacgaacgcggggagggcagacaagggtataggcgcgccctacaatccatgccaacccgttccatgtgtc
gccgaggcgccataaatccggtgacgatcagcggtccaatgatgaagttaggtgtgaagagccgagcgatccttgaagctgtccc
tgatggtgtcatctacctgcttgacagcatggctgtcaacgcgggcacccgatccgcccgaagcgagaagaatcataatggggaa
ggccatccagcctcgcgtcgcgaacgccagcaagacgtagcccagcgctcggccgccatgcccgcgataatggcctgttctcgcgc
aaacgttgggtggcgaggacagtgacgaaggcttgagcgaggcggtgaagattccgaataaccgaagcgacagcgccgatcatcgtcgc
gtccagcgaaagcggtcctcgcgaaaatgaccagagcgctgcggcacctgtctacgagttgcatgataaagagacagtcataag

Figure 123B

tgcggcgacgatagtcacgccccgcgccaccggagagctgactgggtgaaggctctcaaggcatcggcgcagatcccggtgcct
aatgagttagttaaactacattaattgcgttgctcactgccgcttccagtcgggaacctgtcgtgccagctgcattaatgaatcgcca
acgcgcggggagaggcggtttgctattggcgccagggtggtttttttccaccagtgcagcgggcaacagctgattgcccttcaccgcc
tgccctgagagagttgcagcaagcggtccacgctggtttgcccagcaggcgaaaatcctgttgatggtggttaacggcggtatataac
atgagctgtcttcggtatcgtcgtatccactaccgagatccgcaccaacgcgcagcccgactcggtaattggcgcgattgcgccag
cgccatctgacgttggcaaccagcatcgcagtggaacgatgccctcattcagcatttgcaggttggtaaaaccggacatggcactcca
gtcgccttcccgttccgctatcggtgaatttgattgcagtgagatattatgccagccagccagacgcagacgcgcgagacagaactta
atggccccgctaacagcgcgatttgcgtgacccaatgcgaccagatgctccacgccagtcgcgtaccgttcatgggagaaaaataat
actgttgatgggtgtctggtcagagacatcaagaaataacgcgggaacattagtgcaggcagcttccacagcaatggcatctggtcatcca
gcggtatgtaattatcagccactgacgcgttgcgcgagaagattgtgcaccgcgcttaccaggcttcgacgcgcgttcgttctaccatc
gacaccaccacgctggcaccagttgacggcgagatttaccgcgacaatttgcgacggcgcggtgcaggccagactggagggt
ggcaacgccaatcagaacgactgtttgcccgcagttgttgcacgcggttgggaatgtaattcagctccgcatcgcgcgttccattt
ttcccgcttttcgcagaacgtggctggcctgttaccacgcgggaaacggcttgataagagacaccggcatactctgcgacatcgtata
acgttactgtttcacattcaccacctgaattgactcttccggcgctatcatgccataccgcgaaagggttttgcgcattcgtatggttgc
gggatctgcacgctctcccttatgcgactctgcattaggaaagcagccagtagtaggttagggcgttagcaccgcgcgcgaaggaaat
ggtgcatgcaaggagatggcgcccaacagtcgcccgccacggggcctgccaccataccacgccgaacaagcgctcatgagcccg
aagtggcgagccgcatcttcccatcggtgatgtcggcgatataggcgccagcaaccgcacctgtggcgccgggtgatccggccacgat
gcgtccggcgttagaggatcgcgatctcgaatccgcgaaatlaatacgaicactatagggaattgtgagcggataacaattccctctaga
aataatttgttaacttlaagaaggagatatacatgaattaaacctactaaaggcgccgcgaagttcctattcttagaaagtataggaa
cttcattctaccgggttagggaggcgcttttcccaaggcagtcgtggagcatgcgttttagcagccccgcgtgggcacttggcgctacacaagt
ggcctctggcctcgcacacattccacatccaccggtaggcgccaaccggctccgttcttgggtggcccttcgcgccacttccactctcc
cctagtgcaggaagtctccccccgccccgcagctcgcgtcgtgcaggacgtgacaaatggagtagcacgtctcactagtctcgtgcagatg
gacagcaccgctgagcaatggaagcggttaggcctttggggcagcgcccaatagcagctttgtctcttcgcttctggcctcagaggctg
ggaaagggttgggtccggggcgggctcagggcggggtcagggcgggcgccggaaggctctccggaggcccggaattct
gcacgcttcaaaagcgacgctcgcgcgtgttctctctctcctcatctccgggcttgcacctgcagcagcacgtgtgacaattaatcat
cggcatagtatatcggcatagtataacgacaaggtaggaactaaaccatggagaaaaaatcactggatataccaccgttgatatacc
caatggcatcgtaaagaacattttgaggcatttcagtcagttgctcaatgtacctataaccagaccgttcagctggatattacggcctttttaaag
accgtaaagaaaaataagcacaaagtttatccggcctttatccattcttgcgccctgatgaatgtctatccggaaattccgtatggcaatgaa
agacggtgagctggtgatattgggatgtgtacccttgttacaccgttttccatgagcaaaactgaaacgtttcatcgtcttgagtgaaatacc
acgacgatttccggcagtttctacacatatattgcgaagatgtggcgtgttacggtgaaaacctggcctatttccctaaagggttattgagaat
atgttttctgtcagccaatccctgggtgagtttaccagttttgattaaacgtggccaatatggacaacttcttgcgcccggtttaccatgg
gcaaatattatagcaaggcgacaagggtgctgatccgctggcgaltcaggttcatcatgccgtttgtgatggcttccatgtcggcagaatgc
ttaatgaattacaacagtiactgcgatgagtgagggcgggcggttaagcgggactctggggttcgaataaagaccgaccaagcgacgtct
gagagctccctggcgaaatcggtaccaataaaagagctttattttcatgatctgtgttgggttttgtgtgcggcgcggaagtcttattcttag
aaagtataggaaacttctcagccctatagtgatcgtattagatcgcggccgcgccttgacgatccacatcctgagcaataattcaacc
actaattgtgagcggataacaaaggaggtaaaaaacatggtatcctgttctgcggggttaagatttacctgttcggtgaacacgcgtagt
ttatggcgaaactgcaattgcgtgtggtggaactgcgtaccggtgttcgcgggaactcaatgactctatcattcagagccagatcgg
ccgcaccggtctggtttcgaagaccccttatgtgtcgtggttaattgagaaaatgcgcaaatctattcctattaacggtgttttctgaccgt
cgattccgacatcccggtgggtcggctcgggtgtagcgcgcagccgttactatcgcgtctattggtgcgtgaacgagctgttccgcttgg
gctcagcctgcaagaatcgtaactgggccacgaaatgaaatfaagtaggggtccgctcccaaccgatacgtatgttttacc
ttcggcgcgctggttaccatcccggaacgtcgcaactgaaactccggactgcggcattgtgattggcgataccggcgttttctctccac
caagagtagtagtaacgtacgtcagctgcgcgaaagctacccggatttgatgaaccgctgatgacctatttggcaaatctctcgtat
cggcgaaacactggttctgtcgtggcactacgcatccatcgccgcctgatgaacgcaaccagggtctcttgacgccccggcggttaac
atcttagaactgagccagctgatctattccgtcgtcggcaggtgcgtttggcgctaaaatcacggcgctggcgcggtgctgtatggt

Figure 123C

tgcgctgaccgctccggaataatgcaaccaagtggcagaagcggtagcaggcgctggcggtaaagtgactatcactaaaccgaccgag
caaggctgaaagtagattaa
(SEQ ID NO:107)

Figure 124A

1-

aaggcgagctcaacgatccggctgctaacaagcccgaagggaagctgagttggctgctgccaccgctgagcaataactagcataacc
ccttggggcctctaaacgggtcttgagaggttttctgaaaggaggaactatccggatatcccgcaaggagcccgagctaccggcat
aaccaagcctatgctacagcatccagggtgacgggtccgaggatgacgatgagcgattgttagatttcatacacggctgactcggt
agcaatttaactgtgataaactaccgcattaaagcttcatgatgataagctgtcaaacatgagaattattcttgaagacgaaaggccctcgtg
atagccctattttataggtaatgcatgataataatggtttcttagacgtcagggtggcacttttcggggaatgtgctgaggaacccctattgttt
atttttcaatacattcaaatatgtatccgctcatgagacaataacccgtgataaatgcttcaataatattgaaaaagggaaggtatgattgaacaa
gatggattgcacgcagggttctccggccgttgggtgagaggctattcggctatgactgggcacaactgacaatcgctgctctgatccg
ccgtgttccggctgtcagcgagggcgcccggttcttttgaagaccgacctgtccggtgccctgaatgaactgcaggacgagcgagc
gggctatcgttgctggccacgacggcggttcttgcgcagctgtgctcgcaggttgcactgaagcgggaagggactggctgctattggg
cgaagtgcggggcaggatctcctgtcatctcaccttgcctcgcgagaagatccatcatggctgatgcaatgcggcggtgcatcacgc
ttagatccggctacctgccattcgaccaccaagcgaaacatcgcatcgagcgggcacgtactcggatggaagccgggtcttgcgtacagga
tgatctggacgaagacatcagggggtcgcgccagccgaactgttcgccaggctcaaggcgcgcatgccgacggcgaggatctcgtc
gtgacacatgcgatgcttgcggaatatcatgttggaatggccgcttttcttgattcatcgactgtggccggctgggtgtgctggcga
ccgctatcaggacatagcgttggctacccgtgataatgctgaagagcttggcgcggaatgggtgaccgcttctcgtgctttacgggtatcgc
cgtcccgattcgcagcgcatcgcttctatcgcttcttgcagagttcttgcagcgggacttgggttcgaaatgaccgaccaagcgac
gcctaactgtcagaccaagtttactatatacttttagattgatttaaaacttcatttttaatttaaaaggatctagggtgaagatccttttgataatct
catgacaaaaatccctaacgttagtttcttccactgagcgicagaccccgtagaaaagatcaaaggatcttcttgagatcctttttctgcg
cgtaatctgctgttgcacaaaaaaaccaccgctaccagcggtgtgtgttgcggatcaagagctaccaactcttttccgaaggtaact
ggcttcagcagagcgagataccaaatactgtccttctagtgtagccgttagtgccaccactcaagaactctgtagcaccgctacatac
ctcgtctgctaactcctgttaccagtggctgctgccagtggcgataagctgtgttaccgggttggaactcaagacgatagttaccggataag
gocgagcggtcgggctgaacgggggggttcgtgcacacagcccagcttggagcgaacgacctacaccgaactgagatacctacagcgtg
agctatgagaaagcgccacgcttccgaaggaggaagggcgagcaggtatccggtaagcgcgagggctcggaacaggagagcgacg
aggagcgttccagggggaaacgctgtatctttatagctcgtcgggttgcgccacctgacttgagcgtcgtatgtttgtgatgctcgtcagg
ggggcgagcctatggaanaacgccagcaacgcggccttttaccgggttcttgcgcttttgcacatgttcttctcgttatt
cccttgattctgttgataaccgtattaccgctttagtgagctgataccgctcgcgcagccgaacgaccgagcgagcgagtcagtgag
cgagggaagcggaagagcgctgatgcgggtattttctctacgcatctgtgcgggtatttcacaccgcaatgggtgactctcagtaacaatctgct
ctgatgccgatagtaagccagtatacactccgctatcgtcactgtgactgggtcatggctgcgccccgacaccgccaacaccgctgac
gocccctgacgggcttctgtctccggcatccgcttacagacaagctgtgaccgctcgggagctgcatgtgtcagagggtttaccgctc
atcaccgaaacgcgcgagcgagctgcggtaaacgtcatcagcgtggtcgtgaagcgattcacagatgtctgctgttcatccgctccagc
tcgttgagtttccagaagcgttaattgtctgcttctgataaagcgggccatgtaaggcggttttttctgttgggtcactgatgctcctggt
aagggggatttctgttcaggggtaataatgataccgatgaaacgagagaggatgctcacgatacgggttactgatgatgaacatgcccggtta
ctggaacgttgtgagggttaacaactggcggtatggatgcggcgggaccagagaaaaatcactcagggtcaatgccagcgttctgtaaat
acagatgtagggtgttccacagggtagccagcagcatcctgcgatgcagatccggaacataatgggtcagggcgctgacttccgcgttcca
gactttacgaaacacggaacccgaagaccattcatgttgggtcaggtcgcagacgttttcagcagcagctgcttcacgttctcgtcgtta
tcgggtgattcattctgctaaccagtaaggcaaccccgccagcctagccgggtcctcaacgacaggagcacgatcatgcgacccgtggcc
aggaccaacgctgcccagatgcgcccgtgcggctgctggagatggcgacgcgatggatatgtctgccaagggttgggttgcgcat
tcacagttctccgcaagaattgattggctccaattcttgagtggtgaatccggttagcgagggtgcccggcgttccattcaggtcaggtggc
ccggctccatgcaccgcgacgcaacgcggggaggcagacaaggatagggcgcgccctacaatccatgccaacccgttccatgtgctc
gocgaggcggcataaatcgccgtgacgatcagcggtccaatgatcgaagttaggctggtaagagccgcgagcgatccttgaagctgtccc
tgatggctgcatctacctgctggacagcatggcgtgcaacgcgggcatcccgatccgcccgaagcgagaagaatcataatggggaa
ggccatccagcctcgcgtcgcgaacgccagcaagacgtagccagcgctcggccgatccggcgataatggcctgttctcgcg
aaacgtttgggtggcgggaccagtgacgaaggttgagcgaggcggtgcaagattccgaataccgcaagcgacaggccgatcatcgtcgc
gtccagcgaaagcggtctcgcggaatgaccagagcgctgcggcacctgtcctacgagttgcatgataaagaagacagtcataag

