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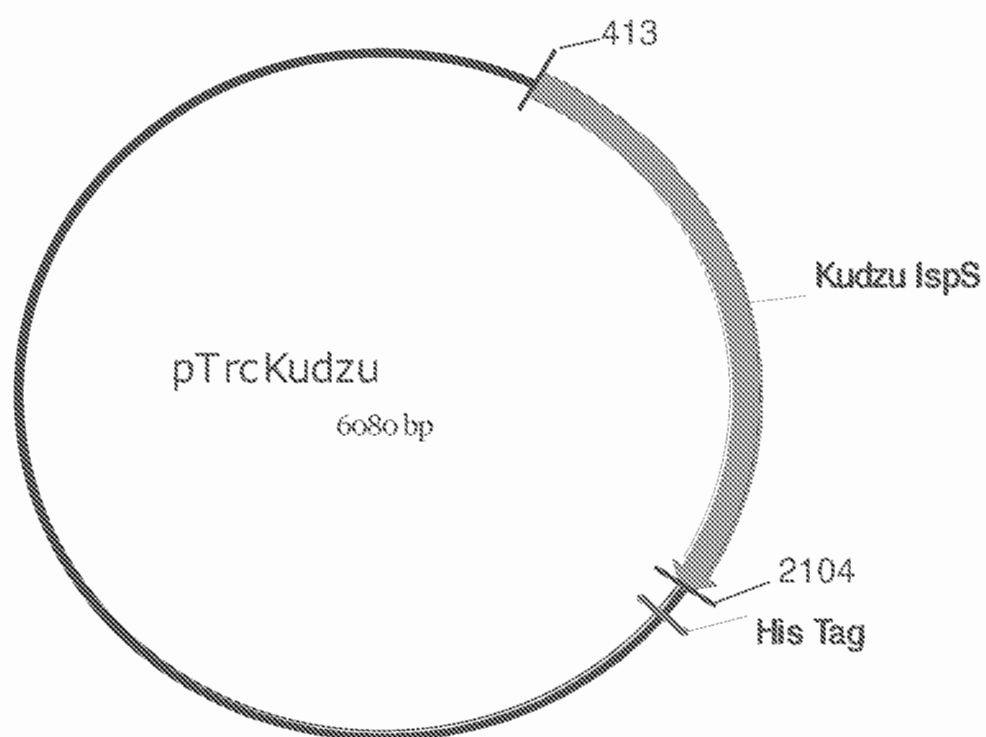


Figure 3A

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Figure 3B

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Figure 3C

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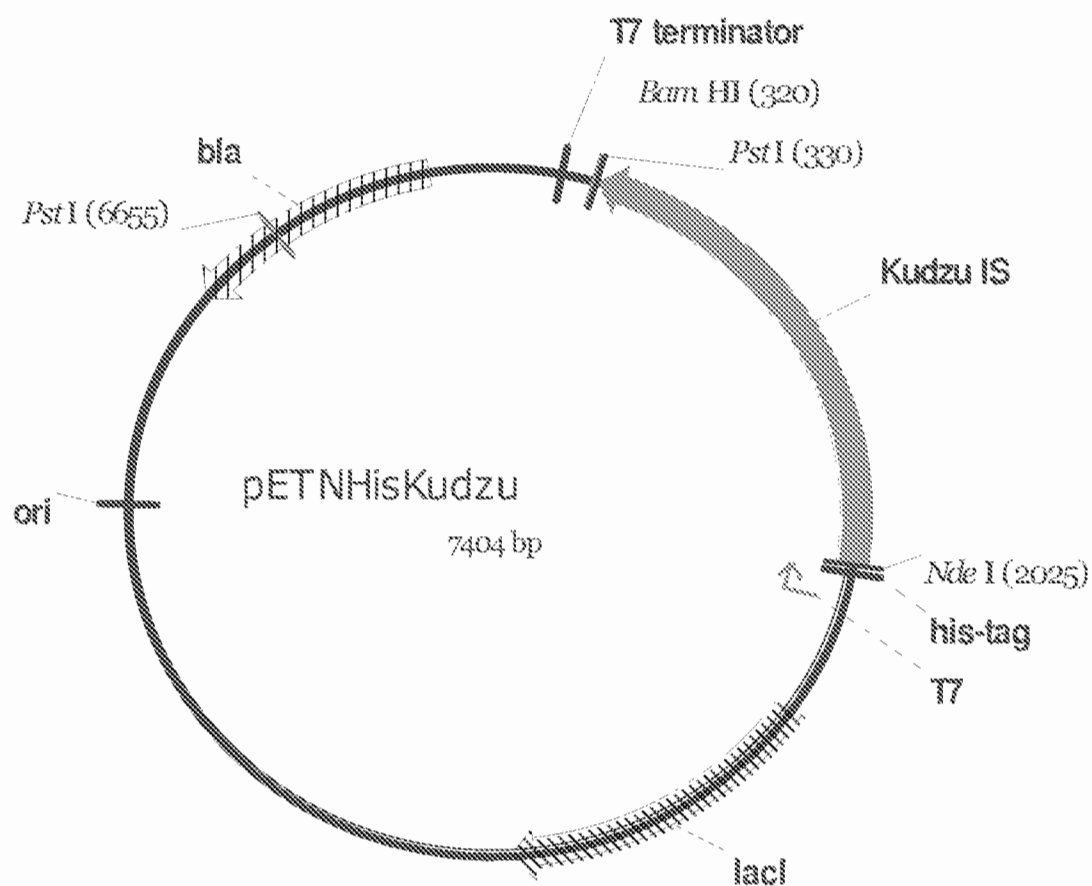