Figure 124B

tgcgcgcacgatagctatgccccgcgccaccgcgaagagagctgactcgttggttgaggctctcaagggcctgcgcgcagatcccggtgcct
 aatgagtgagctaaactacatataatgctgtgcgtctactgccgctttccagctcgaggaaacctgctgtgcagctgcttaataatgaatgccca
 acgcgcgggggagaggcggttgcgtatgtgggcgcgcagggtggttttctttaccagtgagacgggcaacagctgattgcccttcaccgcc
 tggccctgagagagtgtagcaagcgggtccacgctggttgcgccagcaggcgaaaatcctgttgatgtgttaacggcgggatataac
 atgagctgtctcgggtatcgtctatccactaccgagataccgcaccaacgcgcagcccgagctcgtaatggcgcgcattgcgccag
 cgccatctgatcgttggaaccagcatcgcagtggggaacgatgccctcattcagcatttgcatgtgttgtaaaaccggacatggcactcca
 gtcgcctcccgttcgcctatcggctgaatttgatigcgcagtgagataattatgccagccagccagacgcagacgcgcggagacagaactta
 atggggcccgctaacagcgcgattgtcgtgacccaatgcgaccagatgtccacgcccgctgcgtaccgcttcatgggagaaaaataa
 actgttgatgggtgtctgtgcagagacatcaagaaataacgccggaacattatgacaggcagcttccacagcaatggcatctcgttgcaccca
 cgggatagttaatgatcagccactgacgcgttgcgcgagaagattgtgcaccgcgcgtttacaggcttcgacgcgcgttcgttaccatc
 gacaccaccacgctggcaccagctgacgcgcgcgagattiaatcgccgcgacaatttgcgacggcgcgtgcagggccagactggaggt
 ggcaacgccaatcagcaacgactgtttgccgccagttgtgtgccacgcggttggaagtgaattcagctccgccatcgcgcgttccacttt
 tccccgcgttttcgcgaaacgtggctggcctggttcaccacgcgggaaacggctcgataagagacaccggcatalactctgcgacatcgtata
 acgttactggttcacattcaccacctgaatigactctcttccgggcgtatcatgccataaccgcgaaagggtttgcgccattcgaatggtgtcc
 gggatctcgacgcctctccttatgcgaactcctgcattaggaagcagcccagtagtaggttagggccgttgagcaccgcgcgcgaaggaa
 ggtgcatgcgaaggagatggcgcccaacagctcccccgccacgggggcctgcccaccataccacgcggaacaagcgctcatgagccg
 aagtggcgagcccgatcttcccacgcgtgatgtcggcgatataggcgccagcaaccgcacctgtggcgccggtgatccggccacgat
 gcgtccggcgtagaggatcgagatctgatccgcgaatlaatacgaactactataggggaattgtgagcggataacaattccccttaga
 aataattttgttaactttaagaaggagatatcatatgaattaacccactaaaggcgccgcgaagtcttattcttagaaagtataggaa
 ctctattctaccgggtaggggaggcgctttcccaaggcagctgtgagcaatgcgttttagcagccccgtggggcacttggcgctacacaagt
 ggccctcggccctgcacacattccacatccaccggtagggcgccaaccgctcgttcttgggtggcccttcgcgccaccttccactcctcc
 cctagtccaggaagtcccccccgccccgcagctcgcgtcgtgcaggacgtgacaatggaagttagcagctcactagtctcgtgcagatg
 gacagcaccgcctgagcaatggaagcgggtagcccttggggcagcgcccaatagcagcttggctccttcgcttctgggctcagaggctg
 ggaagggggtgggtccggggcggggtcagggggcggggtcagggggcggggcggcgcccgaaaggctcctcgaggcccgccgactct
 gcacgcctcaaaagcgcacgtctgcgcgctgttctccttctcctcatctccgggctttcgacctgcagcagcacgtgttgacaattaatcat
 cggcatagtatacggcatagtataatcagacaagggtgaggaacaaaccatggagaaaaaaatcactggatataaccaccggtgatataatcc
 caatggcatcgtaaaagaacattttaggcatttcagtcagtgtgctcaatgtacctataaccagaccgttcagctgataattacggccttttaag
 accgtaaagaaaaataagcacaaagttttatccggcctttatcacattcttgcgcgcctgataatgctcatccggaattccgtatggcaatgaa
 agacgggtgagctgtgatagggatagtgctcaccctgttacaccgttttccatgagcaaacgtgaacgttttcatcgtctggagtgaatacc
 acgacgatttccggcagtttctacacatataatcgaagatgtggcggtttacgggtgaaaacctggccatttccctaaagggttattgagaat
 atgttttctgtctcagccaatccctgggtgagtttaccagttttgattaaacgtggccaatatggacaacttcttgcgcccggtttaccatgg
 gcaaatattatagcaaggcgacaagggtgctgatccgctggcgattcaggttcatcatgccgtttgtatgtgcttccatgtcggcagaatgc
 ttaatgaattacaacagctactgcgatgagtgaggcggggcgggcgtaagcgggactctgggggttcgaataaagaccgaccaagcgacgtct
 gagagctccctggcgaattcgggtaccataaaagagcttatttcatgatctgtgtgtgtgtgtgtgtgcgcgcgggaagttcctatttctag
 aaagtataggaacttctcagccctatagttagtctgtattagatcgggccgcgcgccttgcactatgccacatcctgagcaataattcaacc
 actaattgtgagcggafaacaaggagggtaaaaaaacatggtatcctgttctgcgcggggtaagatttacctgttcgggtgaacacgccgtagt
 ttatggcgaaactgcaattgcgtgtgcgggtggaaactgcgtaccggtgttcgcgcgggaactcaatgactctatcactattcagagccagatcgg
 ccgcaccggctcgtgatttcgaaaagcacccttatgtgtctgcggtaattgagaaaaatgcgcaaatctatttctattaacggtgttttctgaccgt
 cgattccgacatcccggttgggctccgggtcgtgggtagcagcgcagccgttactatcgcgtctattgtgtgcgtgaacgagctgttcggctttg
 gccacagcctgcaagaaatcgctaaactggggccacgaaatgaaatlaagtagcgggtgcgcgtcccccaaccgatactgtatttctacc
 ttggcgcgctgtgttaccatcccggaacgtcgaactgaaactccgactcggcgattgtgattggcgataccggcgttttctcctccac
 caaagagttagtagctaacgtacgtcagctgcgcgaaagctaccggatttgatgaaccgcgtgatgaccttatttgcaaaatctctcgtat
 cggcgaaacaactgttctgtctggcgactacgcatccatcggccgctgatgaacgtcaaccagggtctctcggacgcccttggcggtaac
 atctagaactgagccagctgaatcttccgctcgtgcggcaggtgcgtttggcgctaaatcacggggcgcttggcgcggttggctgtatgtg

Figure 124C

**tgcgctgaccgctccggaaaaatgcaaccaagtggcagaagcggtagcaggcgtggcggtaaagtgactatcactaaaccgaccgag
caaggctcgaaagtagattaa**

(SEQ ID NO:108)

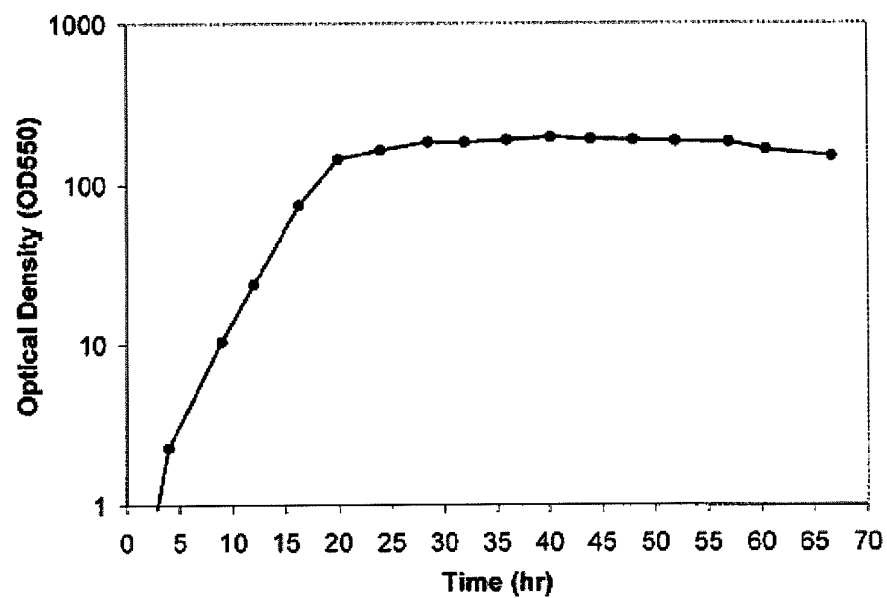
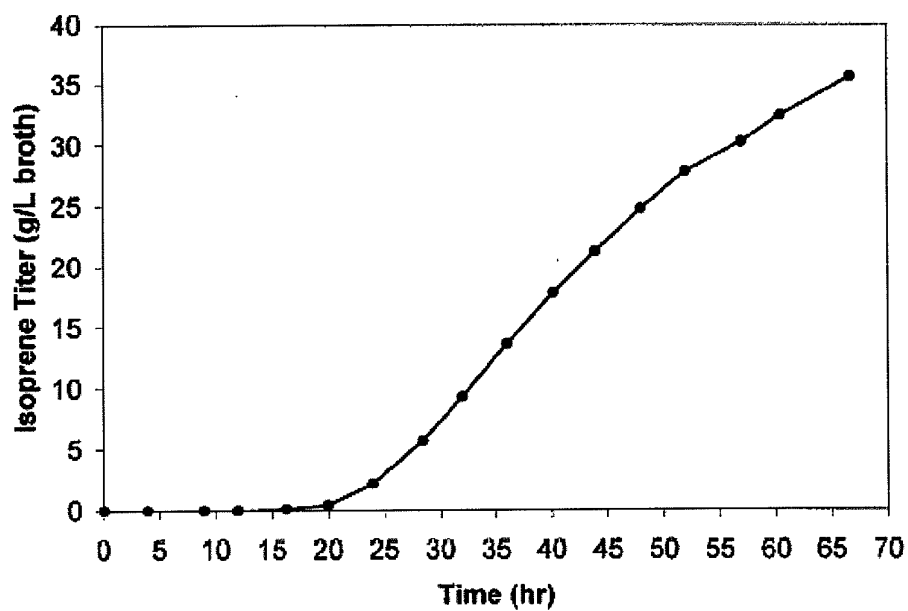
Figure 125A**Figure 125B**

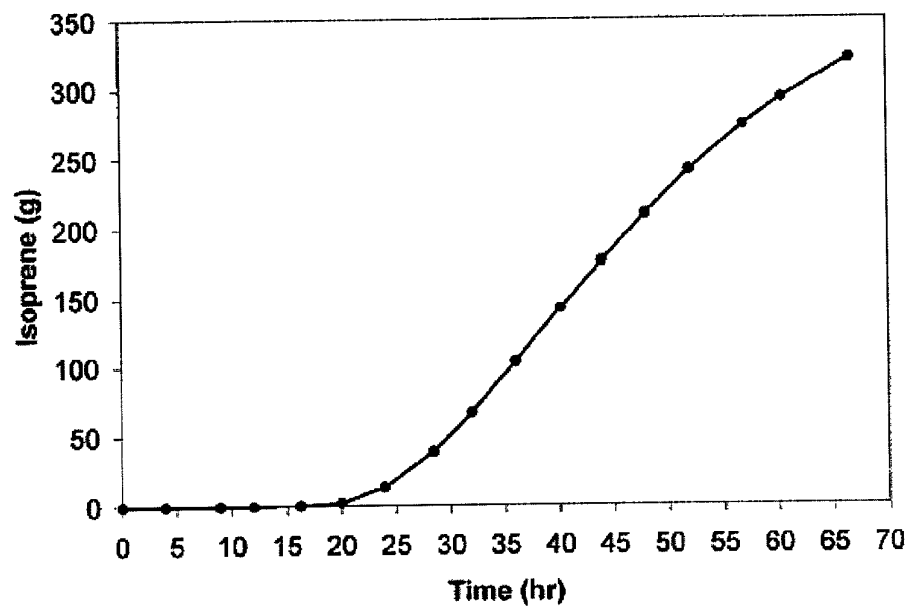
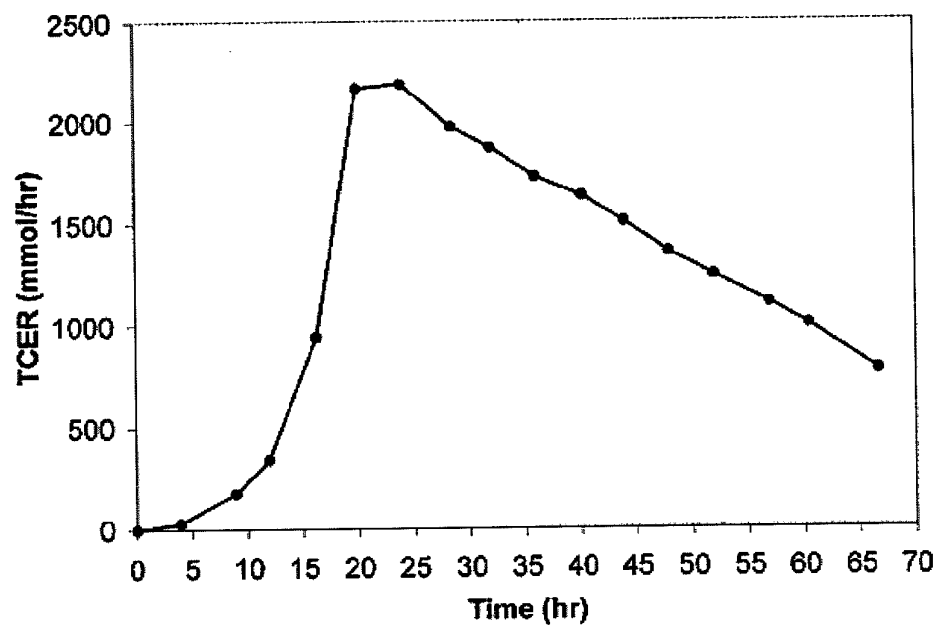
Figure 125C**Figure 125D**

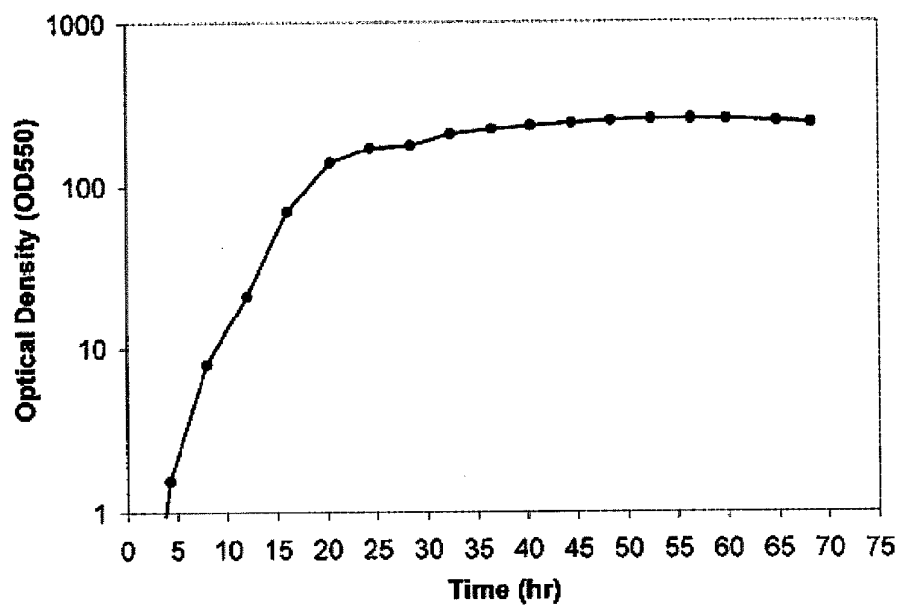
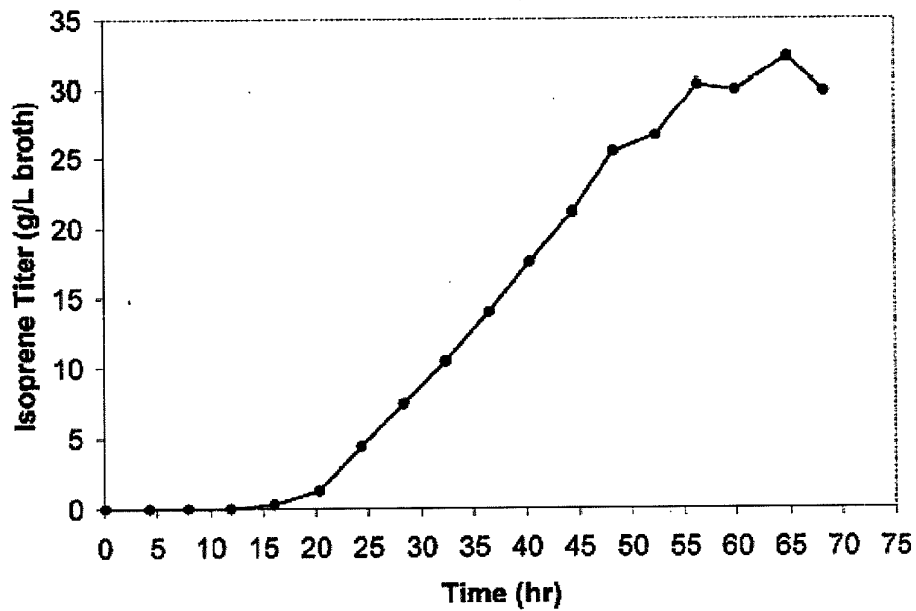
Figure 126A**Figure 126B**