Figure 5A

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Figure 5C

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Figure 6

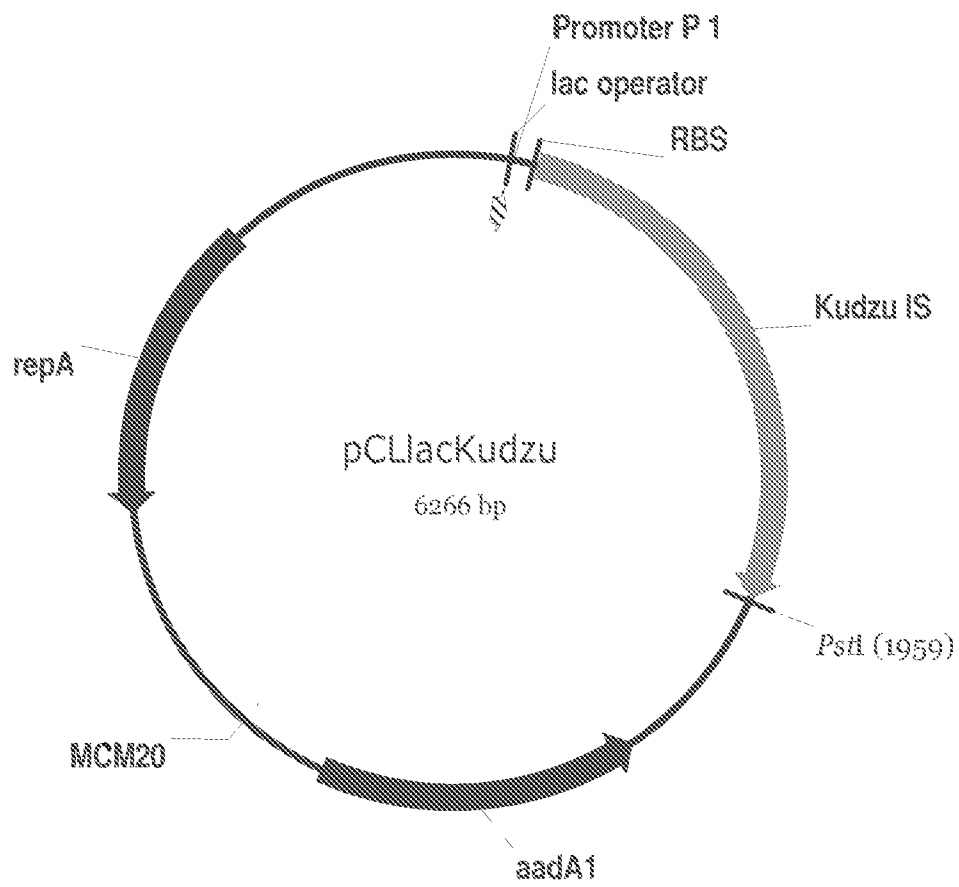


Figure 7A

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Figure 7B

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Figure 7C

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Figure 8A

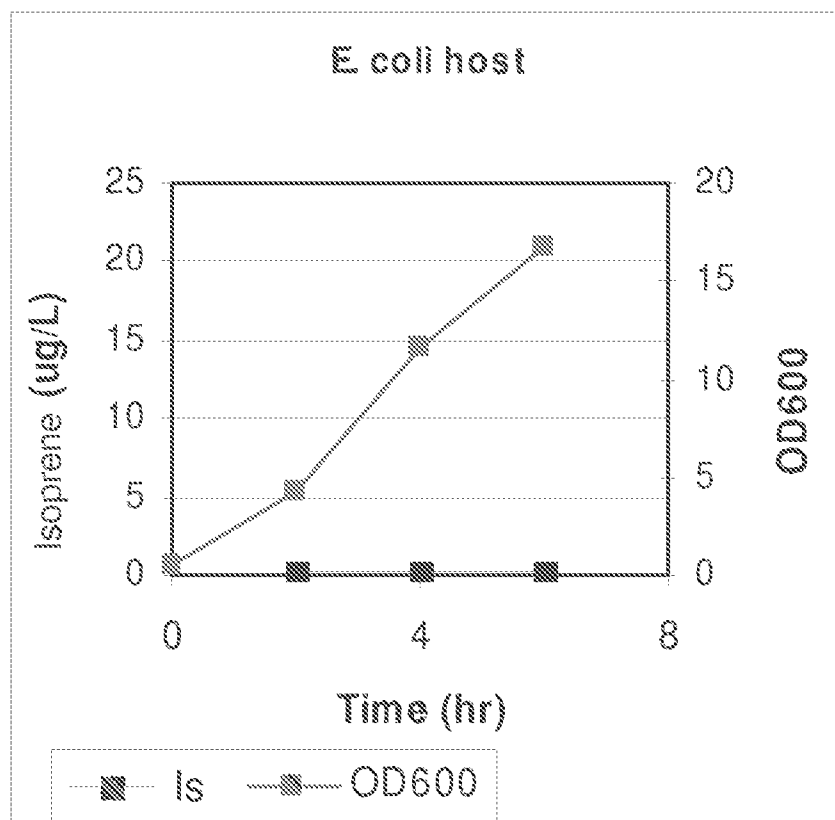


Figure 8B

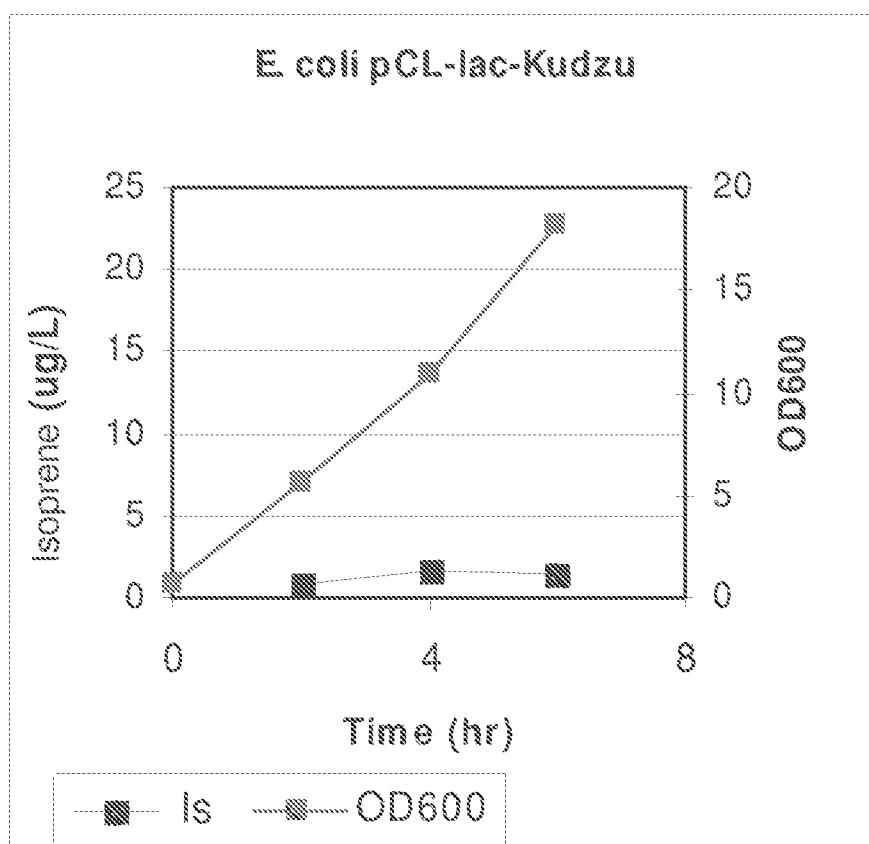


Figure 8C

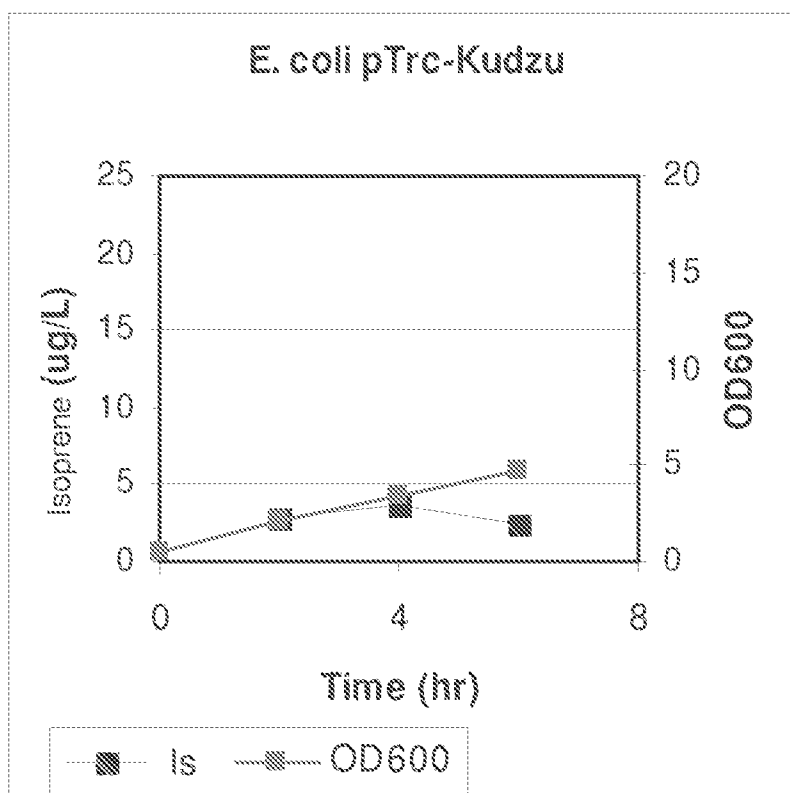


Figure 8D

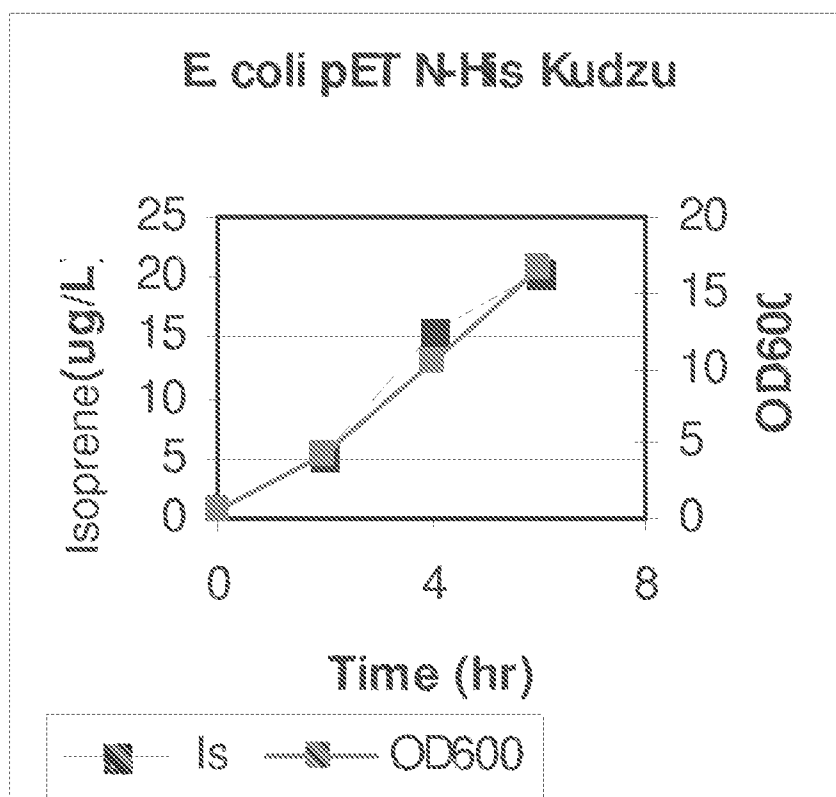
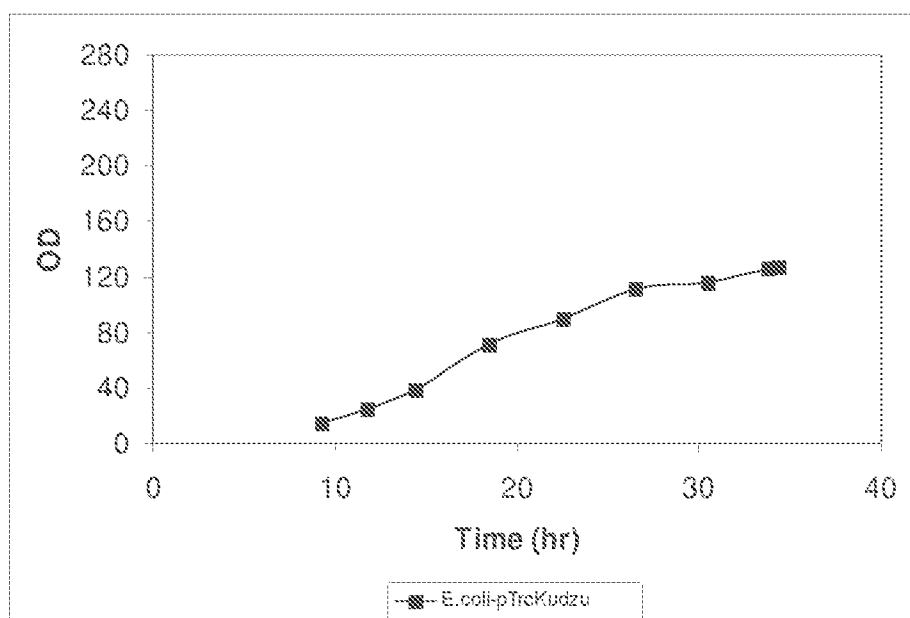


Figure 9

A.



B.

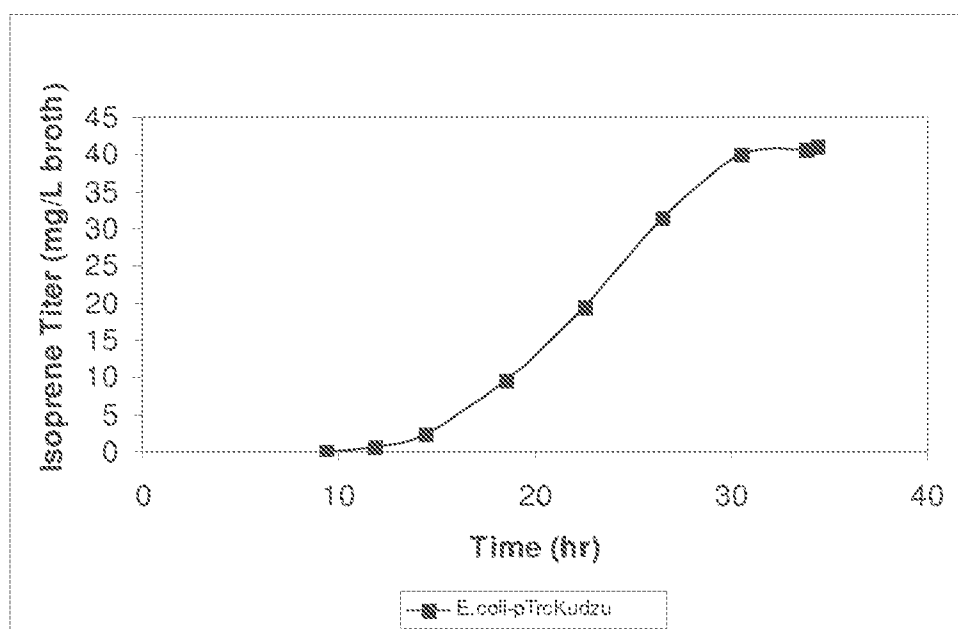


Figure 10A

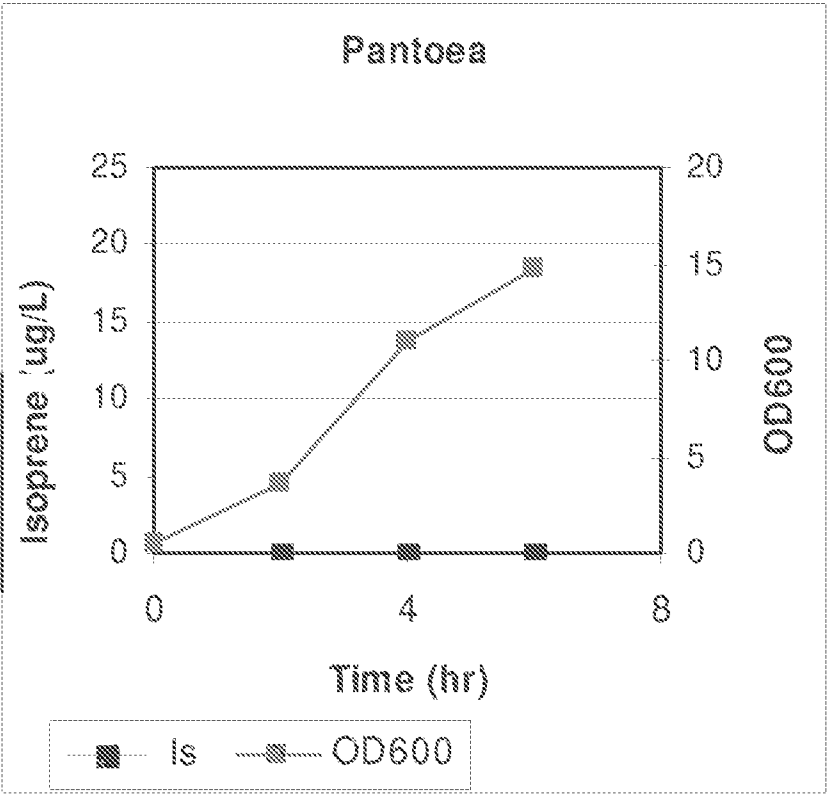


Figure 10B

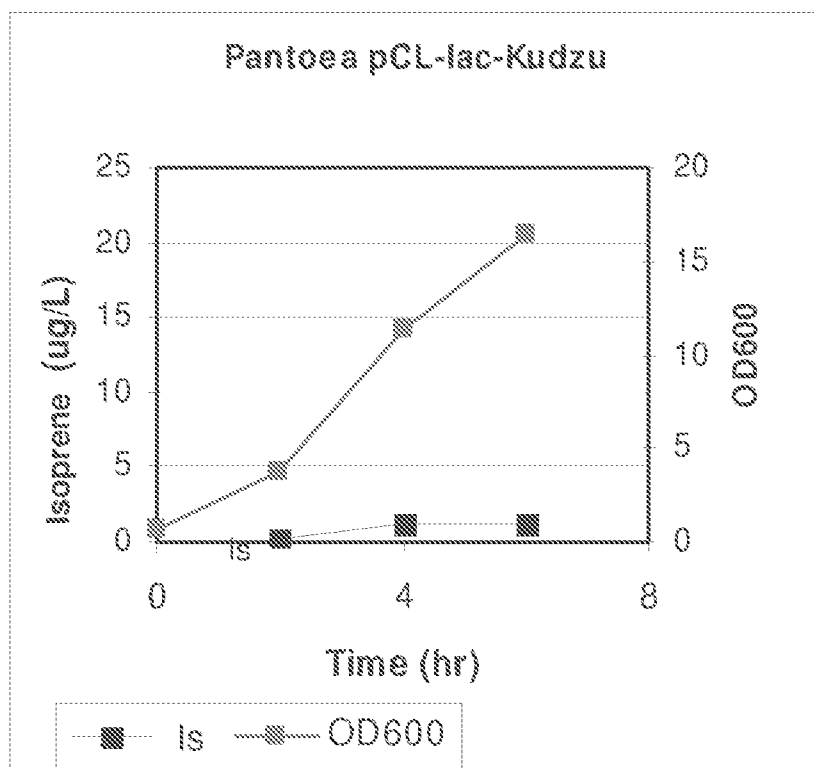


Figure 10C

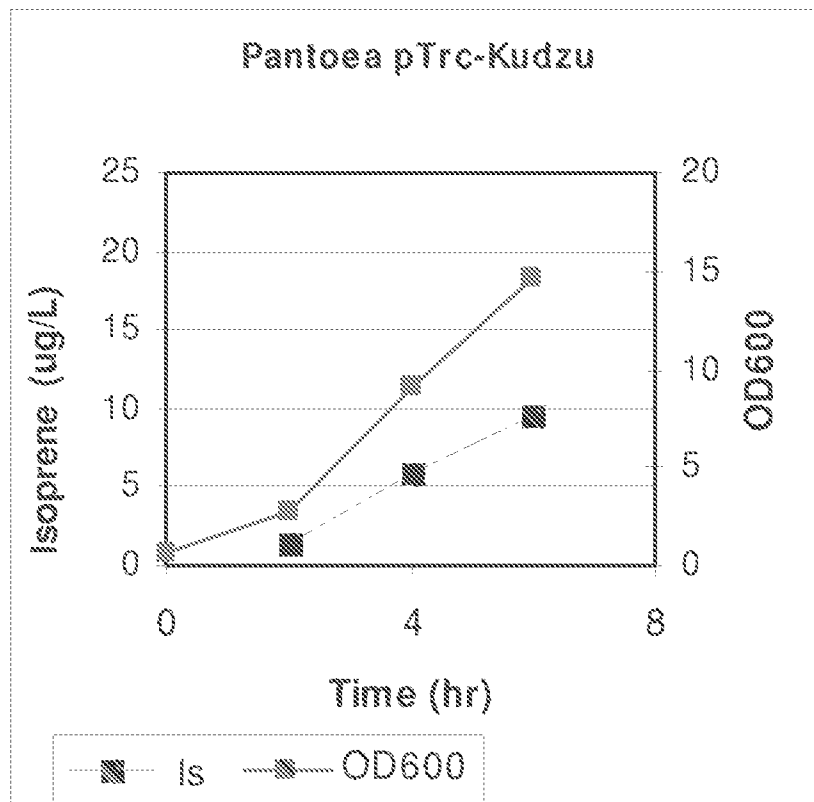


Figure 11

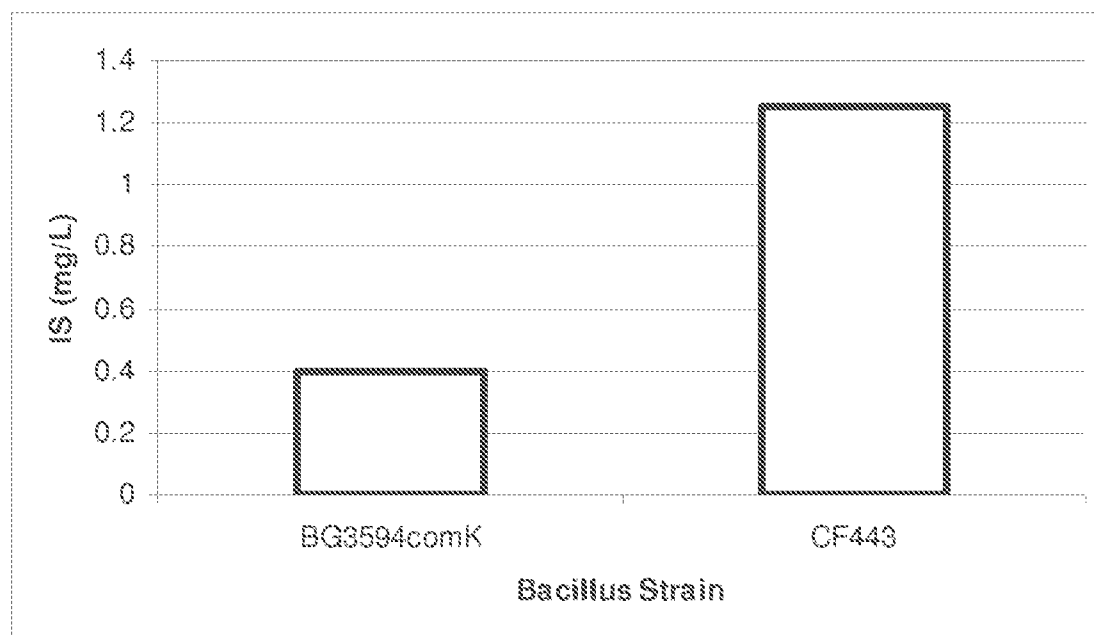


Figure 12A

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Figure 12B

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Figure 12C

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gatttttattaattttttttataattgcatcattcggcgaaaatccttgagccatatctgtcaaaact
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gttggcttttgtttaataacttcagcaacaaccttttgtgactgaatgccatgtttcattgctc
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gcctgtttcacgatttttgtttataactctaataatttcagcacaatcttttactctttcagocctt
ttaaattcaagaatatgcagaagttcaaaagtaataaacatttagcgattttcttttctctocatg
gtctcactttttccactttttgtcttgtccactaaaacccttgatttttcatctgaataaatgct
actattaggacacataataattaaaagaanaaccocatctatttagttatttgttttagtcacttat
aactttaacagatgggggtttttctgtgcaaccaatttttaaggggttttcaatactttaaaacaca
tacataccaacaacttcaacgcacctttcagcaactaaaataaaaaatgaogttattttctatatgt
atcaagataaagaaagaacaagttcaaaaacoatcaaaaaaagacaccttttcaggtgcttttttt
attttataaaactcattccctgatctcgacttcgttcttttttttaoctctcggttatgagttagt
tcaaattcgttcttttttaggttctaaatcgtgtttttcttggaattgtgctgttttatccttta
ccttgtctacaaaacccttaaaaaacgttttttaaggcttttaagcogtctgtacgttccttaag

(SEQ ID NO:57)