Figure 126C

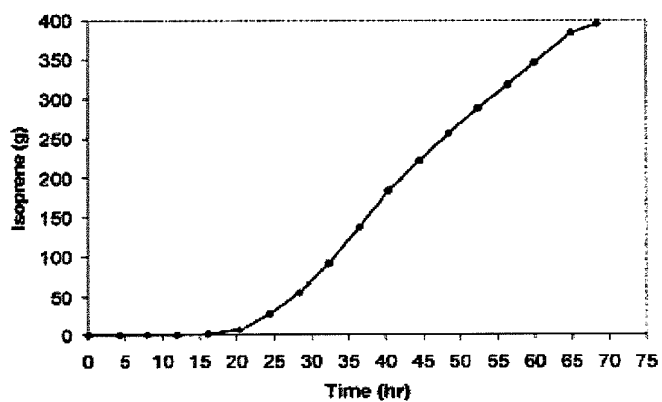


Figure 126D

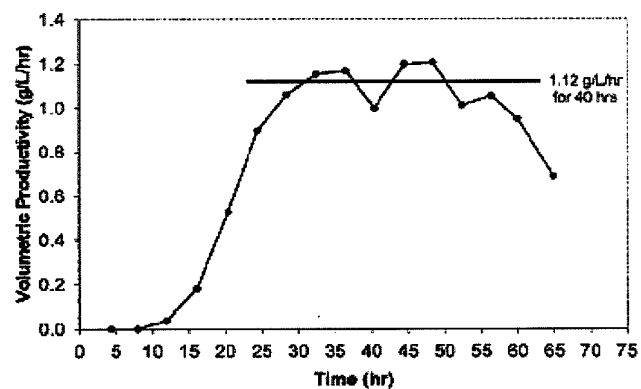


Figure 126E

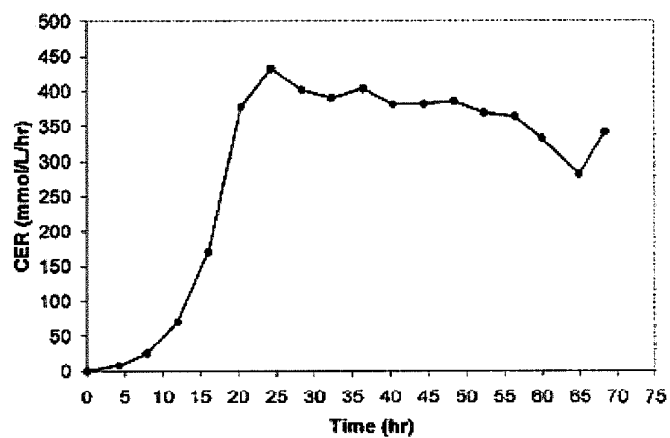


Figure 127A

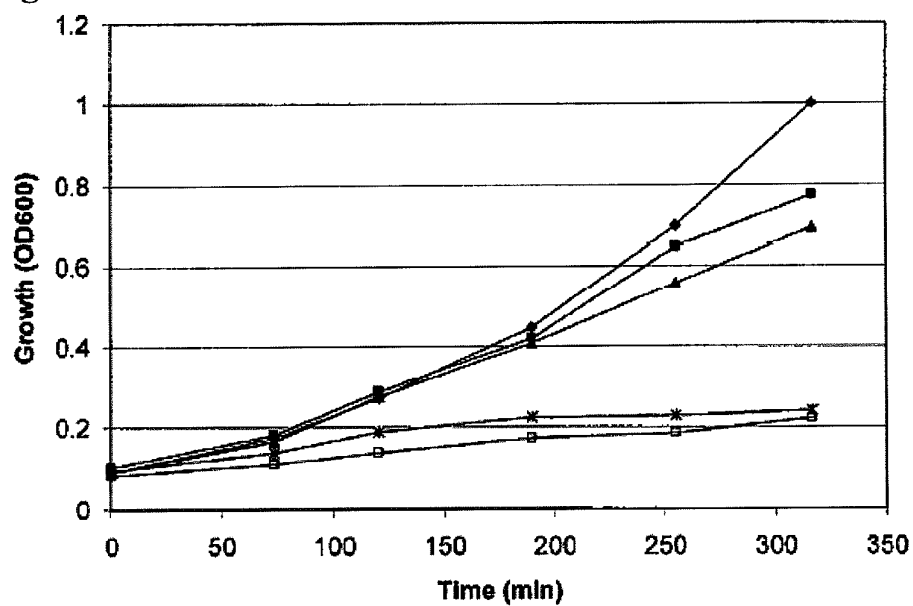


Figure 127B

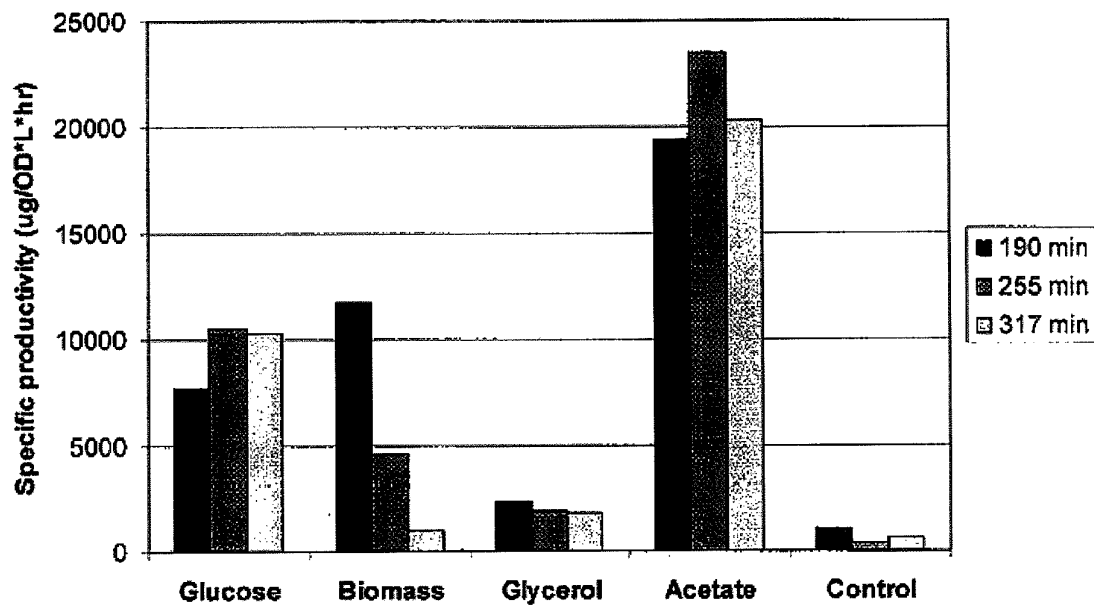


Figure 127C

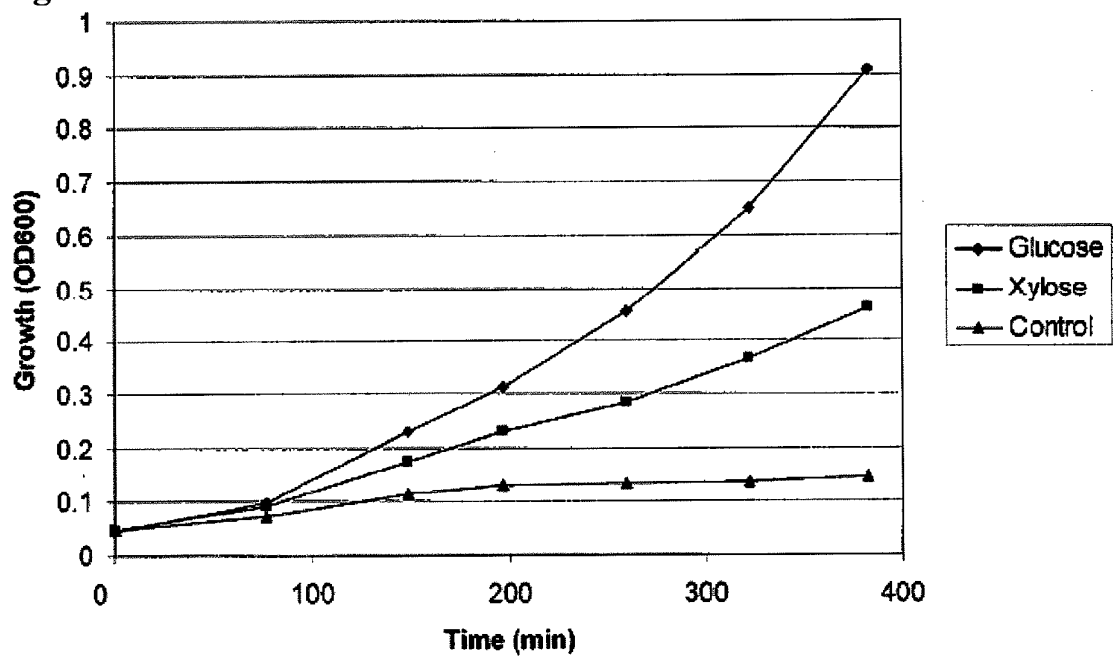


Figure 127D

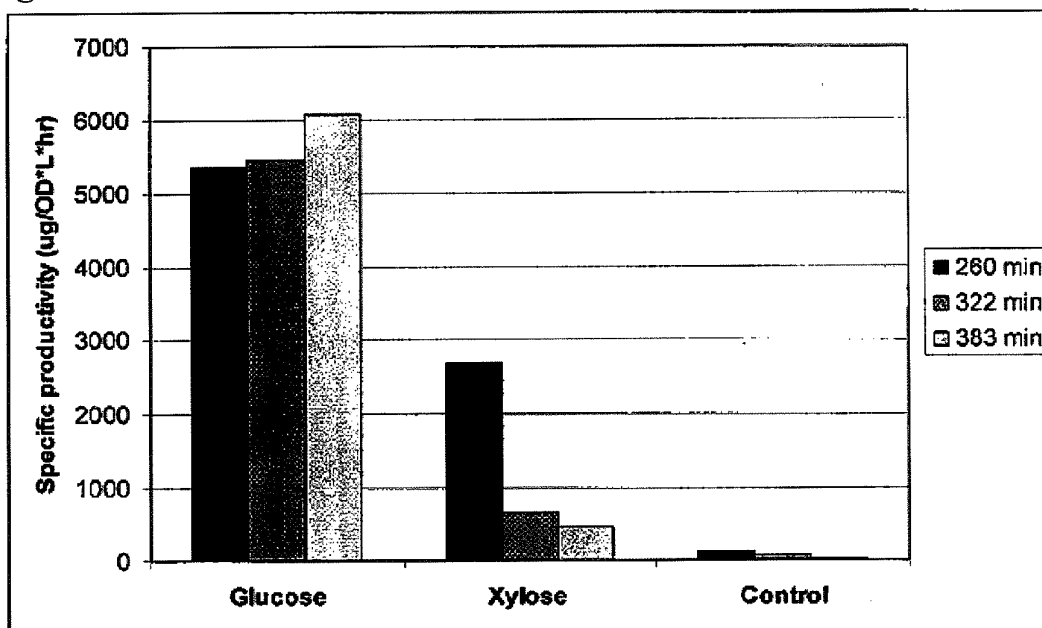


Figure 128A

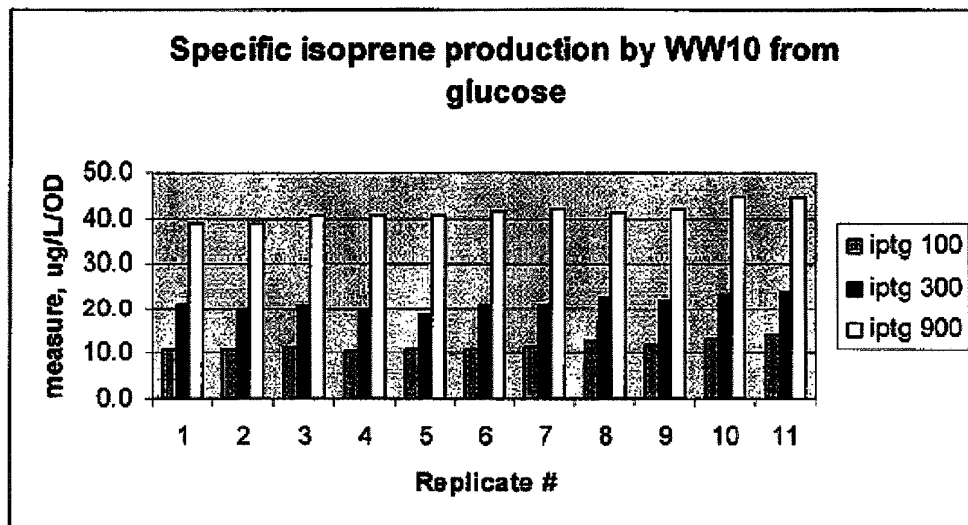


Figure 128B

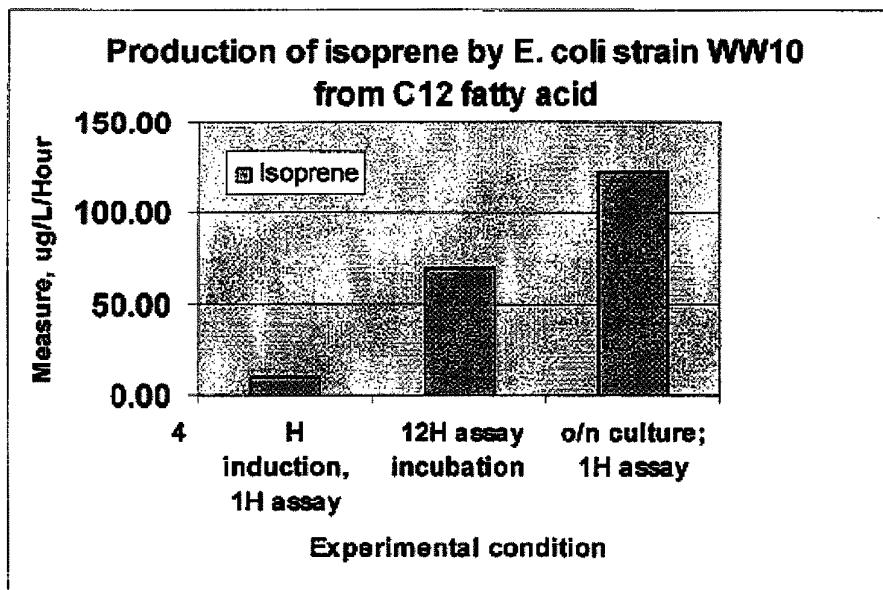


Figure 129

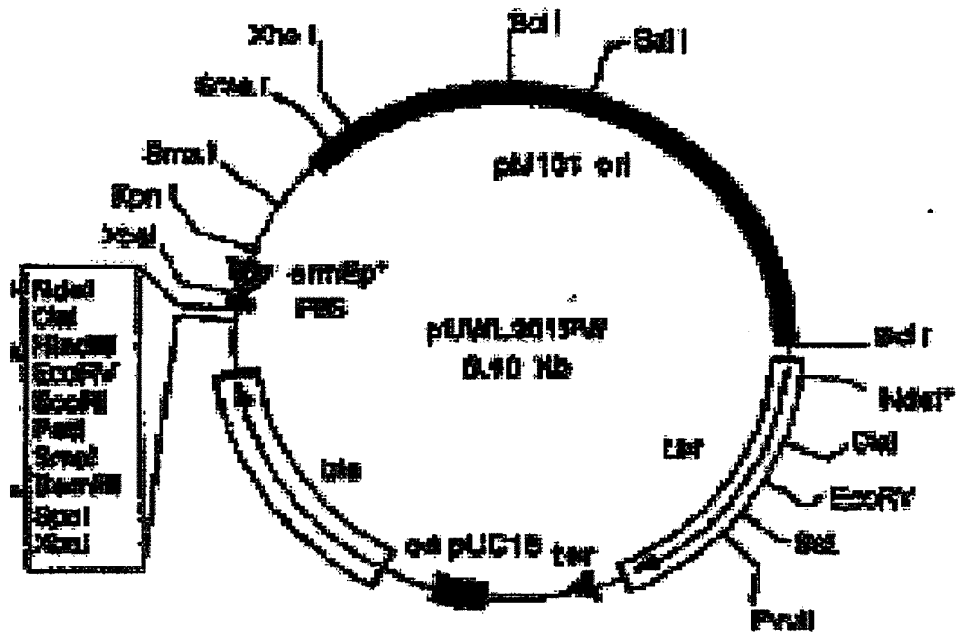


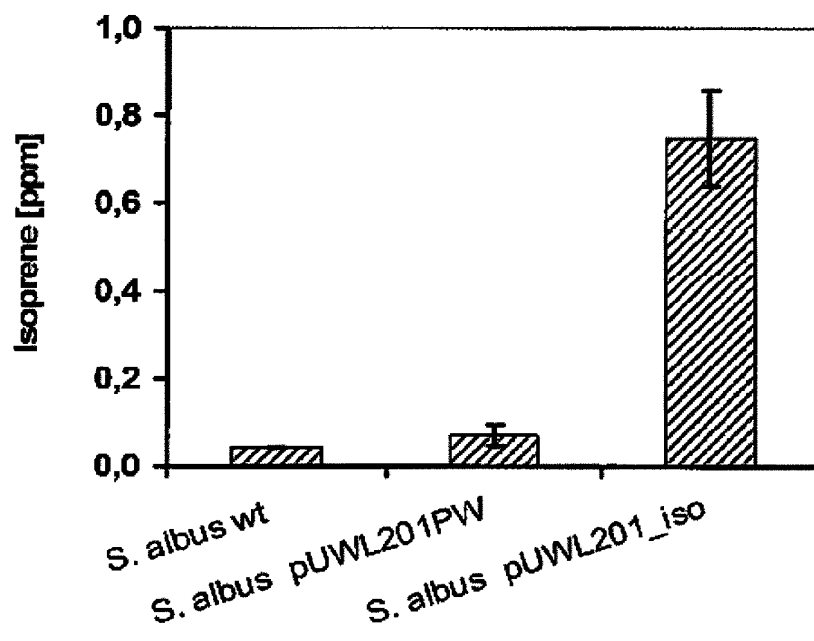
Figure 130

Figure 131A

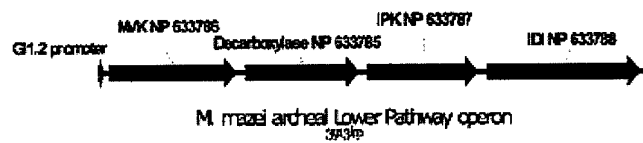


Figure 131B

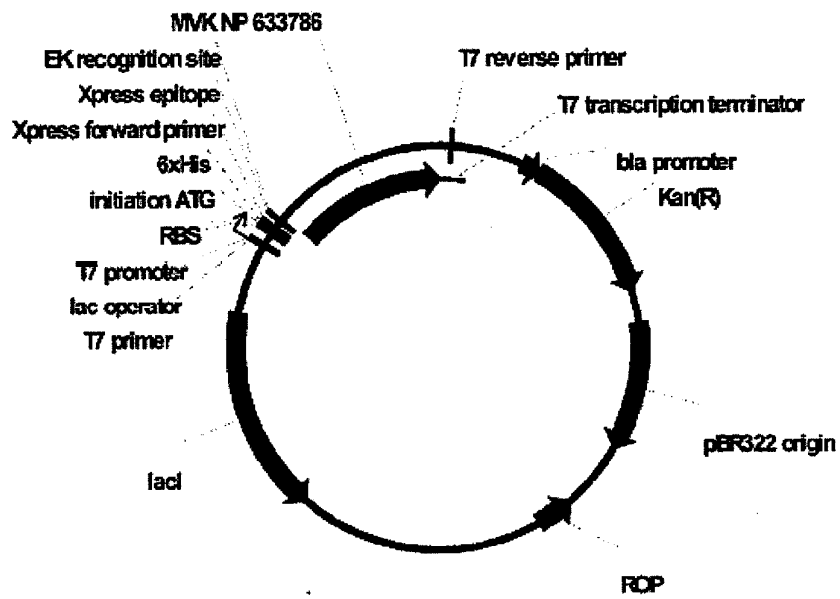
gcggccgcgccctgacgatgccacatcctgagcaataattcaaccactaattgtgagcggataacacaaggaggaaacagc
catggtatcctgttctgcgccgggtaagatttacctgttcggtgaacacgccgtagtttatggcgaactgcaattgcgtgtgcgt
ggaactgcgtaccctgttctgcgccggaactcaatgacctatcactatcagagccagatcgccgcaccggctcggattcgaa
aagcacccttatgtgtctgcggtaattgagaaaatgcgcaaatctatcttattaacgggttttcttgaccgtcgaticcgacatccc
gggtgggtctccgggtctgggtagcagcgagccgttactatcgctctattggtgcgtgaacgagctgttcggctttggcctcagc
ctgcaagaaatcgctaaactggccacgaaatcgaattaaagtaacgggtgcgcgtcccaaccgatacgtatgtttctacct
tcggcggcggtgttaccatcccgggaacgtcgcaaaactgaaaactccggactgcggcattgtgattggcgataccggcggtttctc
ctccacaaaagagtttagtagtaacgtacgtcagctgcgcgaaagctaccggatttgatcgaaccgtgatgacctattggc
aaaatctctcgtatcgccgaacaactggttctgtctggtgactacgcacatccgcccgtgatgaacgtcaaccagggtctcct
ggacgccctggcggttaacatcttagaactgagccagctgatctatctcgctcgtgcggcagggtgcgtttggcgctaaaatcacg
ggcgctgcggcggtgtgtatggttgcgtgacctcgcggaaaaatgcaaccaagtggcagaagcggttagcaggcgct
ggcggtaaaagtactatcactaaaccgaccgagcaaggctgtaagtagattaagccttgacttaatagtctgttatttcgccccta
tggtacctagtaggaggaaaaaaacatggaatgcgtcaaccggctgtgcaggtcaattctacccactgcgttgcgagaacct
ggaaaacgaactgaaacgtctctgaaggcctggagatccgcgaacaagaagtgcgtggcgacgtctgcgcacgcccgtt
tatatgtactctgcgaagtgcggcgacgtctatgccactctgcgggaagctgatacctacgtaattcttcggcccgaaccacac
cggctacggttagccctgtctctgtgagccgtgaaacttggaaagaccccggttggcgaatcgtatgtgacctggaactggcgga
cggcttctggttccatcgtatagtcgggatgaactcgtcacaatacgaacactctatcgaagttcagctgcgtttctgcaata
ccgtttgaacgcgatttcaaaattctgccaatctgcatgggtatgaagacgaagaaccgcggtcgaagtaggtaacctgctg
gcggatctgatcagcgagtcggtaaacgtgctgtgatcctgcgaagctctgatttaccactatgagacggctgaacgtgcca
aagaaatcgattccgaagtattgattctatctgaactttgacatctctggcatgtacgacgcctgtatcgccgtaacgcctctgttt
gcggttacggcccgtaccgctatgctgacggcaagcaaaaagctggcggtctctcgtgcgactttgctgaaatcgcgaac
agcgggtgacgtgtccggtgataaagacgcgtgtgtgggtacggcccatcctggttgagtaagctgattaaagggtgaacagat
aggatttctgcatggaatcctacaaggaggaaaaaacatgaatgcttctaatacgaaccgggtgatttgaactgggtggtctgcta
ttaccgacaaaagggtccctacgaaggcgtagttaagggaagctgatttgcgtgcacatcgacagggaagtttagcggtttccgtggca
agatgatcgtgttcatgtgtgtgtagcttcggccatcgtacgcgaagaatacggcctggaccgtaccttcgaccagagg
gcgcaattgttactcatgaatctgttaaaaagctcgcctccaaaagtgttaggtgctctgaatagcttcggcggtgcgtctatcgcg
tgcatcctatggactgcgcagtatccgtaacggtcgtatcgaacgatgtatctggactccatcaagttaatgttgaaaaaggt
ctggtgcgggttctgcacggcgacgtcgaatggatattgaactggcacttgcctctgctgggtgatcaaatgttccctacctg
gccaaagaactgggtatcctccgctcggcctggcgagcgagaggtggtgtgctggataggggcaaacctgtaccgg
aaatcacccagaaacttcgaagagttccgccactgcacgtgtgttctggttactgtatgaaccgggtgcatgctgggcaaa
gtgcttgaacttctggaattgagcaaaaattcttcattactagctacattttcaacgctggttaaagcagacaacatctaccgctttct
gaatggtgagtcacatcggcactcgcacagcccgacaagcgtgttaagctagttattaacctaaatgctctaaaccagttatga
gctctacaaggaggaaaaaacatgattaacactaccagccgcgcgaatgaacacctgaaactctgcgcagaatccccgg
ttgaagcgcgtcaggtatctgcggctttgaagacgttactctgacaccgcgcttaccggagctgaacatggatgaactgga
cctcagcgttgatttctgggtaaacgcacaaagcgcgttctgattgctctatcacgggtgtcaccagataccatccgg
ttaacgctgcgtggcagctgctgctgaggagctgggtgttggcatcggcgttggctctcagcgcgcggccattgatgccga
gccagggaagacagcttccgttagtgctgatgaagccccagatgcgtttgttatggcaacgtcggcgacgacagatccgtc
agtatggtgtgaagggtgtgaaaaactgatcgaatgattgacgcagatgccttggcaatccacctgaactttctgcaagaagcg
gtccaaccgggaaggtgaccgcgacgcgaccgggtgccttgacatgattaccgaaatttgcctcagattaaaactccggtaacg
tgaaagaaccgggtgcaggcattagccgtgaagatgcgattctgttccagaaagctggcgtgagcgcaatcgacgttggcggc
gcggcgccgacctcctgggtgcgtcaggtctaccgtctaaagaagccgtgactctgttagcgagcgtttaggtgagct
gttttgggatttcggcattccgacggtagcttctgtatgaatccgcgtttccttgcgctgatcgaaccggcggtatccgtaac
ggctgtgacattgtctaaaagcattgtctcggcgcaagcgtgcgacgcgcgtctgcggttctgttggctccctggagggc
aaagaatccgtgtacgtgtgctgagctgcacgtggaagaattfaagcagcaatgttttgcgggttcggcgaacatcaaga