Figure 13

ATGTGTGCAACCTCCTCCCAGTTTACTCAGATTACCGAGCATAATTCTCGACGATCTGCTAACT
ACCAGCCGAACCTTTTGGAACCTTTGAGTTTCTCCAGTCTCTCGAAAATGACCTGAAGGTGSAAAA
GCTCGAGGAGAAGGCGACCAAACTCGAGGAGGAGGTGCGATGTATGATCAACAGAGTTGACACC
CAACCCCTGTCTTTGCTGGAGCTGATCGACGATGTGCAGCGGTTGGGTTTGACTTATAAATTTCG
AGAAGGACATTATCAAGGCACTGGAGAACATTGTGCTCCTCGACGAGAACAAAGAAGAACAAGTC
TGATCTTCAAGCTACCGCTCTCTCTTTCCGACTTCTTCGACAAACACGGCTTCGAGGTGTCCGAG
GACGTCCTTCGAGAGATTTAAGGACAAGGAGGGAGGATTTAGCGGCGAGCTGAAGGGAGACGTTT
AGGGTCTTCTCTCTTTGTACGAGGCGTCTACCTGGGATTTCGAGGGAGAGAACCTCCTGGAGGA
AGCTCGTACATTTTCCATCACTCACTTAAGAATAACCTTAAGGAGGGAATTAACACCAAGGTG
GCCGAGCAGGTTTCTCAGGCCCTGGAGCTCCCCCTACCACCAACGGCTCCATAGACTGGAGGCTC
GTTGGTTCTCGACAAATATGAGCCAAAGGAGCCTCATCATCAGTTGCTGTTGGAGTTGGCCAA
GCTGGACTTCAATATGGTTTCAGACGCTGCACCAAAAGGAGTTGCAGGACCTGTCTCGATGGTGG
ACCGAGATGGGATTGGCCTCGAAGCTGGATTTTGTCCGTGACCGACTTATGGAGGTCTATTTTT
GGGCCCTTGGAATGGCGCCTGACCCCCAGTTTCGGAGAGTGCCGGAAGGCGGTGACGAAGATGTT
CGGTCTTGTGACTATCATCGACGACGTCTACGATGTCTACGGCACACTCGACGAGTTGCAGCTG
TTCACTGACGCCGTGAGCGATGGGATGTGAACGCCATTAATACTCTCCCTGACTATATGAAGC
TGTGCTTCTGGCTCTGTACAACACTGTCAACGATACCTTCGTACTCTATCCTCAAGGAGAAGGG
ACACAACAATCTCTCTTACTTGACCAAATCCTGGCGAGAACTGTGCAAGGCTTTTTCTGCAGGAG
GCTAAATGGTCCAATAACAAGATCATTCCTGCTTTTTTCTAAATACCTGGAAAATGCCTCGGTGT
CGAGCTCTGGCGTCCGCCCTTCTGGCCCCCTTCTTACTTCTCCGTCTGCCAGCAGCAGGAGGATAT
TTCCGATCATGCTCTTAGATCGCTGACCGATTTTCAAGGCCCTGTGCGATCTTCTGCGTGATT
TTTCGGTTGTGTAATGACCTTGGCGACCTCTGCTGCTGAGCTGGAACGAGGCGAGACTACAAATT
CCATTATTTCTTACATGCACGAAAACGATGGAACATCTGAAGAACAGGCTAGAGAGGAACTGCG
AAAGTTGATCGACGCCGAGTGGAAGAAGATGAACAGAGAGCGGGTGTCCGACTCTACCCCTGCTT
CCCAAGGCCCTTCATGGAGATCGCCGTGAACATGGCTCGAGTTTCCCATTTGACTTACCAGTACG
GTGACGGCCTGGGTGCTCCGGACTACGCTACAGAGAAACCGAATCAAGCTGCTGCTCATCGACCC
CTTCCCTATCAACCAATTGATGTACGIGTAA

(SEQ ID NO:8)

Figure 14

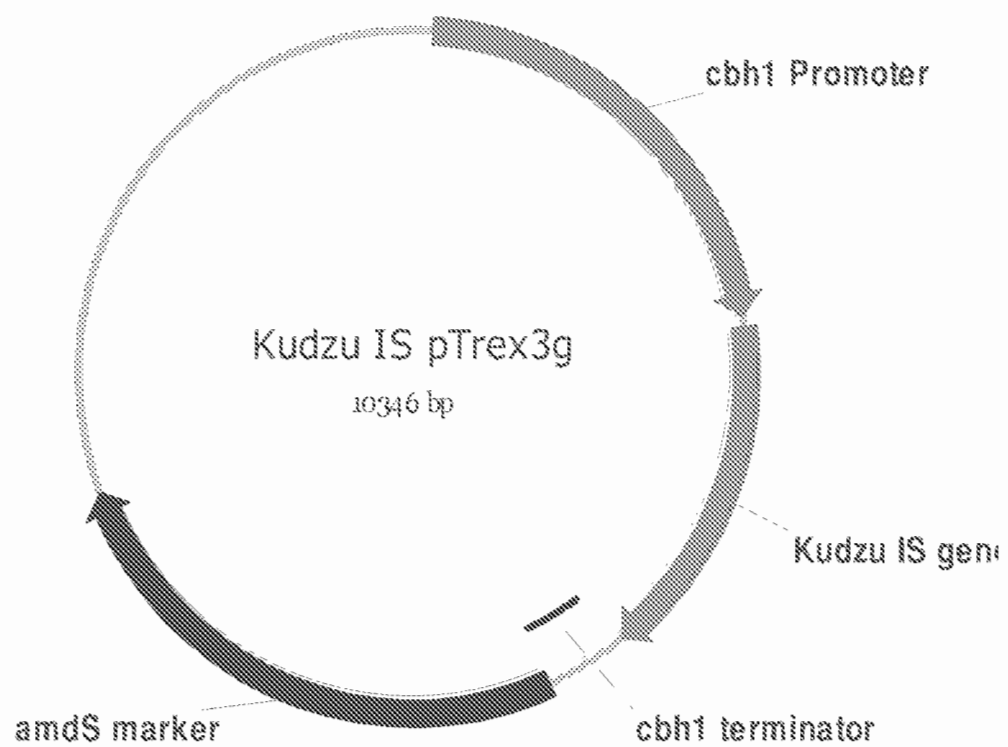


Figure 15A

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1  TGGACCTGGT  ACAAGAACH  CATTGCGACA  ACGGAAAGAA  GAATAAAGAC  AAAGAAAGC
61  AAAAGAAAGCA  ATGAAAACA  AAACAAAACA  ATTTTCATTC  CTCTCTTAT  CATTCTTTT
171  CTTTTCTTTT  CTCTCATTC  ACGCATCTCA  TCGTATCGCT  ATTCTCTT  TTTTTCTCT
181  TCTCTATAT  CATTCTTT  CTCTCTATCT  CTGCTCTCT  TCTCTCTCA  ATTCTCTAT
241  TCGCATCTCC  AACCATCTCT  TCGCATCTCA  TCGCATCTCT  TCGCATCTCT  TCGCATCTCT
301  TCGCTCTCT  CTGCTATCA  CTGCTATCT  GCGCTCTCT  TCGCTCTCT  CTCTCTCT
361  ATTATCTAT  TCAATAACT  TTTCTCTCT  CTATCTCTCT  ACGCTCTCT  GCGCTCTCT
421  TCGCTCTCT  ATATCTCT  TCGCATCTCA  TCGCATCTCT  TCGCATCTCT  TCGCATCTCT
481  TCGCTCTCT  TCGCTCTCT  ATCTCTCT  CTCTCTCT  CTCTCTCT  TCGCTCTCT
541  GCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  TCGCTCTCT  CTCTCTCT
601  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
661  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
721  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
781  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
841  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
901  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
961  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1021  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1081  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1141  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1201  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1261  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1321  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1381  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1441  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1501  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1561  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1621  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1681  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1741  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1801  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1861  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1921  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
1981  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
2041  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
2101  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
2161  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
2221  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
2281  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
2341  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
2401  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
2461  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
2521  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
2581  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
2641  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
2701  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
2761  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
2821  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
2881  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
2941  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
3001  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
3061  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
3121  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
3181  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
3241  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
3301  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
3361  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT
3421  TCGCTCTCT  TCGCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT  CTCTCTCT

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Figure 15B

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3481 TTACATTTCCG ATACAAAACG CCGTAGCTTAA AGCTAAAGAA AAGTTAAATAT CATTTTAAAT
3541 AAATACGCTA TTACAAATAA GACATTTGAA TCATTTATAT CTTTGAATAT GAAATACAA
3601 TTTCAGCGAA TTTTAAACAA ACCTCTGTCA CTTCTTTTAA GATATCTTCT TCTATGGGCT
3661 GTTTCATTTG TTTATCGAAT AATTTACCGTA CTTCTAATTT CTTTCTTCTGA TATACCTGCTA
3721 GTCTAATATC TACTAATAAT CTTTCTGGTG AAAGGCTTCT CATTTCATG ACATCGAATC
3781 ATTCTCTATT TTTTAAATAA GAAGTTTCTC ATAAATTTCT GTAAATCTCG GTTCTATTA
3841 TTGAAAAGAG TAGTTTCTCA TCACTCATGAG GATGCTTTT GTAGAAAGAA ATATGAACTGA
3901 AACCAAAATC AGCCTTGGCA TCGCTTCTGA CAAACCTCTC TTACTGAGAG ACTCGAATTT
3961 TATTTGATGA CTATTAACCT CCACTCTATC AAACCAAAAG GATACAAATG TAACTCAAGT
4021 AGATACCGGA ATTTGATTT TCGATCATAT CTATCATCTA CTGCTTAAAT ATGCAAGCTC
4081 GAGCTTACGA CTTTCTCTCA GAGGCTATTT ATCATCTGAT GATCATCTA CTGCTAGAGA
4141 TACTCTTATT CCACTCTGTA TTGCTTTCAA GCAGGCTATC GATACCTTTG CCGCTCTTAA
4201 AAGATTTCTA CATCTCTATT CTTCTCTTGA CCAACCTCTT TCTAGAGAGG TACTCTCTTT
4261 GTGGGAGAGG CTTCTATCTG TTATCTGTTT GCGATTAAGG CTTGAAAAGG TTGGGGAATTT
4321 GTCTCTGTAAT ATGATCTCTC ACTTACTATA TTCTTTTCTG CTAGCAGCTC GAAATTACTTT
4381 GCACTTTTAC TCTCTATATC GTAGTATTA GATCATCTCT CTTGAAAAGG CTTTAAATTT
4441 TCTGGCTGTT GCTATCTGCG CCGCTACTCT TCTTACTGGA AGTTCTGAAG TCTAAGTCTC
4501 CAAGGCTAGT TTTTAAAGAT GAATCTGATT ATCTCAAGAA AACCAACCTA ATTTTCTATC
4561 CAATTTCTCT AAATTTTCTA CTTCTCTGTA ATCAATAGAA CTTTACTCTC TTTTAAATTA
4621 CGTAAATTAG AAGCTTATCT TCTGTAAGGA ATATAGTATG TAGCTCTCTA ATATGAAATG
4681 AATCTTCTAG TTATAGATA GAGATCTCTT CTTCTCTAAT CTTCTCTCTA TTACTCTATC
4741 CACTTTATTA TACGATCTTA AGTATAAAT CTTCTCTTAT CTTTAAATTA ATGATCTCTA
4801 AAGCTCTGAT TCTATATGCG TACTATCTCA TTAATATCTT TTAAGCTCTA CCGCTCTCTA
4861 CCAATCTCTT AAAATCTCTT TACTCTCTTT TACTCTCTCT AGATTTCTCT GGACTCTCTG
4921 CATCTCTCTA CCACTCTCTA ACACCTCTAG ACAGCTCTAT AAATTTCTCT TCTTTCTCTC
4981 TCTAGGCTGT CGTAAATTAG CTTCTCTTAA GGTCTGGAAT ATGAAAAGGA GACCTCTCTG
5041 TTTCTTTTCT TCTCTCTAAT AAGCTCTTAA AAATTTTCTT CACCTTTCTT TTTCTTGAAT
5101 TTTTTTCTTT TACTTTTCTT CTTCTCTCTT GACCTCTCTT CATATTTCTT TTAATTAAGT
5161 GTCTCTCTTT TCTCAAGCTT CACTCTCTTT TTTCTCTCTT TATTCTCTCT TTTTCTCTT
5221 CTTCTCTCTT ACAAACCTCT CATAGCTCTT TATCTAAGG GCTCTCTCTT CATTTCTCTT
5281 TCGCTCTCTT ATATCTCTCT ACTATATCTT GATCTCTCTT GCACTCTCTT CATCTCTCTT
5341 TTGCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
5401 ACCCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
5461 GATCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
5521 GCTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
5581 ATCTCTCTCT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
5641 CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
5701 GATCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
5761 CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
5821 CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
5881 TATCTCTCTT TATCTCTCTT TATCTCTCTT TATCTCTCTT TATCTCTCTT TATCTCTCTT
5941 CAGCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6001 CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6061 CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6121 TCTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6181 AATCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6241 CAAGGCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6301 AATCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6361 CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6421 GATCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6481 AATCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6541 AATCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6601 CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6661 AATCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6721 TCTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6781 TCTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6841 TCTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6901 GATCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT
6961 AATCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT CTTCTCTCTT

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Figure 15C

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7071 ATCTCTTCCCT GATCCATCGT GATGCCCTGGT TCTCGAATAT CATGGTGGAA AATGGCCCTT
7081 TTCTTGGAAT CAAACGACTGT GGCCTGGCTGG CTGTGGCGGA CCGCTATCAG GACATAGCGT
7141 TGGATACCTG TGATATTCCT GAAACAGCTTG CTGGTGAATG GCTCACCCTT TTCTCTGTGT
7201 TTTACGCTAT CGCCGCTCCC GATTGCCAGC GATTCGCCCTT CTATCGCCTT CTTGATGACT
7261 TCTCTGAAT TGAAAGAGGT ACAAATTJA CTAAATAA CTTTAGATTG AATTAAACU
7321 TCAITTTTAA TTTAAAAGGA ICTAGCTGAA GATCCTTTT GATAATCTCA TGACCAAAAI
7381 CCTTTAACCT GAGTTTTCCT TCTACIGAGC GTCAGATCCC GTAGAAAAGA TCAAAACATC
7441 TTCTTGACAT CTTTTTTTC TGCCTGJAAT CTGCTGCTTG CAAACAAHAA AACCACTGCT
7501 ACCAGCCCTG GTTPTTTTC CGGATCAAGA CTIATCAACT CTITTTCCCA AGGTAACIOE
7561 CTTCACGAGA GCGCAGATAC CAAATACCTT CTTTCTACTG TAGCCCTAGT TAGCCCTACCA
7621 CTTCAAGAAU TCTGTAGCTT CGCTACATA CCTCGCTCIG CTAACTCTGT TACCTAGTGG
7681 TCTCTCTAGT CCTGATAAGT CCGTGTCTTAC CCGCTTGGAC TCAAGACGAT AGTTACCGGA
7741 TAACCTGGAG CCGTCTGGCT GAACTGGGGT TCTGTCCACA CAGCTCAGCT TCCAGCCAACT
7801 GACTTACACC GACTGAGAT ACTACAGTG TTAGTAATGA GAAAGCTGCA CCGTTCTCGA
7861 AGCTAGAAAG GCGCACACTT ATCCGCTAAG CCGCAGGCTC GAAACAGGAT ACGCACGAT
7921 GCAGCTTCCA GCGGGAACCT CCTGGTATCT TATAGTCTT CTCTGGTTTC CCGACTCTG
7981 ACTTGAAGCT CCATTTTTGT GATGCTCTGC AGCGGGGGGG AGCTTATGG AAAACGCTAG
8041 CAACCTGGCT TTTTJATGCT ICTTGGCTTT TCTCTCTCTT TTTCTCTACA TGTTCTTTCT
8101 TGGCTTATCT CTTGATCTG TCGATAAGCT TATACCTGCT TTTGAGTGAG CTGATACCTG
8161 TGGCTGCACT CCAACGACCT AGCGCAGGCA G