Figure 131C

cctgcacaactctccagtagtggttaactggttggacccgcgaataacctggagcagcgcgggtttaacgttaaggacctctccctg
ccgggcaacgcctctgtaagcttcaacgcgtctacaataaaaaaggcacgtcagatgacgtgccctttttctgtctaga

(SEQ ID NO:127)

Figure 132A



MCM376 - MMK from *M. mazei* archeal Lowerin pET200D
6647 bp

Figure 132B

aaggcgagctcaacgatccggctgctaacaagcccgaagggaagctgagttggctgctgccaccgctgagcaataactag
cataaccccttggggcctctaaacgggtcttgaggagtttttgcgtgaaaggagggaactatatccggatatcccgcaaggagccc
ggcagtagccggcataaccaagcctatgcctacagcatccagggtgacgggtgccgaggatgacgatgagcgcatgttagattc
atacacgggtgcctgactgcgttagcaatttaactgtgataaactaccgcattaaagcctatcgatgataagctgcaaacatgagaa
ttaattctgaaagacgaaaggccctcgtgatacgcctattttataggttaatgcatgataataatggtttcttagacgicagggtggca
cttttcggggaaatgtgcgcgggaacccctattgtttatttttctaatacattcaaatatgtatccgctcatgagacaataaccctgat
aaatgctcaataatfatigaaaaaggagagtagtgaaacagatggattgcacgcagggttcctccggccgcttgggtggagag
gctattcggctatgactgggcacaaactgacaatcggtcgtcgtatgccgcctgttccggctgctcagcgagggcgcccggt
tcttttgcagaccgacgtgctccggtgccctgaatgaatgcaggacgaggcagcgccgctatcgtggctggccacgacgg
gcgttccttgcgcagctgtgctgcaggtgtcactgaagcggggaaggagactggctgctattggcggaagtgcggggcaggat
ctctgtcatctcacctgtcctgcccagagaagatccatcatggctgatgcaatgcggcggtgcatacgttgatccggctac
ctgcccattcgaccaccaagcgaaacatcgcatcgagcgggcacgtactcggatggaagccggtcttgcgatcaggatgatct
ggacgaagagcatcaggggctcgcgccagccgaactgttcgccaggctcaaggcgccgatcccgcaggcgaggatctcgt
cgtgacacatggcgatgcctgttgcggaatatcatggtggaaaatggccgcttttctgattcatcactgtggccggctgggtg
tggcgagccgtatcaggacatagcgttggctaccggtgatattgctgaagagcttggcggaatgggtgaccgcttctcgt
gctttacggtatcgccgtcccgaatgcagcgcatcgcttctatcgcttcttgcagagttcttctgagcgggactctggggctc
gaaatgaccgaccaagcgacgcctaactgtcagaccaagttaactcatatatactttagattgatttaaaactcatttttaatttaaaa
ggatctagtgaaatccttttgataatcctatgacaaaatcccttaacgtgagttttcgtccactgagcgtcagacccgtaga
aaagatcaaaaggatcttctgagatcctttttctgcgcgttaatcgtcgttgcacaaaaaaaccaccgctaccagcggtggtt
tgtttgccggatcaagagctaccaactcttttccgaaggtaactggcttcagcagagcgagataaccaatactgtccttctagt
agccgtagttaggccaccactcaagaactctgtgacaccgctacatacctcgtctgctaactcgttaccagtggctgctgcc
agtggcgataagtcgtgtcttaccgggttgagctcaagacgatagttaccggataaggcgagcggtcgggctgaacggggg
gttcgtgcacacagcccagcttgagcggaacgacctacaccgaactgagatacctacagcgtgagctatgagaagcgccac
gcttcccgaaggggagaaaggcgagacaggtatccggttaagcggcagggttcggaacaggagagcgacgaggggagcttcca
gggggaaacgccttgatctttatagtcctgtcgggttcgccacctctgacttgagcgtcgatttttgatgctcgtcagggggg
cggagcctatgaaaaacgccagcaacgcggccttttaccggttcttggccttttgccttctgctacatgttcttctcgtgtt
atccctgattctgttgataaccgtattaccgctttgagtgagctgataccgctcgcgcagccgaacgaccgagcgagcga
gtcagtgagcgagggaagcggaagagcgccgtatgcggtattttcttaccgcatctgtgcggtatttcacaccgcaatggtgca
ctctcagtaaatctgtcctgatccgcataagtaagccagtatacactccgctatcgtactgactgggtcatggtgcgcccc
gacaccgccaaacaccgctgacgcgcctgacgggcttgtctgctccggcatccgcttacagacaagctgtgaccgtctcc
gggagctgcatgtgtcagagggtttaccgtatcaccgaaacgcgcgaggcagctgcggtaaagctcatcagcgtggtcgtg
aagcgattcacagatgtctgctgttcatccgcgtccagctcgtgagtttccagaagcggttaatgtctggtctctgataaagcgg
gccatgttaaggcggtttttcctgttggctactgatgcctccgtgtaagggggatttctgttcatgggggaatgataccgatga
aacgagagaggatgtcacgatacgggttactgatgatgaacatgcccggttactggaacgttgtgagggttaacaactggcg
gtatggatgcggcgagcagagaaaaatcactcagggtcaatgccagcgcttcgttaatacagatgtaggtttccacagggt
agccagcagcatcctgcgatgcagatccggaacataatggtgcaggcgctgacttccgcttccagactttacgaaacacgg
aaaccgaagaccattcatgttgttgcaggtcgagacgttttcagcagcagctcgttccagcttgcgtcgtatcgggtgattca
ttctgtaaccagtaaggcaaccccgccagcctagccgggtcctcaacgacaggagcacgatcatgcgacccggtggccagg
accacacgtgcccagatgcgccgctgctggctgagatggcgagcgatggatgttctccaagggttgggttgc
gcattcacagtctccgcaagaattgattggtccaattcttggagtggtaatccgttagcgagggtgcggccgcttccattcagg
tcgagggtggcccgctccatgcaccgcgacgcaacgcggggaggcagacaaggatagggcgccgctacaatccatgcc
aacccgttccatgtgtcgcgagggcgataaatccgtgacgatcagcggtccaatgatcgaagttaggtggtgaagac
cgcgagcgatcctgaagctgtccctgatggtcgtcatctacctggtgacagcatggcctgcaacgcgggcatcccgatgcc
gccggaagcgagaagaatcataatggggaaggccatccagcctcgcgtcgcgaacgccagcaagacgtagccagcgct

Figure 132C

cgccgccatccggcgataatggcctgttctcgccgaaacgttgggtggcgggaccagtacgaaggcttgagcgagggc
gtgcaagattccgaataccgcaagcgacaggccgatcatcgctcggtccagcgaaagcggtcctcgccgaaatgaccag
agcgctgcccgcacctgtctacgagttgcatgataaagaagacagtcataagtcggcgacgatagtcatgccccgcgcca
ccggaaggagctgactgggtgaaggctctcaaggcgatcggtcgagatccgggtcctaatagtgagctaaactacattaatt
gcgttgcgtcactgcccgtttccagtcgggaaacctgtcgtccagctgcattaatgaatcgccaacgcgcggggagagg
cggttgcgtattggggcgccagggtgtttttttaccagtgagacgggcaacagctgattgcccttaccgcctggccctga
gagagttgcagcaagcggtccacgctgtttgccccagcaggcgaaatcctgtttgatgggtgtaaacggcggtatataacat
gagctgtcttcggtatcgtatccactaccgagatatccgcaccaacgcgcagcccggactcggtaattggcgcgattgcg
cccagcgccatctgacgttggcaaccagcatcgagtggaacgatgccctcattcagcatttgcattgttggtaaaaccgg
acatggcactccagtcgcttccggtatcggtgaatttgattgcgagtgagatattatgccagccagccagacgcaga
cgcgccgagacagaacttaattggggccgtaacagcgcgatttgcgtgtgacccaatgcgaccagatgctccacgccagtcg
cgtaccgtctcatgggagaaaataatactgttgatgggtgtctgtggtcagagacatcaagaataacgccggaacattagtgcag
gcagcttccacagcaatggcatcctggtcatccagcggatagttaatgacagccactgacgcgttgcgcgagaagattgtgc
accgccgtttacaggcttcgacgccgttcgttctacatcgacaccaccacgttggcaccagttgatcggcgcgagatttaa
tcgccgcgacaatttgcgacggcgctgcagggccagactggaggtggcaacgccaatcagcaacgactgtttgccgccag
ttgtgtgccacgcggttgggaatgtaattcagctccgccatcgcgcgttccacttttccgcgttttcgcagaaacgtggctggc
ctggttaccacgcgggaaacggctgataagagacaccggcatactctgcgacatcgtataacgttactggttcacattacca
ccctgaattgactcttccgggctatcatgccataccgcgaaaggttttgcgccattcagtggtgtccgggatctcgacgtct
cccttatgcgactcctgcattaggaagcagcccagtagtaggtgagggccgttgcgaccgcgcgcgcaaggaaatggtgcag
caaggagatggcgcccaacagtcccccggccacggggcctgccaccataccacgcggaacaagcgtcatgagccga
agtggcgagcccgatcttcccatcggtgatgtcggcgatataggcgccagcaaccgcacctgtggcgccggtgatccggc
cacgatgcgtccggcgtagaggatcgagatctgatccgcgaaattaatacgactcactataggggaattgtgagcggataac
aatccctctagaaaataatttgtttaactttaagaaggagatatacatatgcggggttctcatcatcatcatcatgtatggcta
gcatgactggtggacagcaaatgggtcgggatctgtacgacgatgacgataaggatcatcccttaccatgggtatcctgtctgc
gccgggtaagatttacctgttcggtgaacacgccgtagtattggcgaaactgcaattgcgtgtgcggtggaactgcgtacccgt
gttcgcgcggaactcaatgactctatcactattcagagccagatcgccgcaccggctctggttgcgaaagcacccttatgtgtc
tgcggttaattgagaaaatgcgcaaatctattctattaacggtgttttcttgaccgtcgattccgacatccgggtgggtccggtctg
ggtagcagcgagccgttactatcggtctattgttgcgtgaacgagctgttcggcttggcctcagcctgcaagaaatcgcta
aactgggcccacgaaatcgaattaaagtacagggtgcgcgtcccaaccgatactgtatgtttctaccttcggcggtgtgttac
catcccggaacgtcgcaactgaaaactccggactgcggcattgtgattggcgataccggcggttttctctccaccaaagagtta
gtagctaacgtacgtcagctgcgcgaaagctacccggatttgatgaaccgctgatgacctctattggcaaaatctctcgtatcgg
cgaacaactggtctgtctggtgacgtacgcattccgcccgtgatgaacgtcaaccagggctccttggacgccctggcggt
taacatcttagaactgagccagctgatctattccgctcgtgcggcaggtgcgtttggcgctaaaatcacgggcgctggcgcggt
ggctgtatggttgcgtgaccgtccggaaaaatgcaaccaagtggcagaagcggtagcaggcgctggcggtaaagtactat
cactaaaccgaccgagcaaggctgaaagttagattaa

(SEQ ID NO:128)

Figure 133A

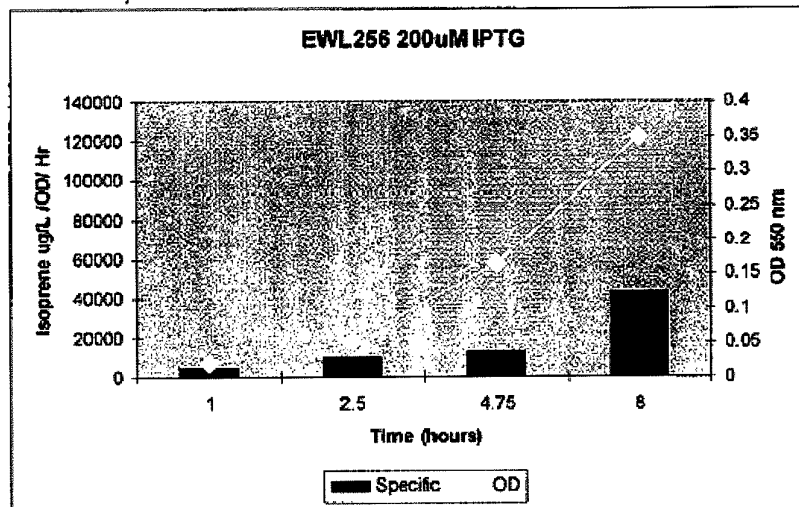


Figure 133B

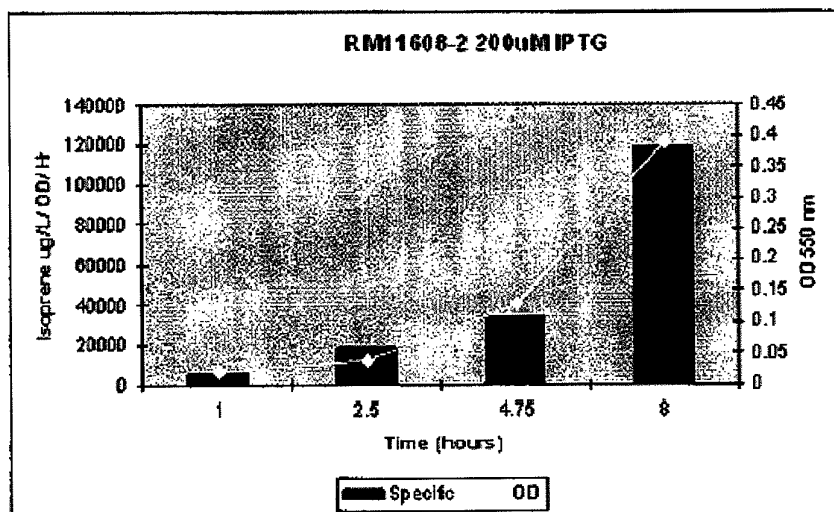


Figure 133C

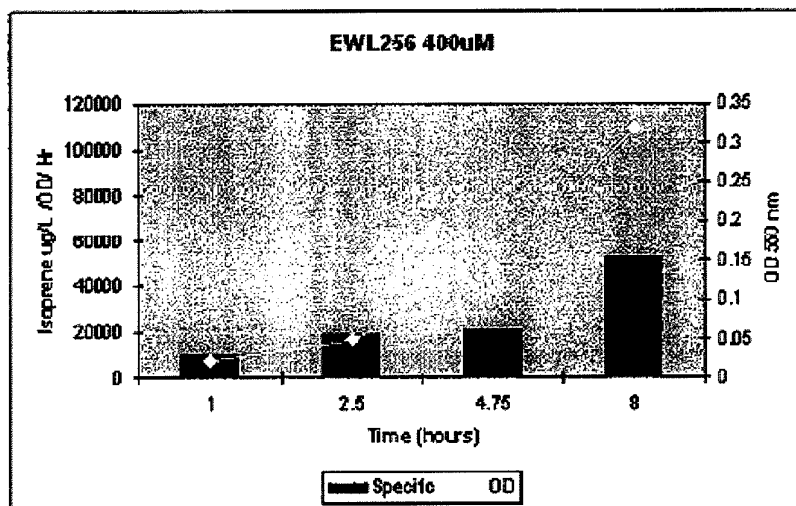


Figure 133D

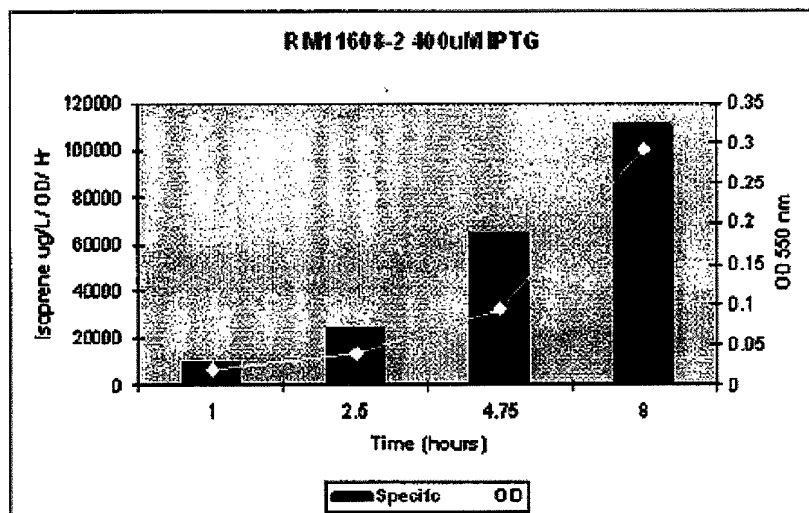
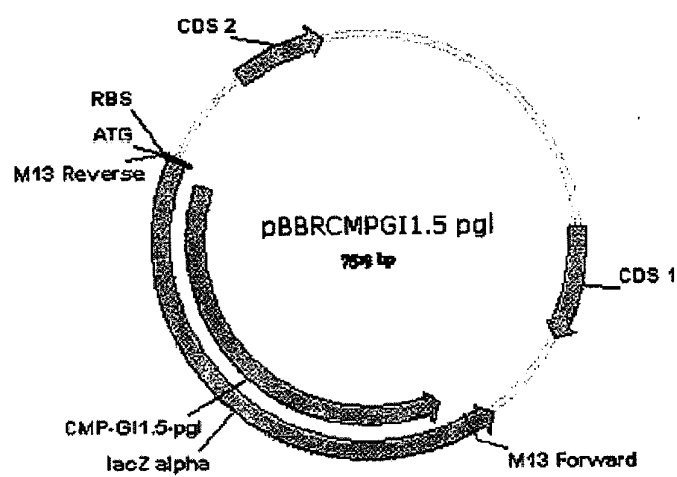


Figure 134

CDS 2: Gentamycin resistance gene; CDS1: E. coli replication protein.

Figure 135A

1-

ctcgggcccgtctcttgggcttgatcgcccttcttgcgcatctcacgcgctcctgcgccggcctgtagggcaggtcatataccctgccgaacc
gcttttgcagccggctcgccacggcttccggcgctcaacgcgctttagattccagcttttcggccaatccctgcggtgcataggcgctg
ggctcgaccgcttgcgggctgatgtgacgtggccactgggtggccgctccagggcctctagaacgcctgaatgcgctgtgacgtgc
cttgcctgccctgatgccccgttgcagccctagatcgccacagcgggccgcaaactgtgtctggtcgcgggtcatctgcgcttgttgcga
tgaactccttggccgacagcctgcccgtctgctcagcgccacacgaacgcggtcatgtgcgggctgttctgtcacgggtggtgctggc
cgtcacgatgcgaccccccgtacttgcggccagccacttgcgcttctcgaagaacgcgctgtgttcttggctggccgacttcca
ccattccgggctggccgtcatgactgactgaccgccaacacagcgcttctgcgcttctctgtgcagcaactcgcgcagtcggccatc
gcttcacgtgtgtgtgctgcccagtgctgttctgtgctcgtgctggtgcagcggttggcgctcgcgcgtcgcggtagcggtgtgt
gagactggccgccagtgtcccatttgcagcttctgtcatgcgcatgctggtatgcggccatgcctgccctcccttttgggtccaacc
ggctcgacggggcagcgcaaggcggtgctccggcgggccactcaatgtgagtatactactagacttgccttcgcaagtcgtgac
cgctacggcggtgcggcgccctacgggcttgcctccgggcttgcctcgcggtgcgtgcgtcccttgcagcccgtggatagt
gacgatggccgagcgccaccggctggctcgttgcctgcggccgtggacaacctgtgtgacaagctgatggacaggctgcgct
gcccacgagcttgaccacagggttgcaccggctaccagccttcgaccacataccaccggctccaactgcgcgccgtgcggtt
gccccatcaattttttaaatttcttctgggaaaagcctccggcctgcggcctgcgcttgcgttgcgggttggacaccaagtgaaggcg
gtcaaggctcgcgcagcgaccgcgacggcgttgccttgacgcctgggaacgaccaagcctatgcgagtgggggcagtcgaagg
cgaagcccggcgtgcccccgagccacgcgcggtgctgggggttccaagggggcagcgccacttgggcaaggccgaag
gcccgcgagtcgatcaacaagccccggaggggccacttttgcggagggggagccgcgccgaaggcgtgggggaaccccgagg
gtgccccttcttgggcaccaaagaactagatagggcgaaatgcgaagacttaaaatcaacaacttaaaaagggggtacgcaacg
ctcattgcggcacccccgaatagctcattgcgtagggttaagaaaatctgtaattgactgccacttttacgcaacgcataattgttgcgc
tgccgaaaagtgcagctgattgcgcatggtgcgcaaccgtgcggcaccctaccgcatggagataagcatggccacgcagtcagaga
aatcgccattcaagccaagaacaagcccgtcactgggtgcaaacggaacgcaaacgcagtgaggctggggcggttatgtcagg
aaaccacggcggaatgtgtgtcatcacctgtggcgagatggccaccagaacgcggtgggtgagccagaagacactttccaa
gctcatcgagcttcttgcggacgtccaatacgcagtaaggaacttgggtggcgagcgctggtatccgtctgtagctaacggcccc
ggcaccgtgtcggcctlacgttgcaatgaccgcgtggcggtggggccagccccgcgaccagtgcgctgtcgggttgcagtcggcgt
gggtgtgatcagacgaccaggacgaatcgtgttggggcatggcgacctgcgcgcacatccgacctgtatccggcgagcagcaac
taccgaccggccccggcgaggagccgcccagccagccggcattccgggcatgggaaccagacctgccagccttgaccgaacggag
gaatgggaacggcgcgggcagcagcgcctgcggtgcccgatgagccgtgttttctggacgatggcgagccgttggagccgcccacac
gggtcacgctgcggcgccgtagcacttgggttgcgagcaaccgtaagtgcgtgttccagactatcggtgtagccgctcgcggcc
ctatacctgtctcctccccggttgcgtcgggtgcatggagccgggccacctgcacctgaatgggaagccggcgccacctgcgaacg
gattcaccgttttatcaggctctgggaggcagaataatgatcatatcgtcaattattacctccacggggagagcctgagcaaacgtgctca
ggcatttgagaagcacacgggtcacactgttccggtagtcaataaacgggtaaaccagcaatagacataagcggctatttaacgacctgccc
ctgaaccgacgaccgggtcgaaattgtttcgaatttgccttccattcctgattatcacttattcaggcgtagcaccaggcggttaaggga
ccaataactgccttaaaaaaattacgccccgccctgccacatcgcagtcggcctattgggttaaaaaatgagctgatttaacaaaaattaac
gcgaattttaacaaaatattaacgcttaaatccattcggcattcaggtgcgcaactgttgggaaggcgatcggtgcgggctcttgcct
attacgccagctggcgaaagggggatgtgtgcaaggcgatttaagtggtaacgccagggttttccagtcacgactgttaaacgacg
gccagttagcgcgctaatagactactataggcgaaattgagctccaccgcggtggcgccgctctagaactagtgtacccccgg
gctgcatgtcgcgagcgccgccagtgtgatggatatctgcagaattcggccttctgatatctagtgtgcgttaaccaccacacattgtc
cctgcccgaccgcatagcgcccttttcatgagtagccccgtctgcgaacaattcgtataccgagatgtgtgagattttgccggcg
caatcagatacttgcgctgtgatcaacattgaagccggcggtggttccgttggtggaagccttcttactaacacgctgccatctc
cgaaacgctgaaaacggtaacaggtgcgggtacggctgcagcggtataaatggcgaccatccgggtgataatagacccccc
aacgggtgtcggaagaattttccggcatcataccagcgcttgacacattcgaattaccgtgcggatcttcagttccagacatccactga
gctgtttaactcattgacgaatacgaattgttgcgttggatggaalacatagacggcgccggcccccttaacgggtgctacttccga
gggtcctgcggccagagatgacctatcgtgacggtaaacaggcaaatgcgactcgtttaatgccgaacccacagcgtagctgtgt

Figure 135B

ccggtgagatattggcgaatggcaaccgtccagcccctcgaccacatcgacgacgcccactggcagggccatcttcagacgcgttacgc
tcacgttaccgcattgtaagaacctacaaagacaaactgcccctgggtgatcgggtggaatatgctcgactacccggcagcgacac
tgccgcaaaggctcagtgccatcgtccggggcgatcgcacgagcgcaaaactcaggggcgaacaccaatagagataacgt
ttgtccgggctgaccaccaicgggtgcacctgccccggcacatcgacaacctgtgtcagcgctcagtgcccttcattgacattccagac
gtgaatttgctggctctcagggtggcgatataaactgttgcctcatgaatgtcctttgggttacctccgggaaacgcgggtgattgtttagtg
gttgaattattgctcaggatgtggcatagtaaggcggtgacggtcgtcgaatacaactcactatagggtcgcagggaagtctatactttcta
gagaataggaaactccgcgccgcacacaaaaaccaacacacagatcatgaaataaagctctttatgggtaccgaattcgccaggggagct
ctcagacgtcgttggtgctctttattcgaaccccagagtccttcacgccccgccttcacacgcagtgctgttaattcattaagc
attctgccgacatggaagccatcacaaacggcagtgatgaacctgaatcgccagcgccatcagcaccttctgccttgcgtataatattgccc
atgggtgaaaacggggcggaagaagtgtccatattggccacgtttaaactcaaaactggtgaactcaccagggattggctgagacgaaaa
acatattctcaataaaccctttagggaaataggccaggttttcaccgtaacacgcccacatcttgcgaatatatgtgtagaactgcggaaatc
gtcgtgttattcactccagagcgatgaaaacgttcagttgtcctatggaanaacgggtgaacaagggtgaacactatcccatatcaccagctc
accgtcttcatggcatalcggaaattccggatgagcaltcatcagcgccggcaagaatgtgaataaaggccggataaaactgtgcttattttct
ttacggtctttaaaaggccgtaatatccagctgaacgggtcgtgtatagggtacattgagcaactgactgaaatgcccaaaatgttcttacgat
gccattgggatatacaacgggtgtatatccagtgattttttctccatggttttagttctcacttgcgtattatactatgccgataactatgccg
atgattaattgtcaacacgtgctgctgcaggtcgaaaggcccgagatgaggaaggaggaacagcgccggcagacgtgcgctttgaa
cgtgcagaatgccgggctccggaggaccttcgggcgcccgccccgccccctgagccccccctgagcccccccggaacccacccctt
cccagcctctgagccagaaagcgaaggagcaaaagctgtattggcgtgccccaaaggccctacccgcttccattgctcagcggtgctg
tccatctgcacgagactagttagacgtgctacttccattgttcacgtcctgcacgacgcgagctgcggggcgggggggaacttccgacta
ggggaggagtggaagggtggcggaaggggccacaaagaacggagcggttggcgctaccgggtggatgtggaaatgtgtgcgaggc
cagaggccactgtgtagcgccaagtggccagcggggctgtaaaagcgcatgctccagactgccttgggaaaagcgccctccctacccg
gtagaatgaagtcttatacttttagagaataggaaacttcgcggccgccctttagtgagggttaattcaactgactgtaacagctaaaatagt
cgcttttggcgtaaggcggaattccagcacactggcgccgttactagtggatccgagctcgggtaccaagcttgatgcaggaaatcgatat
caagcttaccgataccgtcgacctgcagggggggcccggtaccagcttctgtccctttagtgagggttaattgcgcgttggcgtaatcatg
gtcatagctgttctgtgtgaaatgttatccgtcacaaattccacacatacagcgccggaagcataaagtgtaaagccttgggtgtcctaa
tgagttagctlaactcacattaattgctgtgcgtcactgcccgttccagtcgggaaacctgtcgtgccagctgcattaatgaatcgcccaac
gcgcggggagagggcggttgcgtattggcgcatgataaaaactgttgaattcattaagcattctgccgacatggaagccatcacaaacg
gcatgatgaacctgaatgccagcgccatcagcaccttgccttgcgtataatattgcccattgacgcacaccgttgaaacggatgaa
ggcacgaaccagttgacataagcctgttcgggtcgtaaactgtaatgcaagtagcgtatgcgtcacgcaactggtccagaaccttgaccg
aacgcagcggttgtaacggcgagtggtgtttcatggtgttatgactgtttttgtacagtctatgcctcgggcatccaagcagcaagc
gcgttacggcggtggctgatgtttgatgttaggagcagcaacgatgttacgcagcagcaacgatgttacgcagcaggcgagtcgccctaa
aacaagttaggtggctcaagtattggcgtatcttcacatgtaggctcgccctgaccaagtcaaatccatgcgggctgctcttgcatttct
ggctgtgagttcggagacgtagccacctactcccaacatcagcgccgactccgattacctcgggaacttgctccgtagtgaagacattcatcgc
gcttgccttgcaccaagaagcggtgtgtggcgctctcgcggcttacgttctgccaggttgagcagccgcgtagtgtgatctatatctat
gatctgcagctcggcgagcaccggaggcagggcattgccaccgcgtcatcaatctcctcaagcatgaggccaacgcgttgggtgct
tatgtgatctacgtgcaagcagattacgggtgacgatcccgagtgctctctatacaaaagtgggcatacgggaagaagtgtgacatttgat
atcgaccaagtaccggccacctaacaattcgttcaagccgagatcggttccccggccggagttgttcggtaaatgtcacaaacgcggcc
aggtggcactttcggggaagtgtgcgcggccgcttctgctggtggcctgtttctggcgctggacttcccgtgttccgtcagcag
cttttcgccacggccttgatgatcgcgcgcccttggcctgcataatcccgattcaacggccccagggcggtccagaacgggcttcaggcg
tccgaagggt