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(SEQ ID NO:11)

Figure 16

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1  GAAATTCAAA CAAATATCTG GCAACCTCCT CCGAGTTTTC TCAATATACC GAGCATATAT
61  CTGGATGATC TGTAACTAT CAGCCGAACC TTGGGAACCT TCAATTTCTC CACTCTCTTC
171  AAAATGACCT GAAGGTGGAA AAGCTCGAGC AGAAGCTGAC CAACTCGAG GACGAGCTGC
181  GATGTATGAT CAACAGACTT CACATCCAAC CTTCTCTCTT GTTCAGCTC ATCGATGATC
241  TCCAGCCCTT GCGTTTGACT TATAAATTCG AGAAGGACAT TATCAAGCCA CTGGAGAAACA
301  TTGIGTCTCT CCAAGAGAAAT AAGAAGAACAA AGTCAGATCT TCATGCTATC GCTCTCTT
361  TCCGATTCTT TCGACAACAT GGTTCGAGC TCTCGCAGGA CTTTTCGAG AGATTAAAGG
421  ACAAGCGAGCG AGGATTTAAT GCTGAGCTGA AGCGACACCT TCAGGGTCTT CTCTCTTGT
481  ACGAGGCTCT CTACCTGGGA TTCGAGGGAG AGAATCTCT GTAGGAAGCT CGTACATTT
541  CCAATGCTCT TCTTAAGAAI AACCTTAAAG AGGAAATTA CACCAAGCTC CTGAGCTAGC
601  TTTCTCATGC CTGCGAGCTC CCTACCAAC AACCTCTCCA TAGACTGGAG CTTCTCTCT
661  TCTCGACAA ATATGAGCTA AAGGAGCTCT ATTAACAGT GCTGTCTGAG TGGCTAAGC
721  TGGACTTCAA TATGGTTCTG ACCTCTTACC AAAAGGAGTT GCAAGGACTG TCTCTGATCT
781  CGAAGCGACAT GGGATTGGCT TCGAGGCTCG ATTTTCTCTC TGACCGACTT ATCGAGCTCT
841  ATTTTGGGC CTCTGGGATG CGGCTGAGC CTCCTCTCTC AGAGTCTCTC AAGGCGGCTA
901  CGAAGATGTT CCGCTCTCTG ACTATCATCT ATGATGCTCA CATCTCTCTA GCGACACTCT
961  ACGAGTTGCA GGTGTTCACT GACGCGCTCT AGCGATCTCA TGTGAACCTC ATTAATACTT
1021  TCTCTGACTA TATGAGCTCT GCTTCTCTG CTCTGTACAA CACTGTCTAC GATACCTCTG
1081  ACTCTATCCT CAAGGAGAAE GGACACAACA ATCTCTCTCA CTCTACCAAA TCTGCGGCTG
1141  AACTCTGCAA GGTCTTTCTG CAGGAGGCTA AATGCTCTCA TACAGGATCT ATTTCTCTCT
1201  TTTCTAATAA CTCTGGAATA GCTCTGCTCT CAGGCTCTCT CTTCTCTCTT CTGCGCTCTT
1261  CCACTCTCTC CTCTCTCTCT CAGGAGGAGG ATTTCTCTCA TATCTCTCTT AGATCTCTCT
1321  CCAATTTCTA CCGCTCTCTC CGATCTCTCT GCTCTCTCTT TCGCTCTCTT AATGATCTCT
1381  CCACTCTCTC TCTCTGCTCT GAGGAGGCTG AGATCTCTCA TCTCTCTCTT TCTCTCTCT
1441  ATGAAACCA TCGAATCTCT GAAGATCTCT CTAGAGGAGG ACTCTCTCTT TCTCTCTCT
1501  CCGAGTGGAA GAAGATGATC AGAGAGGCTG TCTCTCTCTT TACCTCTCTT CCAAGGCTCT
1561  TCATGAGATC CCGCTGATC ATGGCTCTCT TCTCTCTCTT TACTCTCTCT TACGCTCTCT
1621  GCTCTCTCTT TCTCTCTCT GCTCTCTCTT ACTCTCTCTT CTTCTCTCTT ATCTCTCTCT
1681  TCTCTCTCTT CCAATGATC TCTCTCTCTT ACTCTCTCTT ATCTCTCTCT

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(SEQ ID NO:12)

Figure 17

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1  CAATTCACACA AAAATGTGCT CTCTTTTCAC TGAGAAATGTC TCTTTTACIG AGACTTGATAC
61  TGAAGCAGTGT AGAGAGTGCCA ACACAGAACG CAACTCTCTGG GATTATGACT TTCAGTGTGT
121  TCTTGACACAC GACCAGTCCGA TCGAGGTITA TAGGTATAAG CTCAGAGAAAT TTGAGGTCCA
181  GGTACAGATGA GAGATTAACTA ACCAGAAAGGC CGACTTCCTG ACCCTTCCTG AGCTCAITCA
241  CACAGTTCCA CCACTTGGTCT TTGGTTACCG TTTCGATCC GATATCCGAC GTCGATUGGA
301  TCGAATTTGTT TCTTCCCGAG GTTTCACATG TGTGACTAAG AACTCGCTGC ACCCTACAGC
361  TCTTTCTTCT AGACTGTTCG CCAACCATGG ATTGATGCTT TCCAGGAAAG CTTTTTCCTG
421  TTTCAGGCAI CAGAAAGGAA ACTTTTTCGA GAATTCAGG GAGGACACCA AGGCGATCCT
481  GTCTTGTATG GAGGCTCTGT TCTTGGCTTT TCGAGGCGAG AATATTCCTG ATGAGGTCTG
541  GCTTTTCTCT ATTTTCGACG TGAAGGAGTT GTCCGACCAA AAGATTCGAA AGGAAATTCG
601  CAGCAGGTTT GACTGTGCTT TTGAATTCG TCTGCTATGA CGTATCCAGC GACTGGAGGC
661  CTTGTGGAGG ATCGACGCTT ACAGAAAAAA GGAGGATGCT AATCAGCTTC TGCTCGAAGT
721  CGCTATCTCT GACTATACCA TCATTCAGAG CCGTACCCAG CCGACTTCTG GACAGACCAAC
781  CCGGTGGTGG CGAGCGGTGG GACTGGGCAI GAAGTCCAG TTTGCTAAG ATCGATTGAT
841  TGAATCGTTC TACTGGGCGAG TGGCTGTCTC CTCTGAGCTT CAGTACTCCG ATTGCGGAAA
901  CTCCGTTTGA AGAGTGTCTT CTCTTGTCTC TATCATCCAG CAGTCTTCTG ATGTTTACCG
961  CACTCTGAT GAACTCGAA CTCTCAGGGA CGTGTGTGAG CGATGGGATG TGAATGCTAT
1021  TAAATATCTG CCAGATTATA TCAAGTTGTC TTCTTGGCG CTCTACAACA CAATTAATGA
1081  AATTCCTTAT CACATCTTCA ACCACAAGCG ACAGAACATT CTGCTCTTAC TTACTAAAGC
1141  CCGGCGGAC CTGTGTGAG CTCTTTTCTA GGAATCCAG TGGCTCTTAT AATAATCTAT
1201  TCTTACATTI GATCATTACT TCGCTAACGC TTGGAAGTCT TCCACTGGCT CTCCTCAGTT
1261  GATTTTCTCT TACTTTGACG TGGTTCAGAA CATCAAGAAA CAGGAGATTG AGAATCTTCA
1321  GAAGTATCAI GACATCATCT CCGGCTCTTC GCATATCTTT CGACTGTCTA AIGACTTGGC
1381  CTCCTCAICT OCTGACATTC CCGGAGGAGA AACAGCCAAI TCTGTGTCTG GTTACTTCTG
1441  TACAAAGGCT ATCTCCGAG AGTTGGCTAC CGAGTCTGTC ATGAATCTGA TCCATGAAAC
1501  CCGTAAGAAG ATGAACAAAG AGAAACCGG CGGTTCTCTG TCGGCTAAAT CATTTGTGA
1561  AACCGCGATC AATCTGGCTC GTCACTCTCA TTGTACTTAC CATAAAGGTT ACSCGCTACAC
1621  TTGCGCGGAC GAATTGACCC GTAAAGCTGT GCTTTCGGTG ATTACCGAGC CGATCTCTCT
1681  GTTCGAAAGA TAATAGGATC C

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(SEQ ID NO:13)