(SEQ ID NO:136)

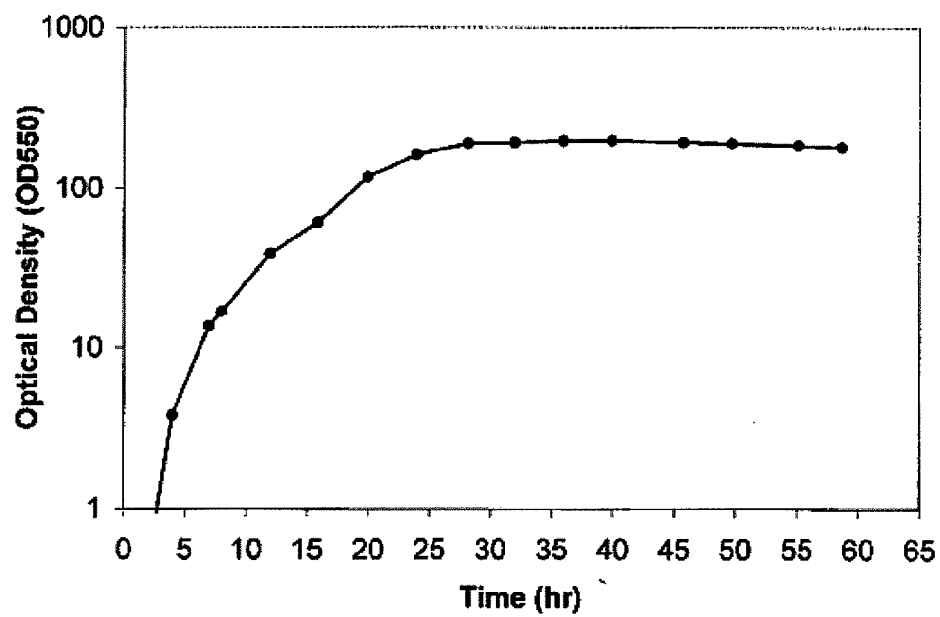
Figure 136A

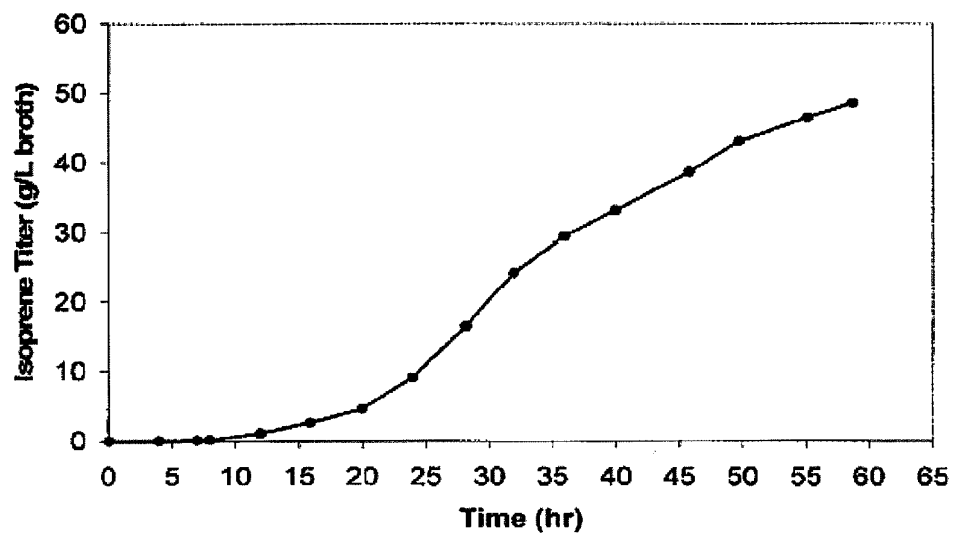
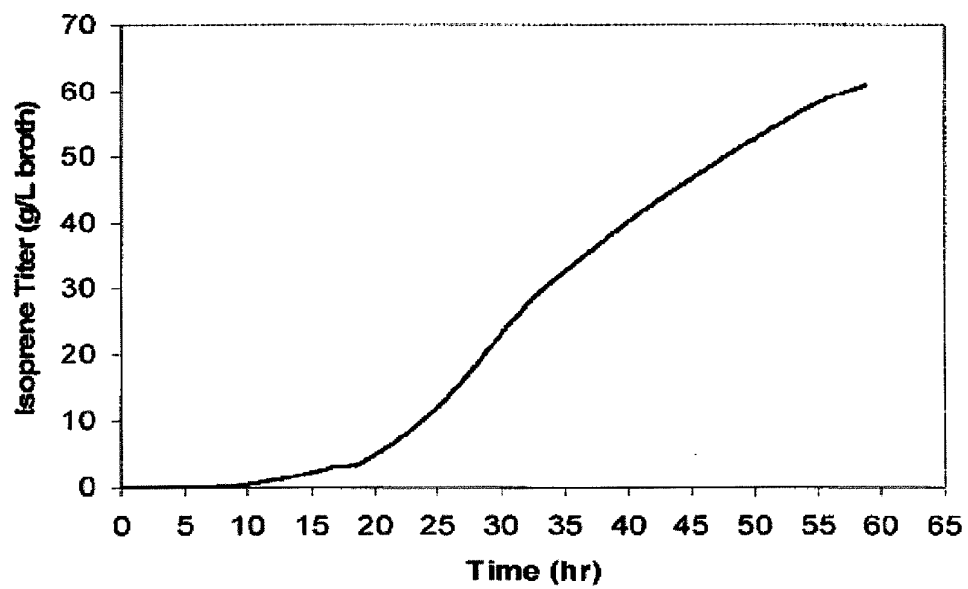
Figure 136B**Figure 136C**

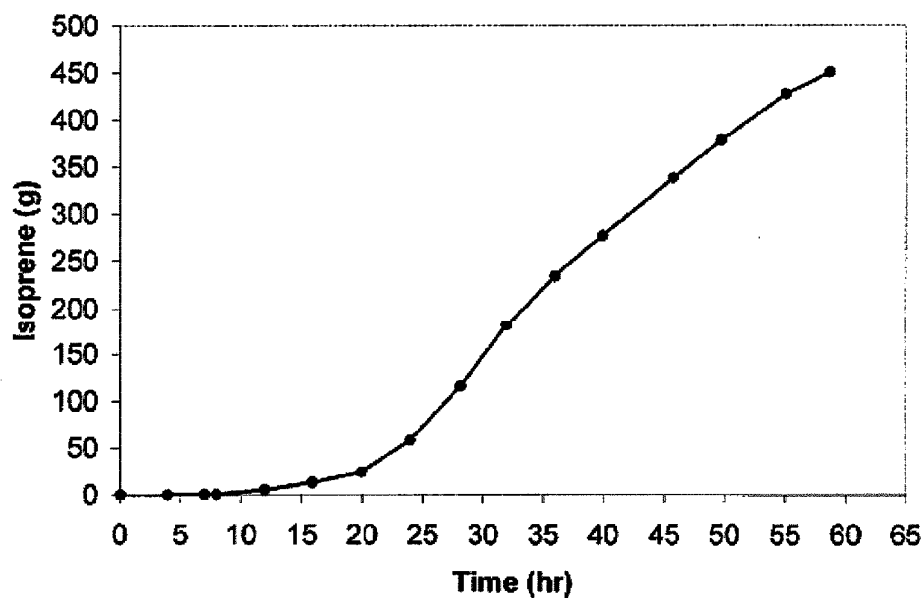
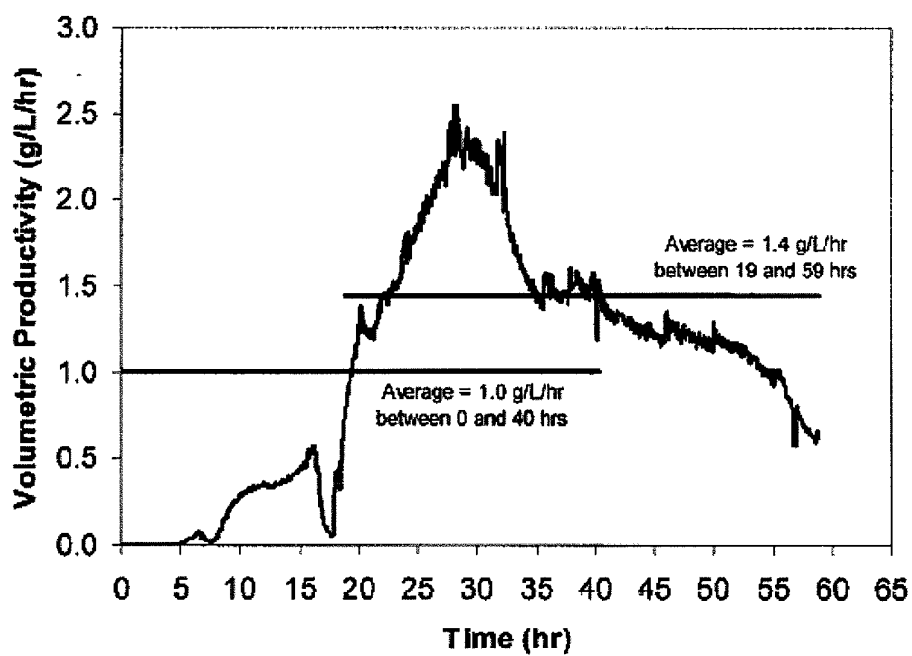
Figure 136D**Figure 136E**