Figure 18A1

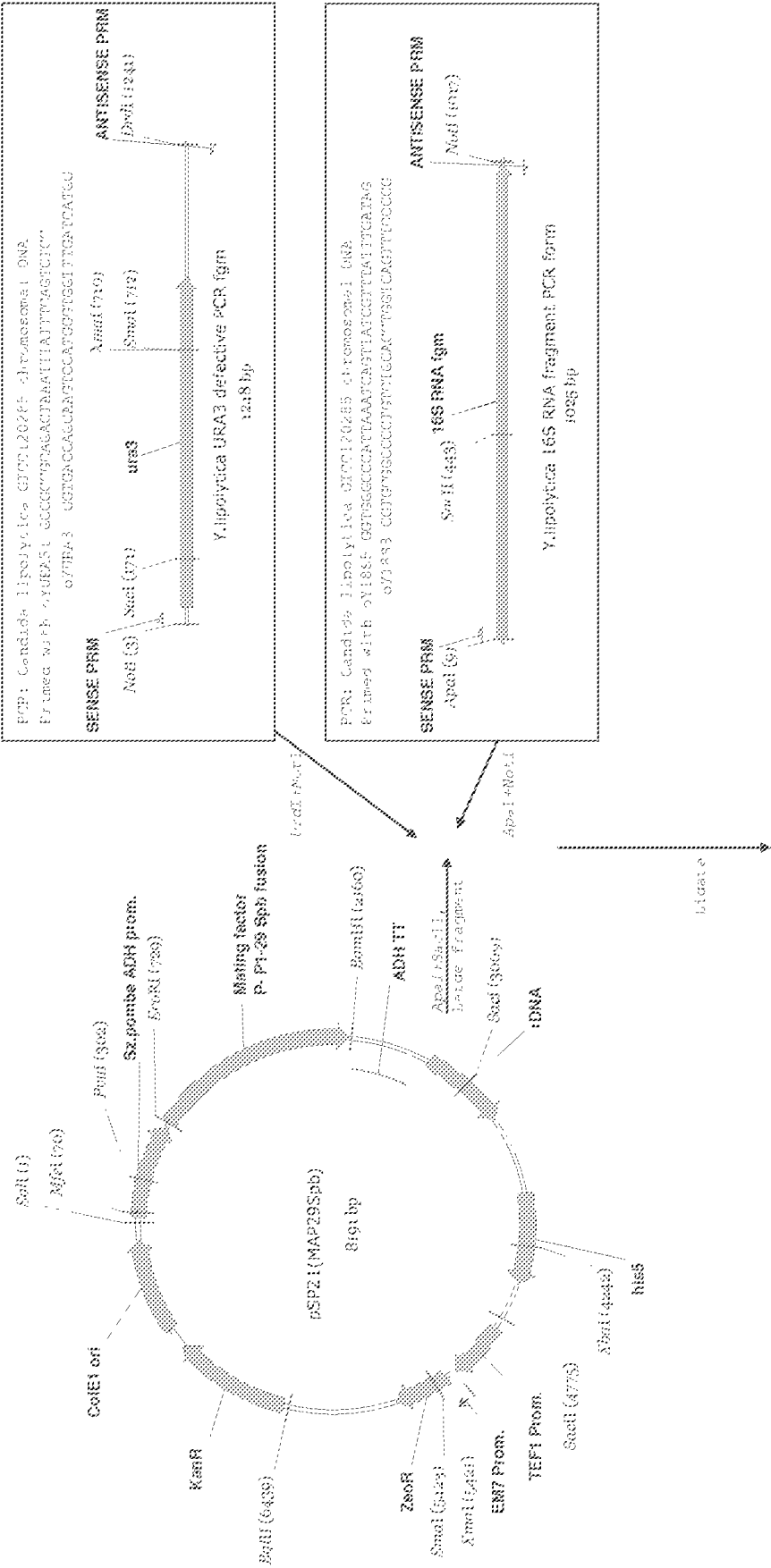


Figure 18B

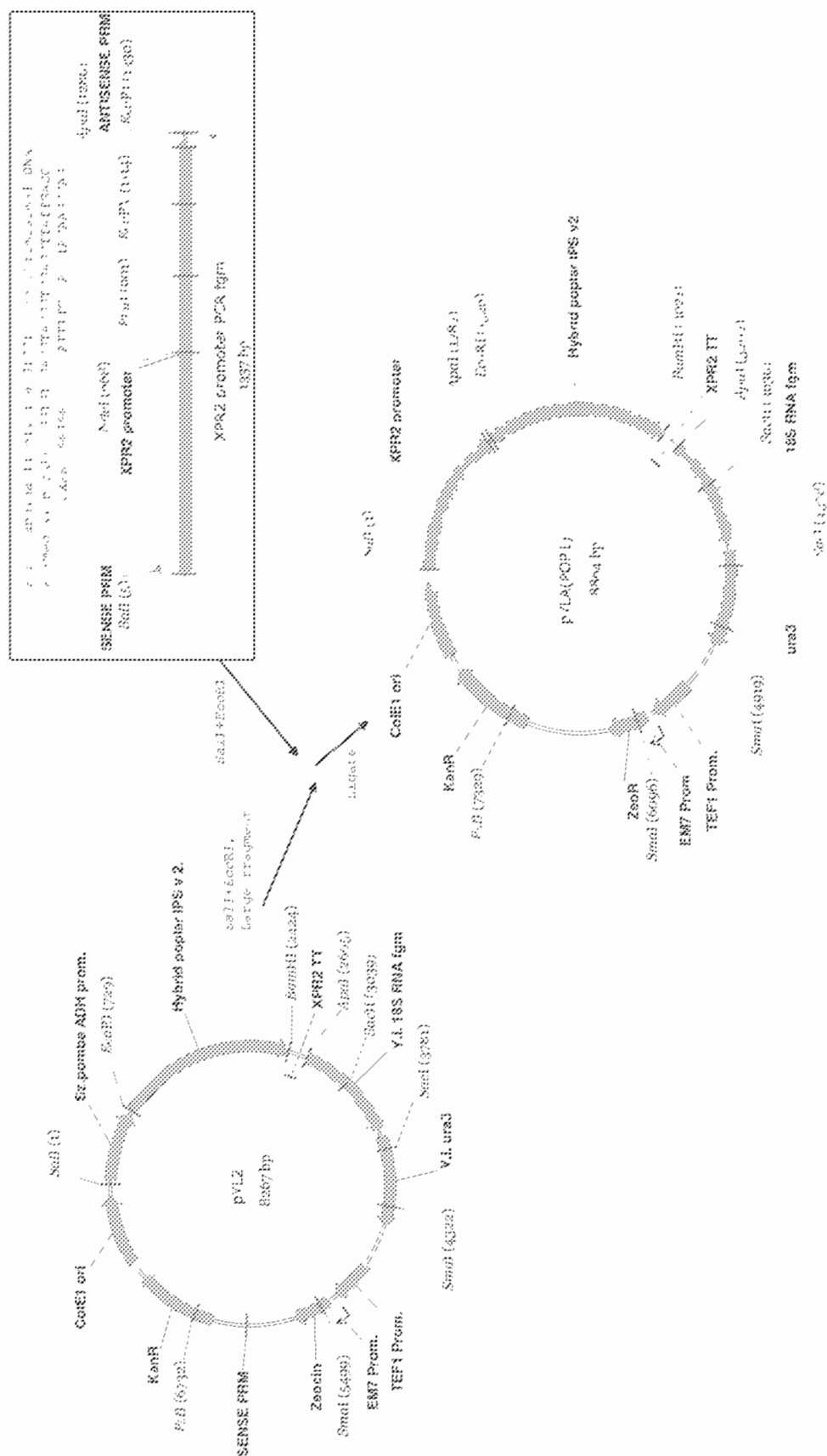
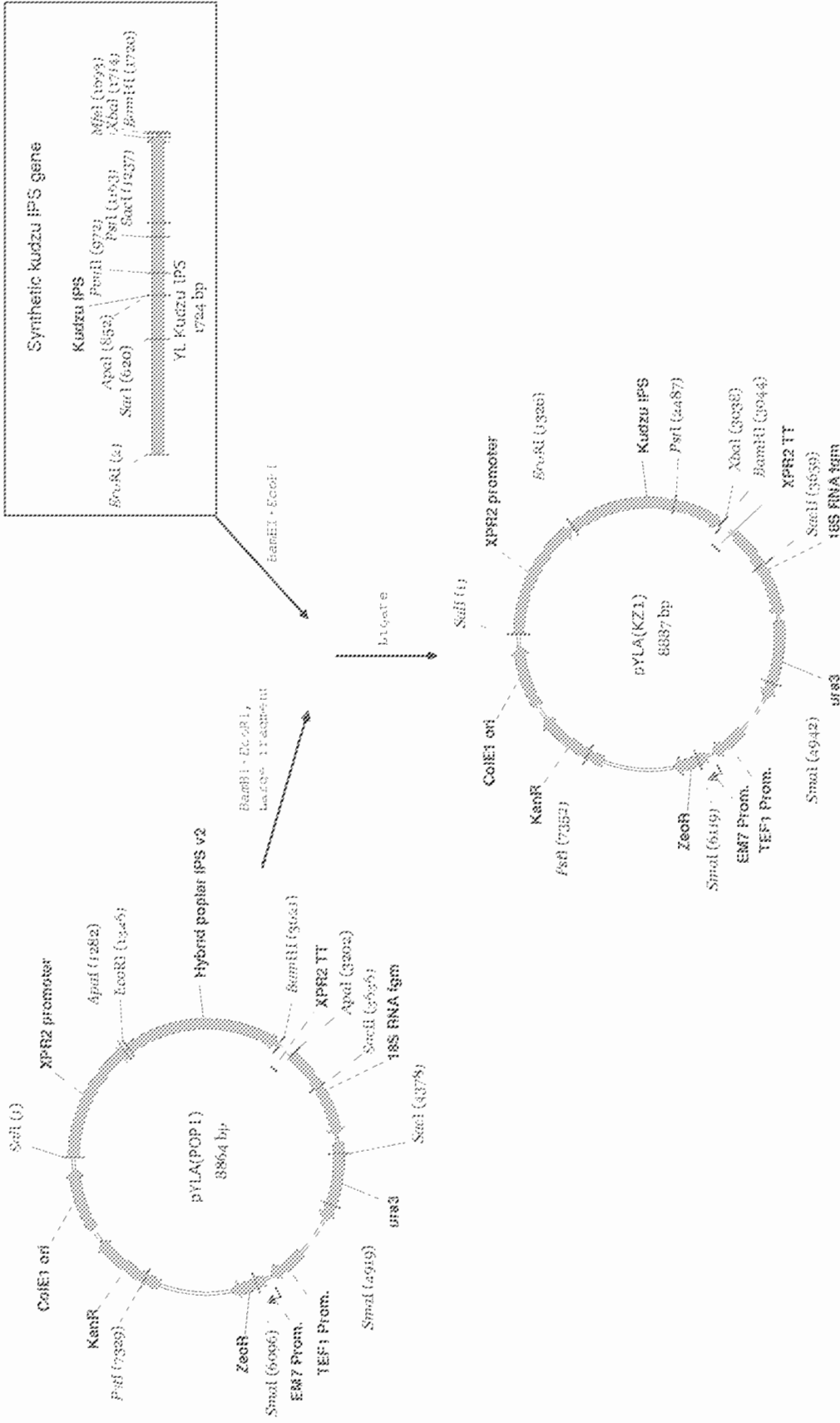


Figure 18C



Q

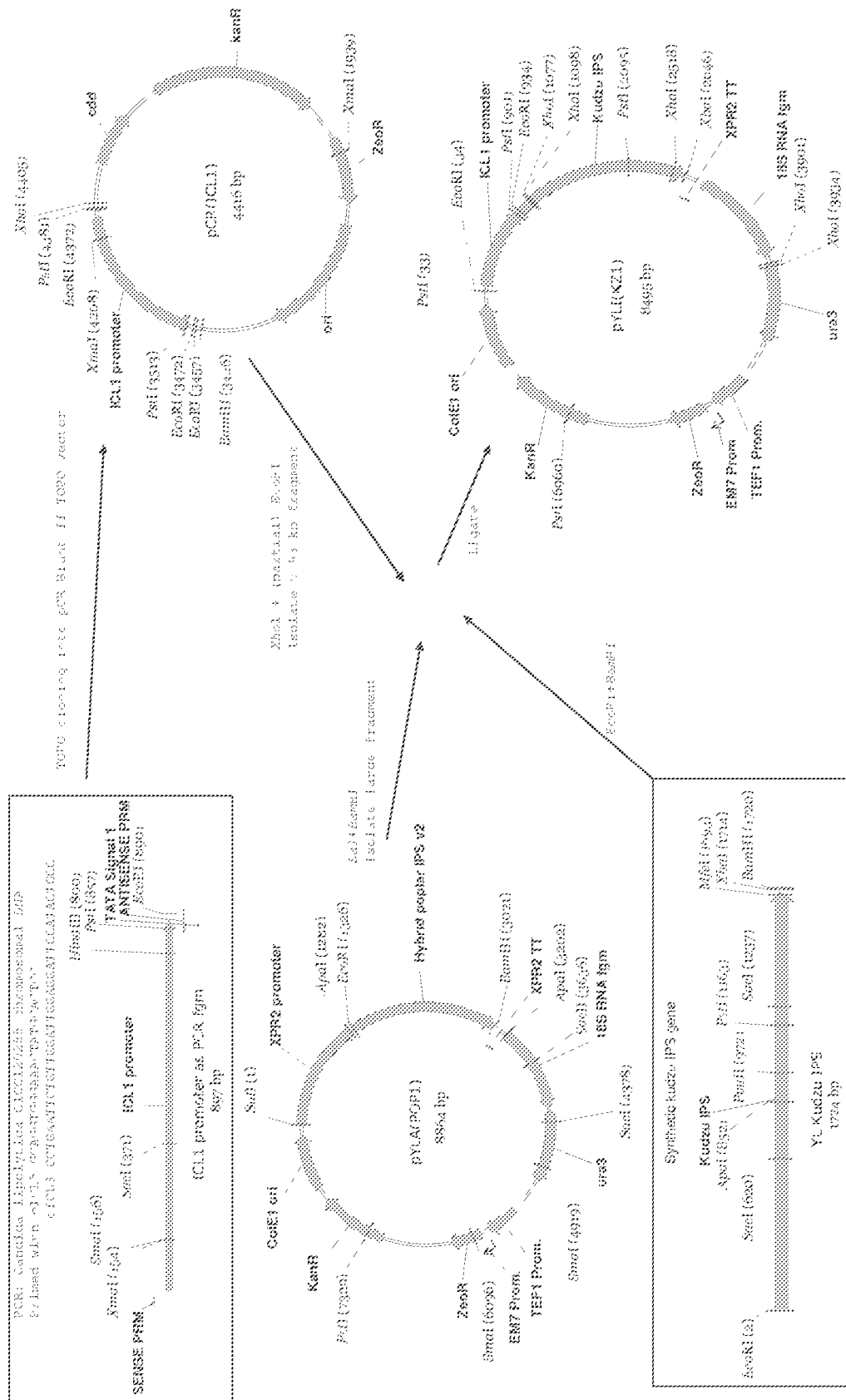


Figure 18E

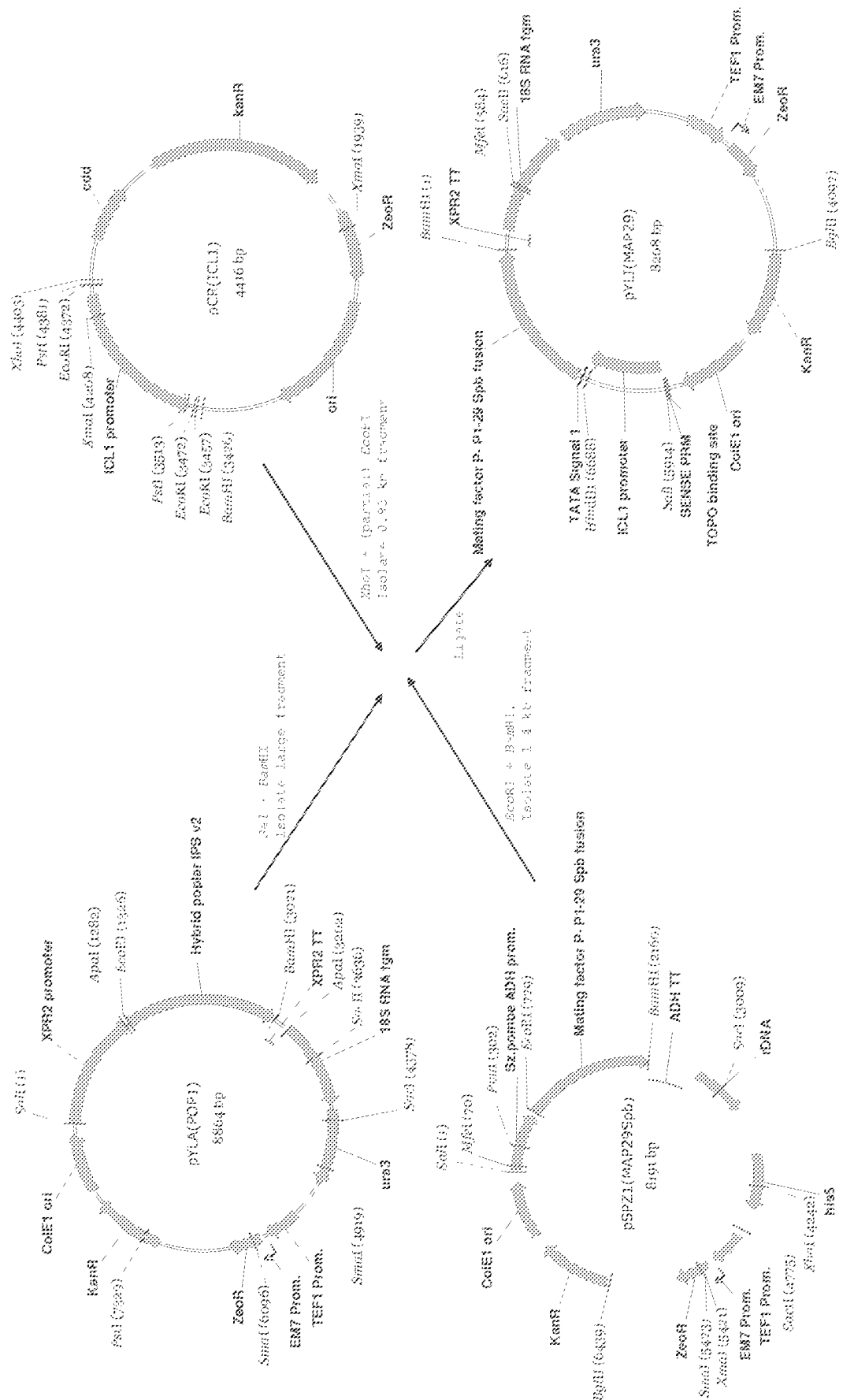


Figure 18F

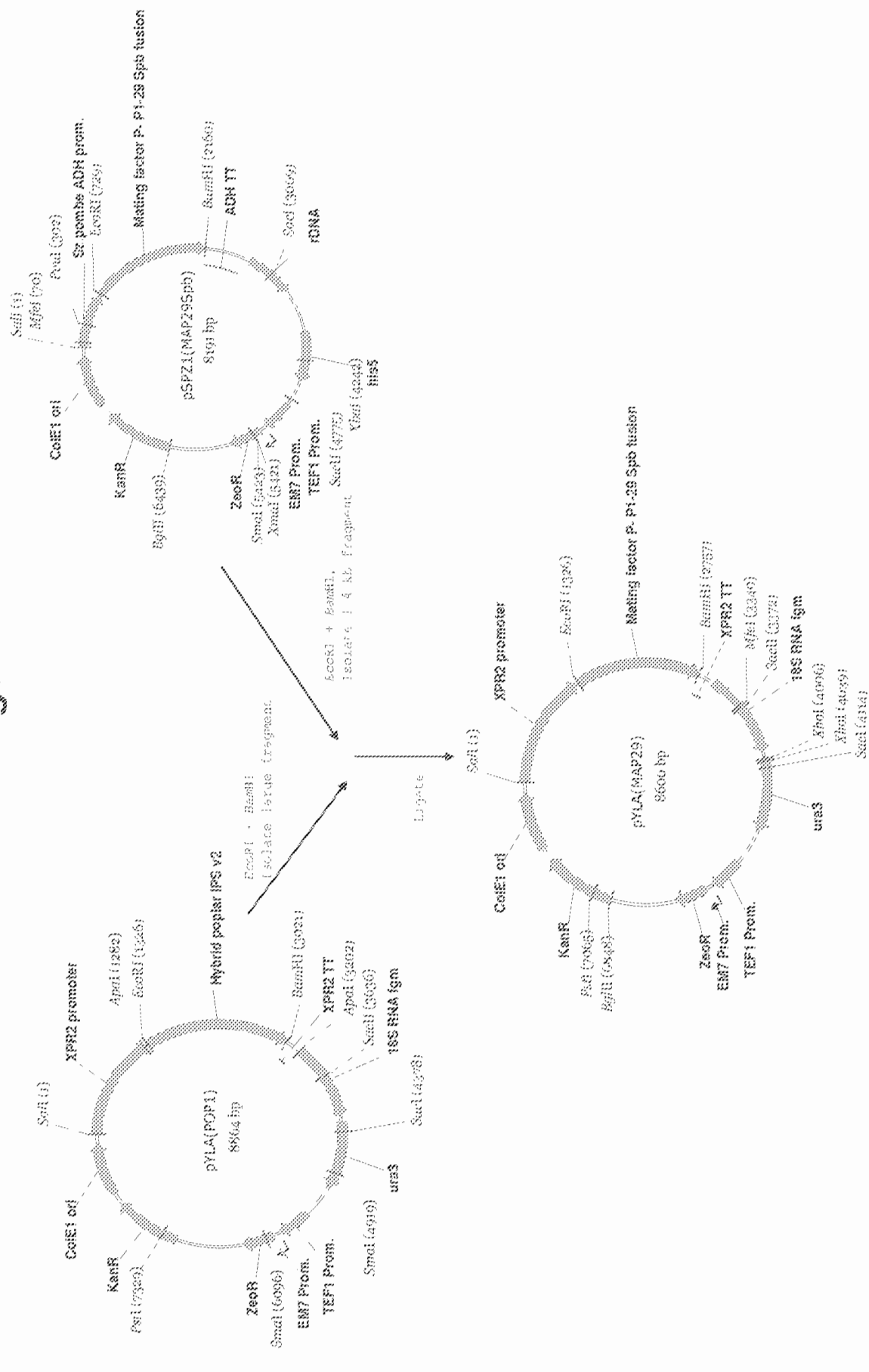


Figure 19A

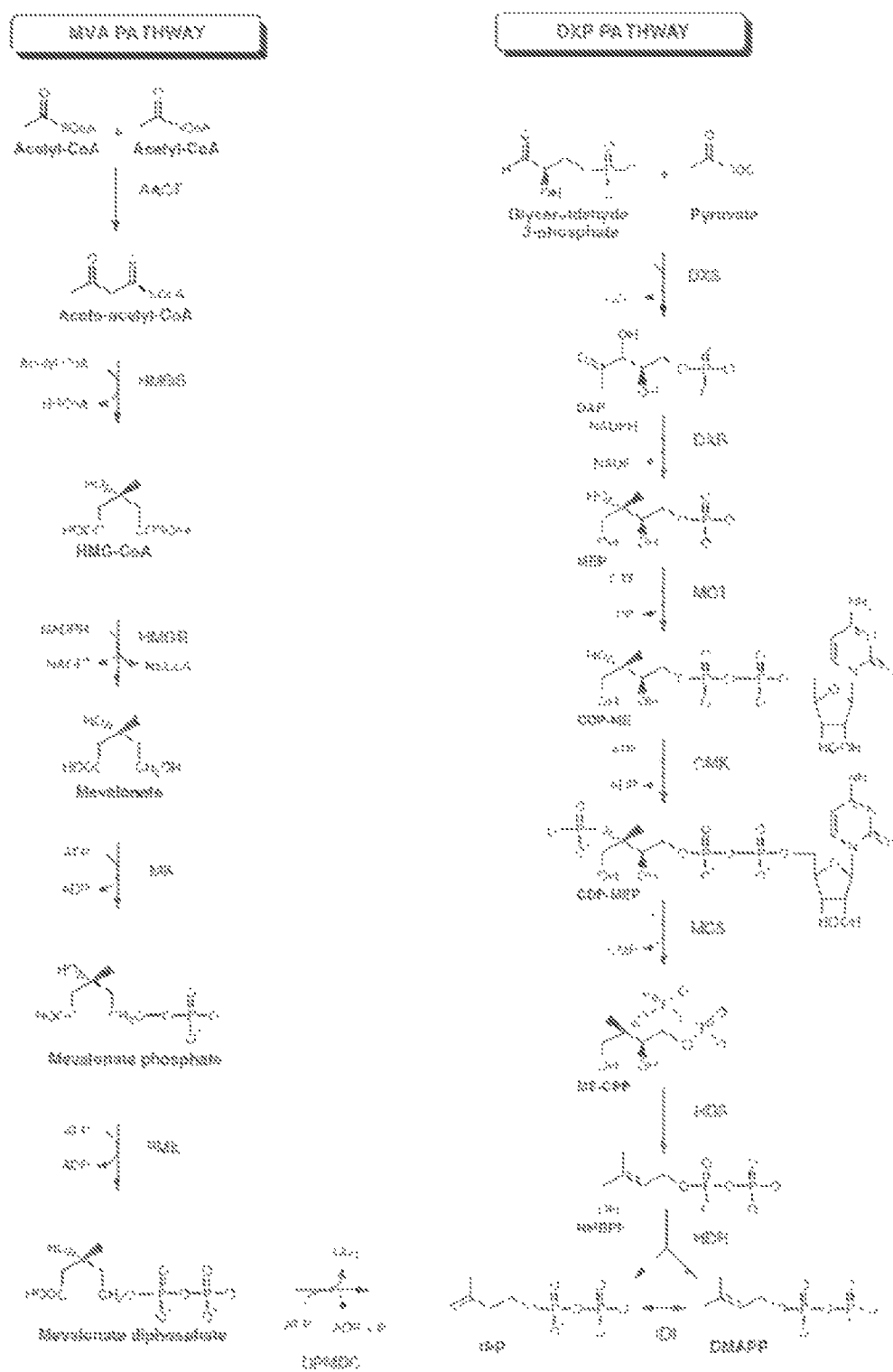


Figure 19B

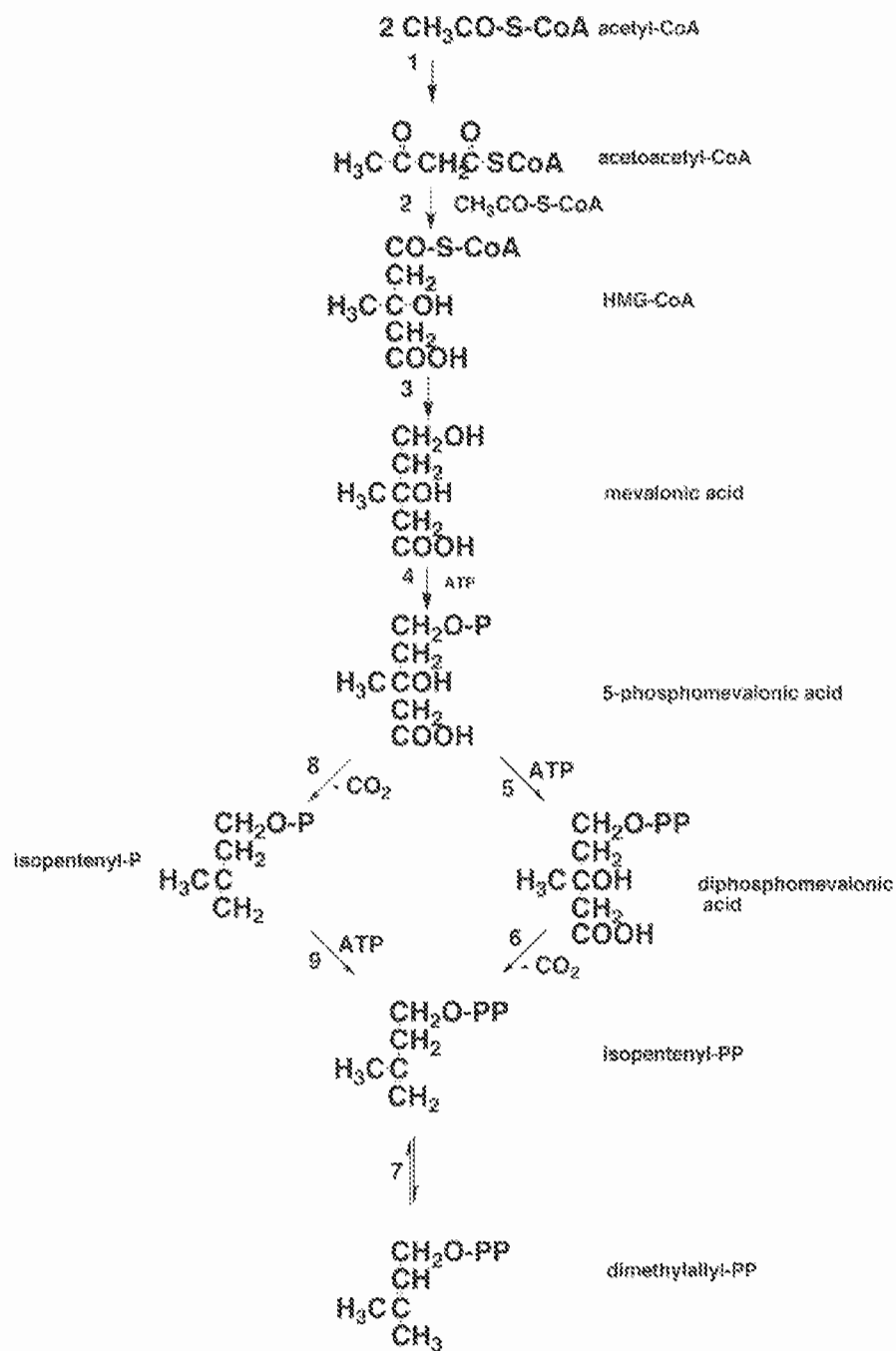


Figure 20

Y. lipolytica CLIB122::pYLA(KZ1)

Y. lipolytica CLIB122::pYLA(MAP29)

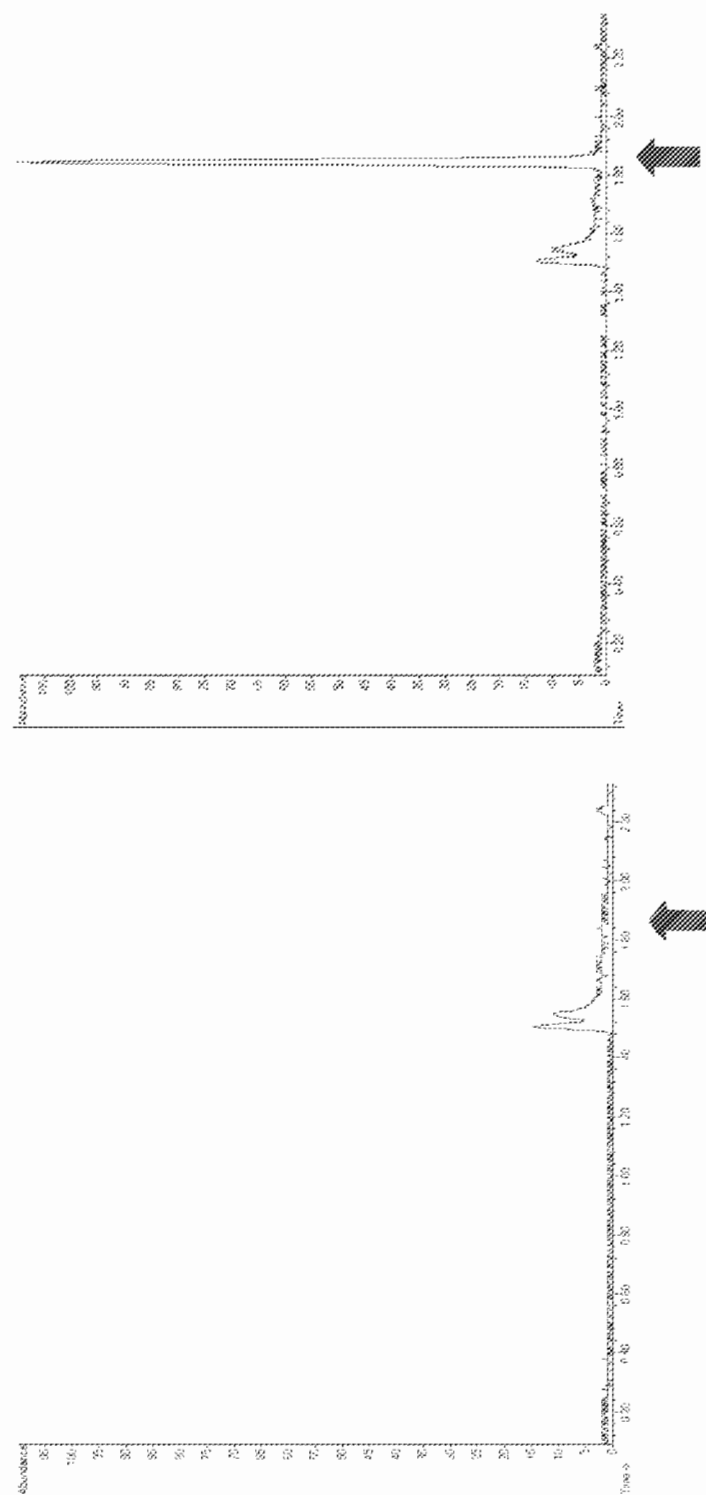


Figure 21

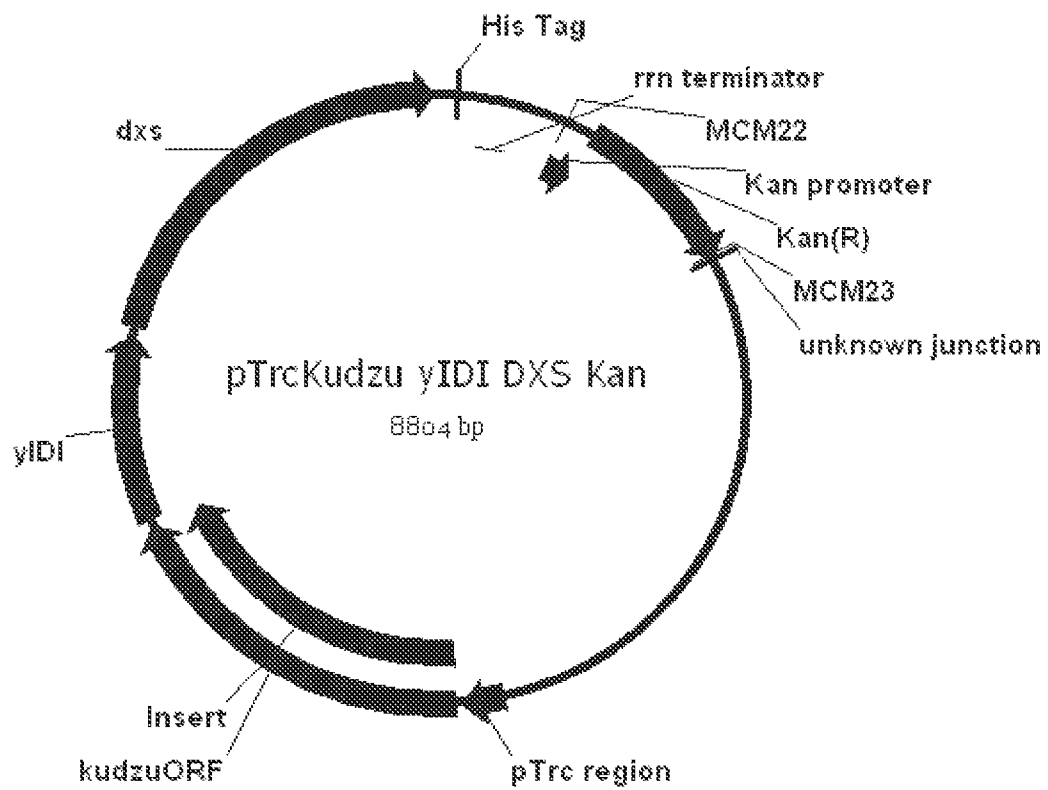


Figure 22A

1-

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Figure 22B

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Figure 22C

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Figure 22D

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(SEQ ID NO:20)