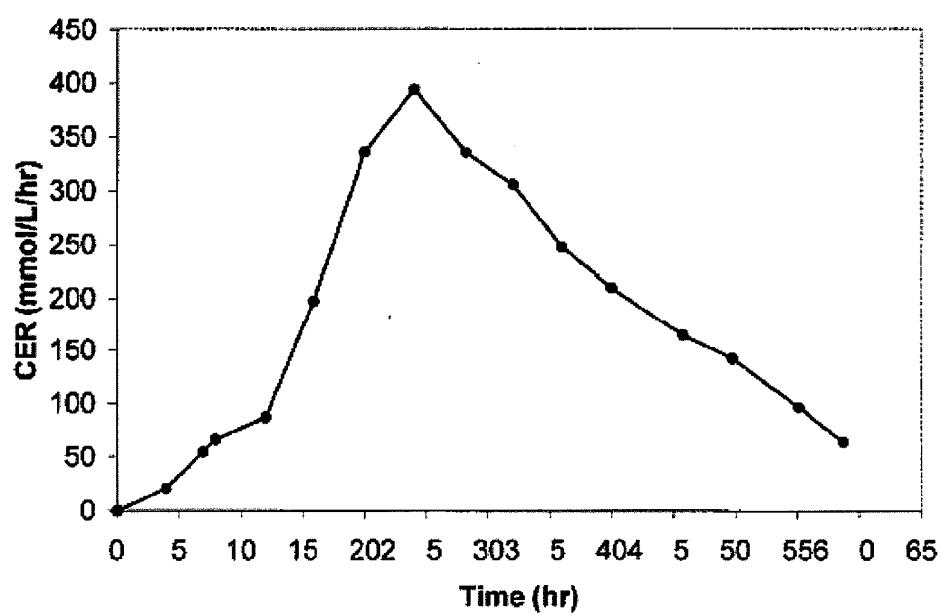
Figure 136F

Figure 137A

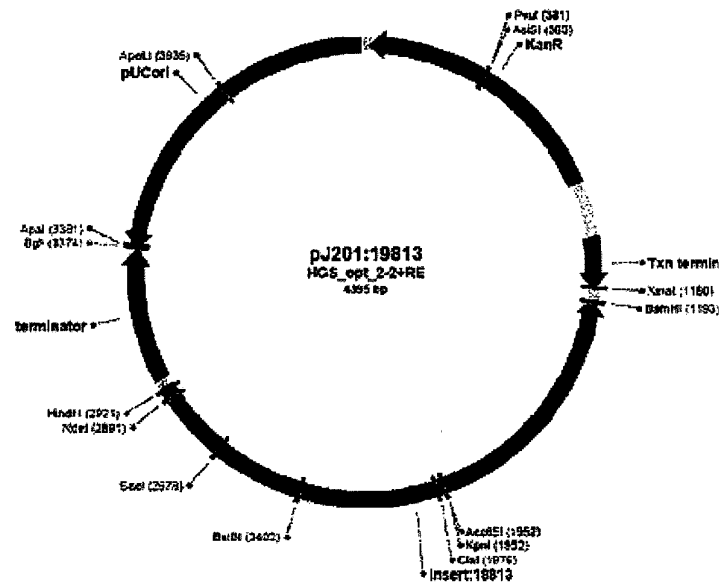


Figure 137B

5'-

tagaaaaactcatcagcatcaaatgaaactgcaatttattcatatcaggattatcaataccatattttgaaaaagccgtttctgtaatgaagga
gaaaaactcaccgagggcagttccatagatggcaagatcctggtatcggctcgaftccgactcgtccaacatcaataaacctattatttcc
cctcgtcaaaaaataagggtatcaagtgagaaatcacatgagtgacgactgaatccggtgagaatggcaaaagtattatgcatttcttccagac
ttgttcaacaggccagccattacgctcgtcatcaaaatcactcgcataaccaaacgggtattcattcgtgattgcgcctgagcgaggcgaaat
acgcatcgtcgtttaaaggacaattacaaacaggaaatcagtgcaaccggcgcagggaacactgccagcgcatcaacaattttcacctg
aatcaggatatttcttaataacctggaacgctgttttccggggatcgcagtggtgagtaaccatgcatacagggagtagggataaaatgctt
gatggtcggaagtgccataaattccgtcagccagtttagtctgaccatcicatctgtaacatcattggcaacgctacctttgccatgtttcagaa
acaactctggcgcatcgggcttccatacaagcgalagattgtcgacactgattgcccgaattatcgcgagcccatttataccatataaate
agcatccatgttgaatttaacgcgcctcgacgtttccgttgaatatggctcatatttcttcttttcaattattgaagcatttaccagggtat
tgtctcatgagcggatacatatttgaatgtatttagaaaaataaacaatataggggcagtggttacaaccaattaaccaattcgaacattatcgcg
agccatttatacctgaatatggctcataaacacccctgtttgcttggcggcagtagcgcgggtgtccacctgaccccatgccgaactcaga
agtgaaccccgtagcgcgcgatggttagtgggactcccatcgagagtagggaaactgccagcgcataaaaaacgaaaggctcag
tcgaaagactgggcttccgcccgggctaatagggggtgtcgccttcgatgacgggtacgggatccacacgtacatcagctgttgat
ggggaaacgggtcagtagcagcagcttgatcggttctcgggtgcgtaacccggcgccagcccgctcccatattgtaggtgcagtg
gttcacgcggggccatgttcacggcgcacatcgaacgccttcggcagcaggggtgtgtcgcacacgcgctcgcgggttatttctccact
cggcgtcgcacagcttgcgcagcttctcggggcctgttctcgcctcgttccgttctcgtcatgtagctgtatgtctgttggtgttctc
ccgcttcgagttccgcccggaggtcgcagatcgttcacagccgaaagatcacgcaggacgagcgcaccagccgttggaagtcgg
tcaggggagcggagggtgtgttcgagatacttctgtctgttcgagaccgagaagtagctcggcgccagcagcgcgaccccgctgga
ggacacgctggcggttctccaggtactgtctgaaggcggggatgatctgttattgtctcacttggcttctgcagggaaggccttgcacagtctg
cgccagcttttggcagatagctcaggtattgttgcccttctcctcaggatggagtaggacgtgtcgttcacgggtgtgtacagggccaggga
agcacagcttcataatagtcgggcagcgtgttgatggcgttcacgtccagcgttccaccgctcgttggaagagctgcagctcgtccagggtta
ccgtacacgtcatagacgtcatcgaatggtgaccagaccgaacatcttggtagcggccttgcggcattcgcggaactgcgggtcggcg
ccatgccagcggccagaagtacattccatcaggcgggtcccgacgaaatccagcttgcgtggcaggcccatctcgggtccaccaccgg
ctcaggctcgtcagctcttcttgggtcagggcttggaacctgttgaatcaggttggccagttccagcagcagctgtgtgatcgggtccttgg
gttctacttgcagaaaccaccgcgcctccaggcgggtcagggcgttgatgatacggcagctccagcgcgtgggacacctgtcggcca
ccttcgttgcacccctccttgcaggtgttcttcagatgggtgatgtgaaggtagcggcctcctccagcagatttccgttcgaaaccgaga
tagctggcctcgtacagggtcagcagggcctgcacgtcaccttccagttcccgagaaagcccttcttgccttgaagcgtcgaacac
gtcctggtcactcaaaagccatgctgcgcagcagggcggaagctcagggcggtcgcgtgcagatcgtttgttcttattctcgtccag
caggacgatgttccagcgccttgatgatactttcacaactgttaggtcagggccagggcgctgcacgtcgtcgtatgagctccagcaggt
caggggctgggtgtccaccgggtgatcatgcaacgcacctcctcctcagcttgggtgcttcttctcagcttccaccttcaggtcgtttt
ccaggctctgcaggaactcgaagtccacaggttgggtcgtgttgtagtgcggaccgacggctattatgctcgggtgatcgggtgaactggtc
ctggtggcgacatatgtatctccttcttaagttaaacaagcttaagatgttcagcgacaaggcgacacaaaatttcttaaatgcataat
aaatactgataacatcttattgttattattttgtattatcgttgacatgtataattttgatatacaaaactgatttcccttatttatttcgagattta
ttttcttaattctttaaacaactagaaatattgtatatacaaaaatcataaataatagatgaatagttaaattataggtgttcatcaatcgaaaaag
caacgtatcttatttaaagtgcgttgccttttctcatattataaggttaaataattctcatatacaagcaaaagtacaggcgcccttaaatattctga
caaatgctcttccctaaactccccataaaaaaacccgcgaagcgggtttttacgttatttgcggattaacgattactcgttatcagaaccg
cccaggggggcccgagcttaagactggcgtcgttttacaacacagaagagttttagaaacgcaaaaaggccatccgtcaggggcttct
gcttagttgatgccttgacgttccctactcgccttccgcttccctcgtcactgactcgtcgcgtcgggtcgttcgggtcggcgagcggtat
cagctcactcaaaaggcggttaacgttatccacagaatcaggggataacgcaggaagaacatgtgagcaaaaggccagcaaaaggc
caggaaaccgtaaaaaggccggtgtcgtggcgttttccataggtcgcggccctcgtacgagcatcaaaaaatcgcgtcgaagtacagag
gtggcgaaaccgacaggtatataagataccaggcgtttccctcggaaagctccctcgtcgcgtcctcgttccgaccttgcgcttaccg
gatacctgtccgcttctccttccgggaagcgtggcgcttctcatagctcacgctgtaggatctcagttcgggtgtaggtcgttcgtcctcaag
ctgggctgtgtgcacgaacccccgttcagcccgaccgctgcgcttaccggtaactatcgtttagtccaacccggttaagacacgactt

Figure 137C

atgccactggcagcagccactggtaacaggattagcagagcgaggatgtaggcggtgctacagagttctgaagtgggtgggctaactac
ggctacactagaagaacagtatttggtatctgcgctcgaagccagttaccttcggaaaaagagttggtagctcttgatccggcaaaca
accaccgctggtagcgggtggtttttgttgcaagcagcagattacgcgcagaaaaaaggatctcaagaagatccttgatctttctacgg
ggctgacgctcagtggaacgacgcgcgtaactcacgttaagggaatttgggtcatgagcttgccggtcccgtaagtcagcgtaatgct
ctgctt

(SEQ ID NO:137)

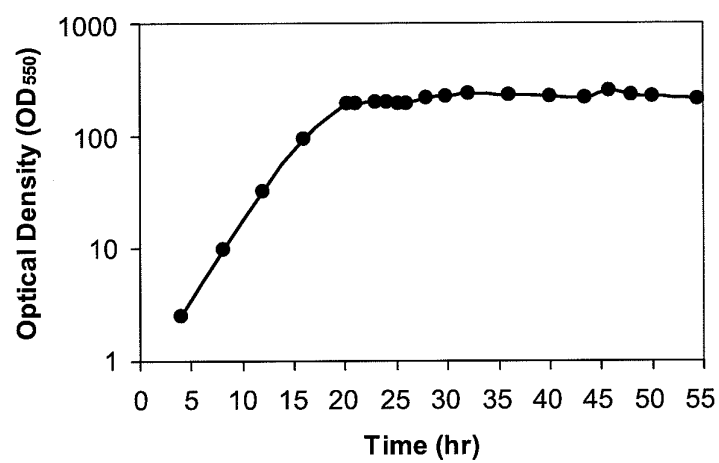
Figure 138

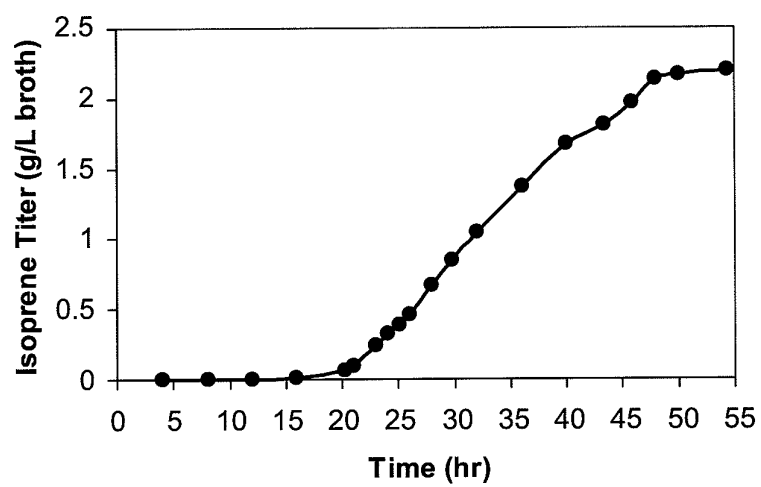
Figure 139

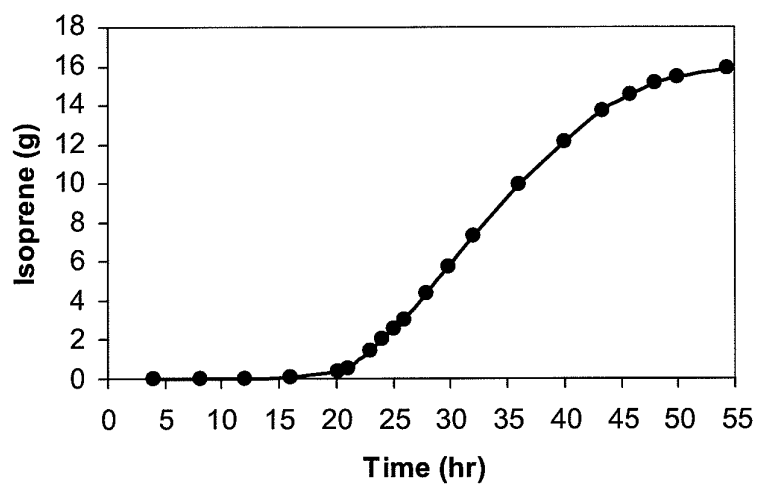
Figure 140

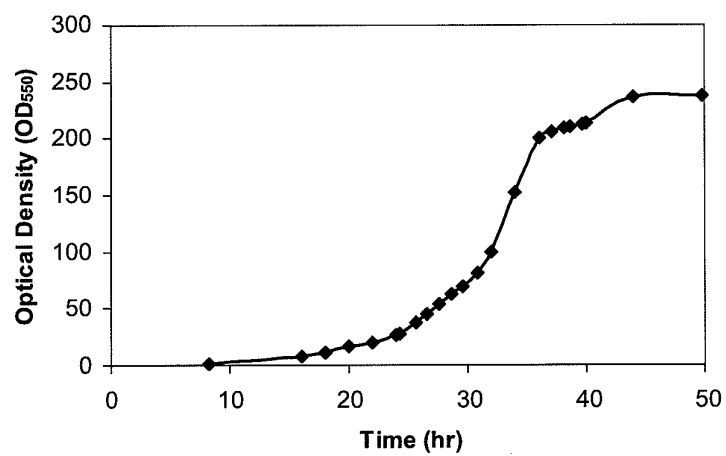
Figure 141

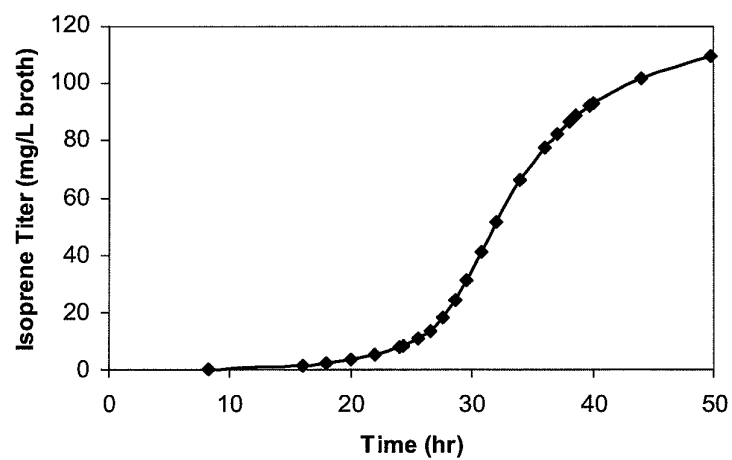
Figure 142

Figure 143