Figure 23A

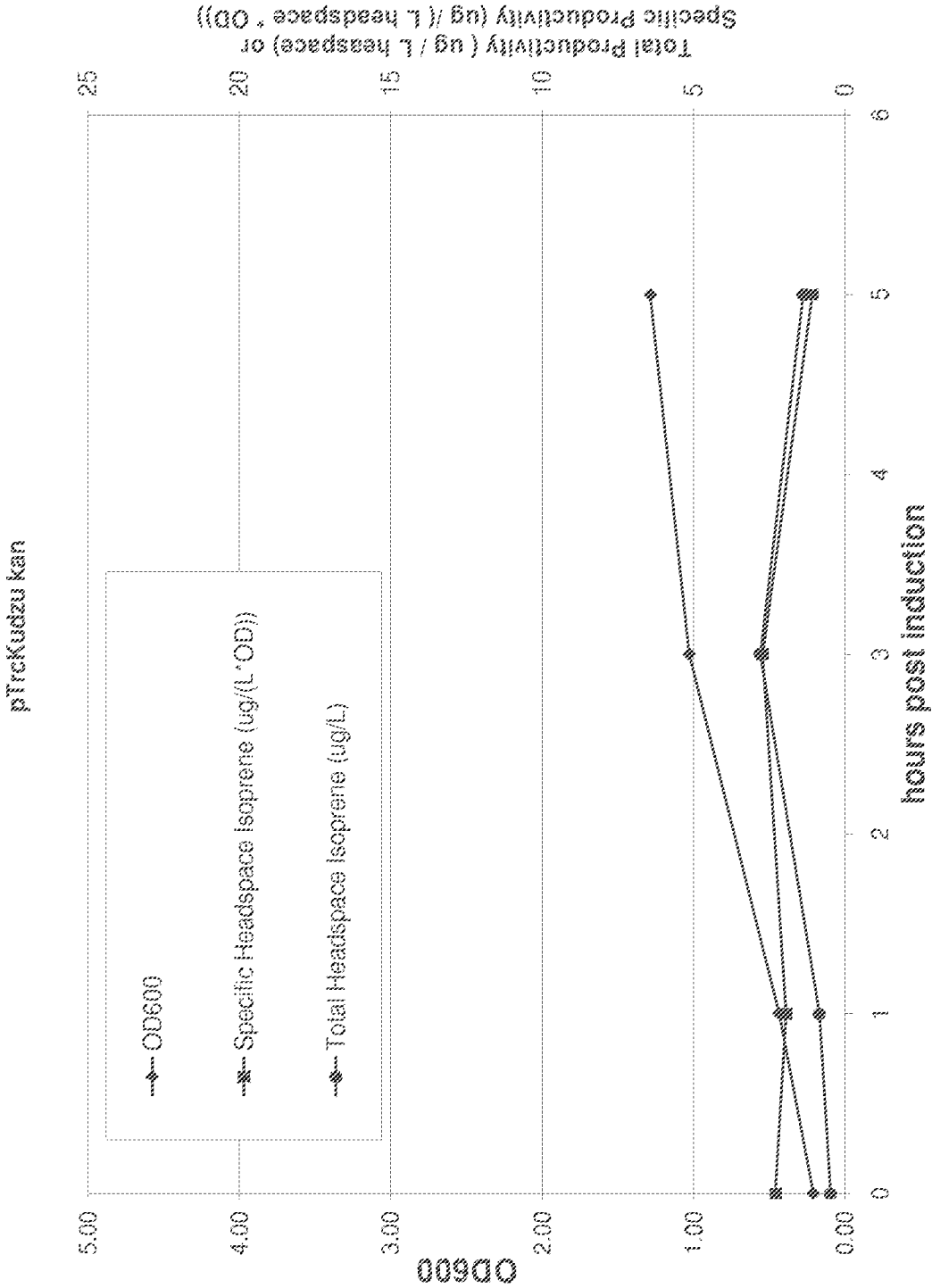


Figure 23B

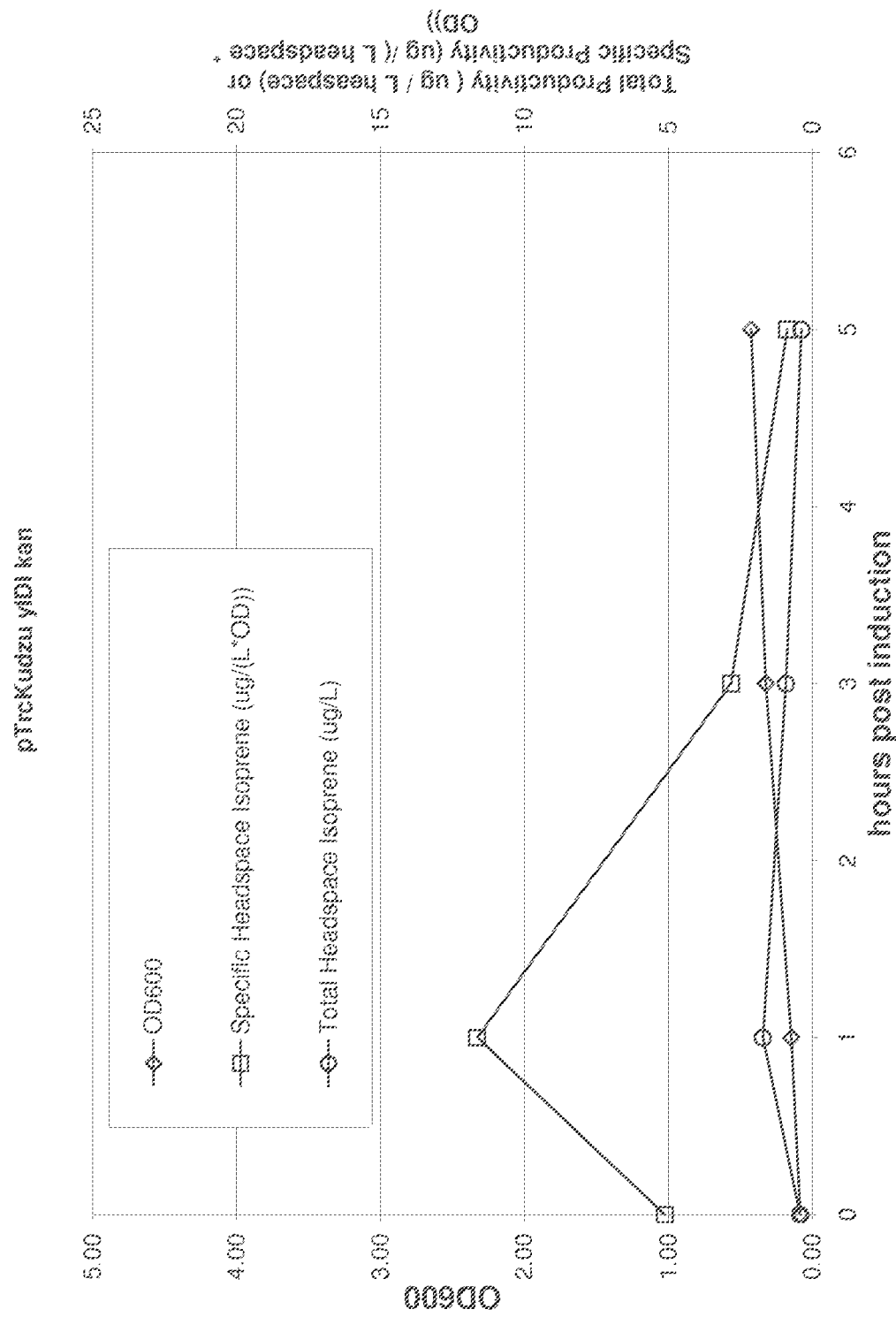


Figure 23C

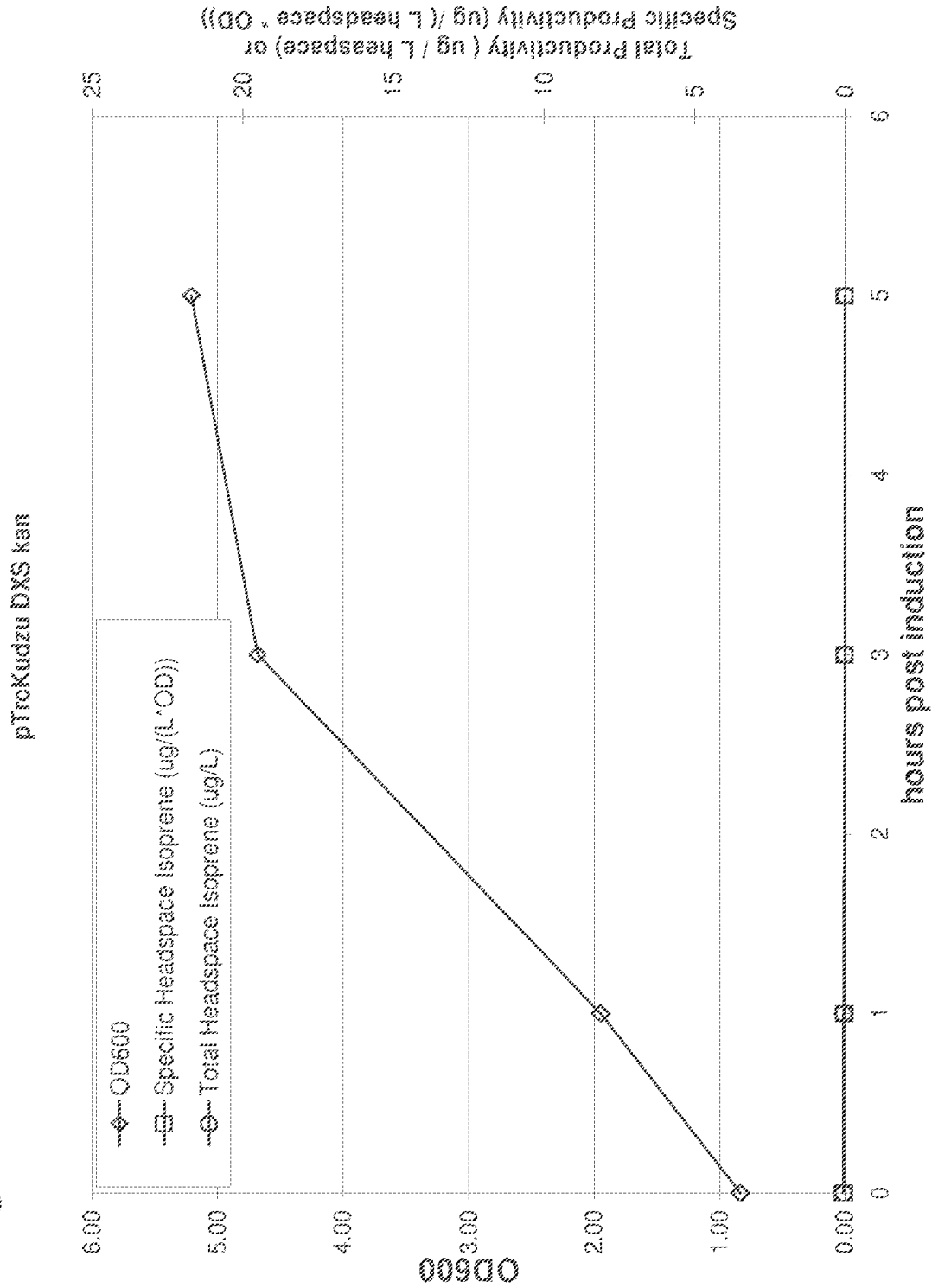


Figure 23D

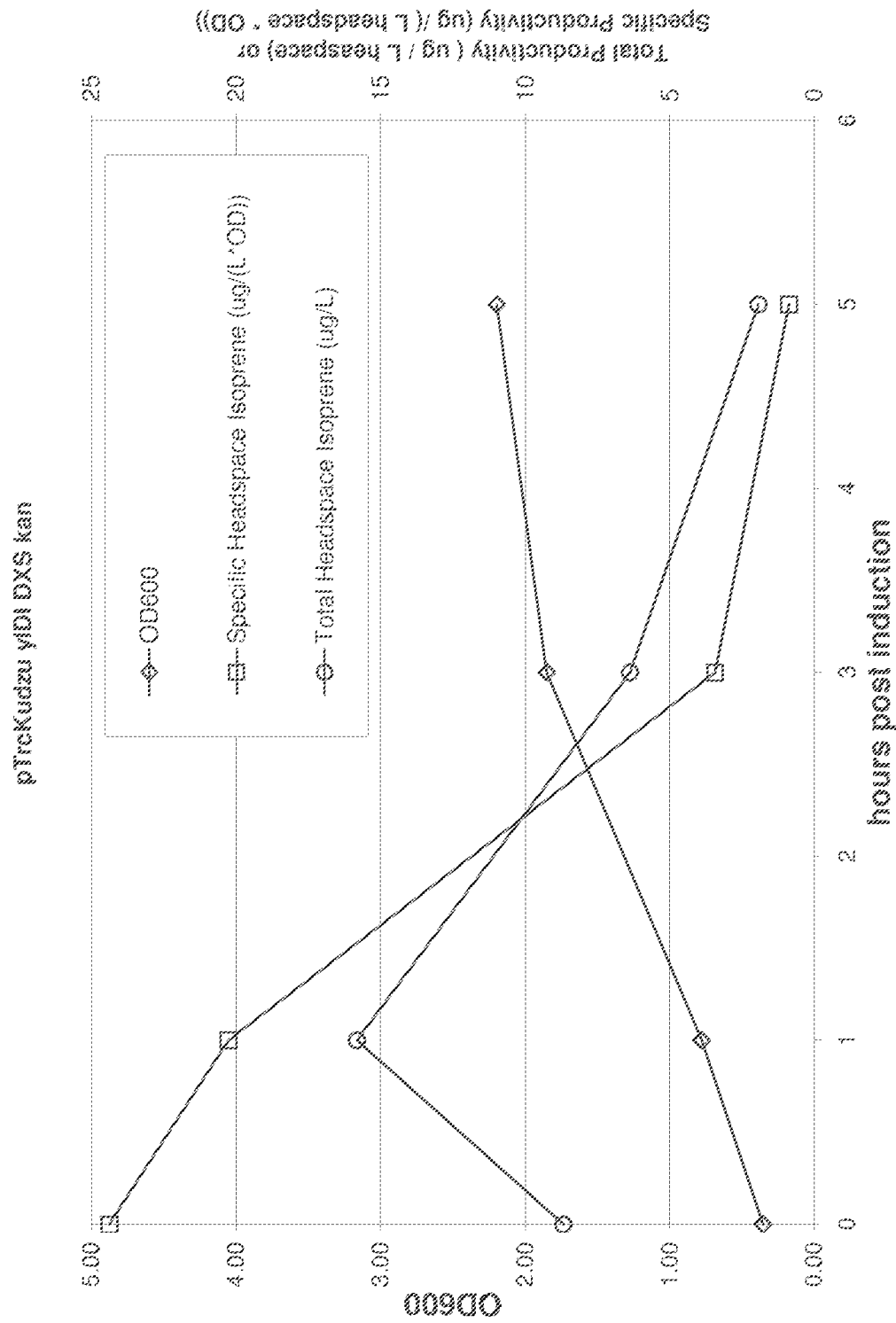


Figure 23E

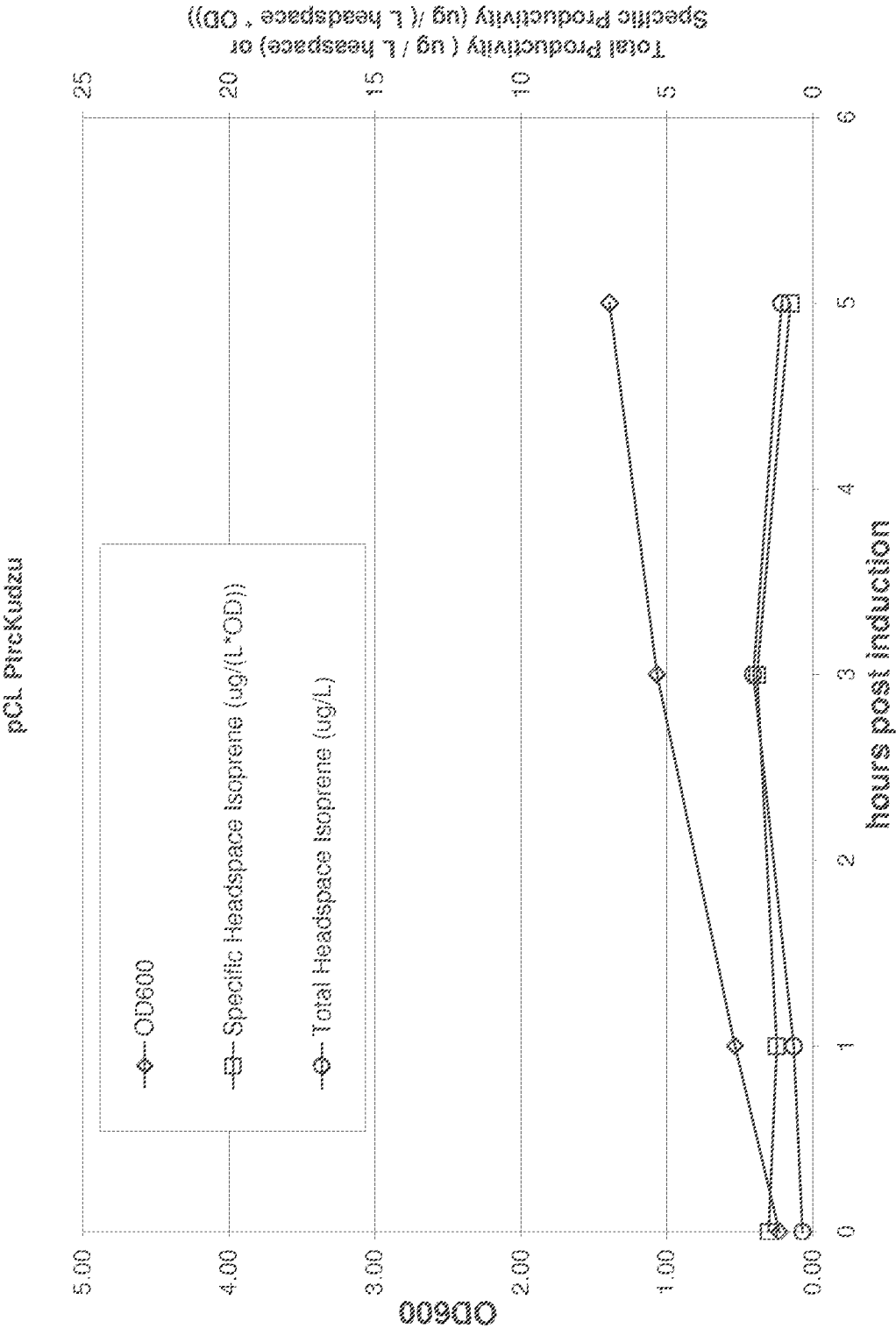


Figure 23F

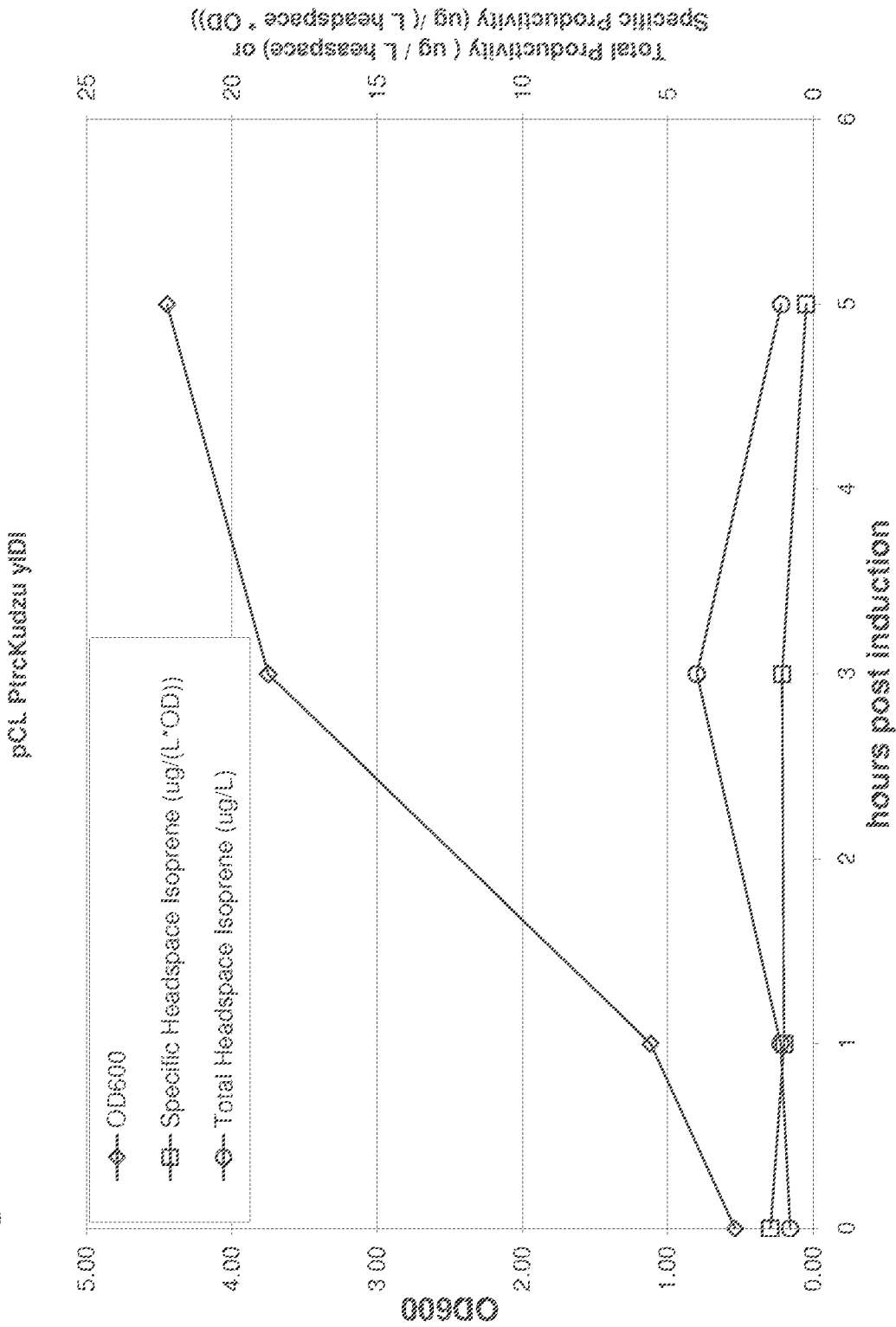


Figure 23G

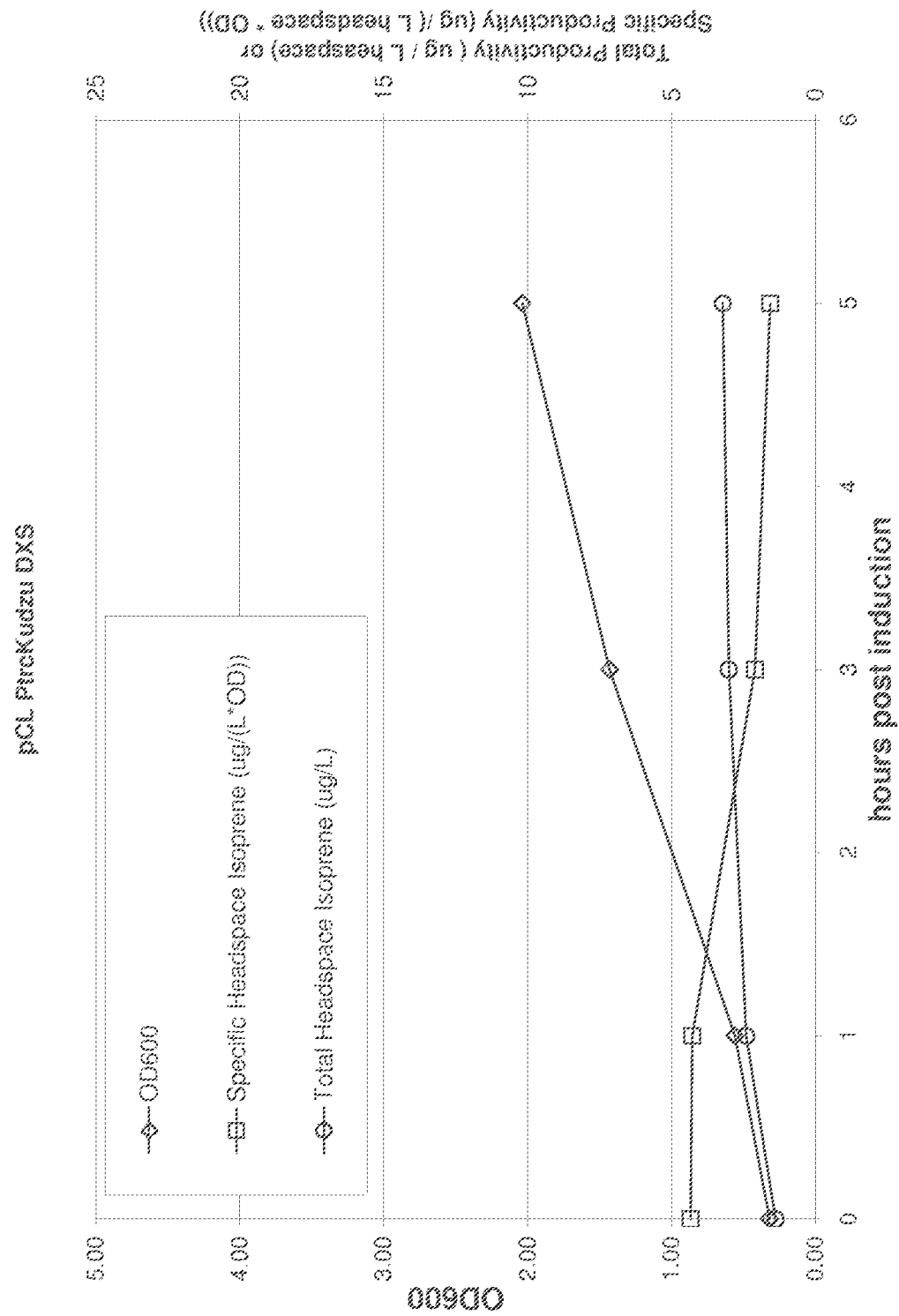


Figure 23H

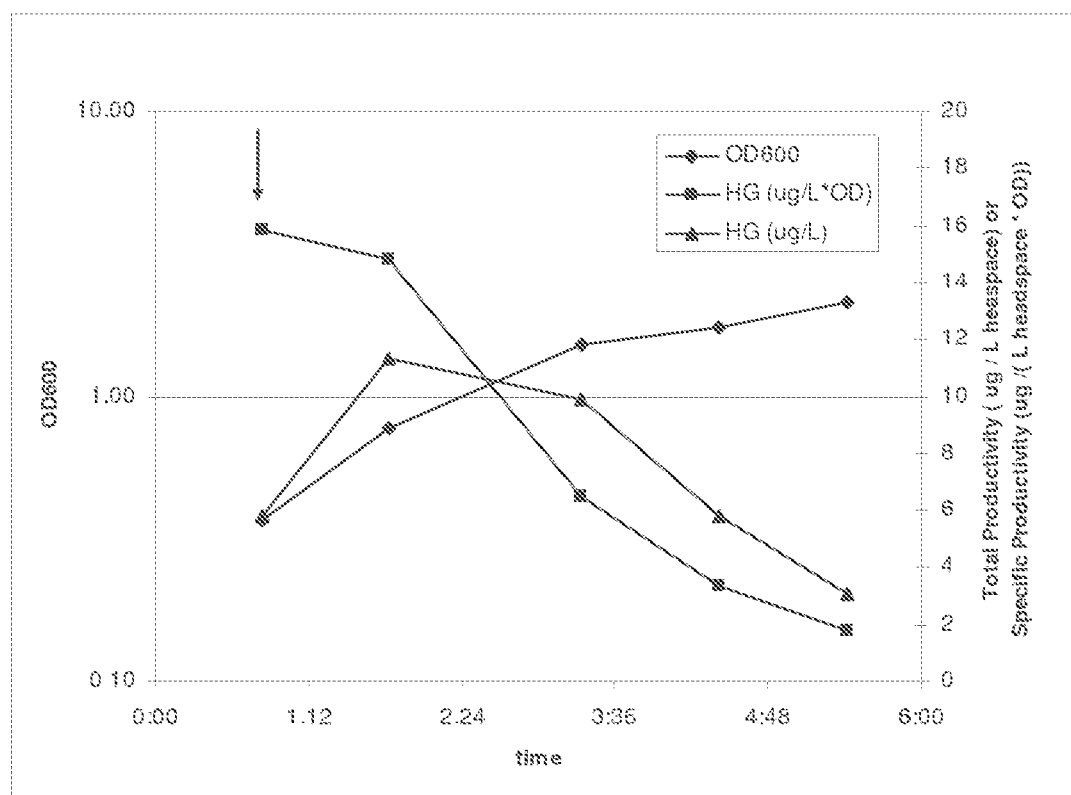


Figure 24

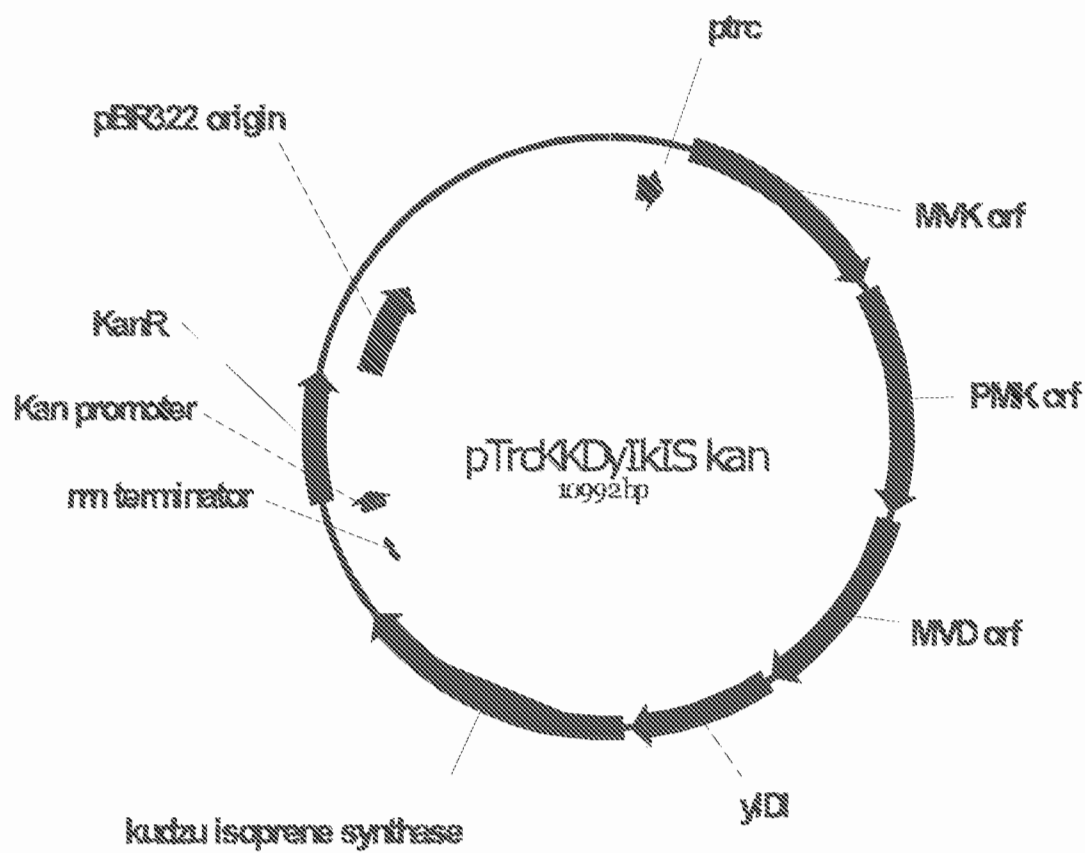


Figure 25A

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Figure 25B

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Figure 25C

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Figure 25D

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(SEQ ID NO:33)

Figure 26

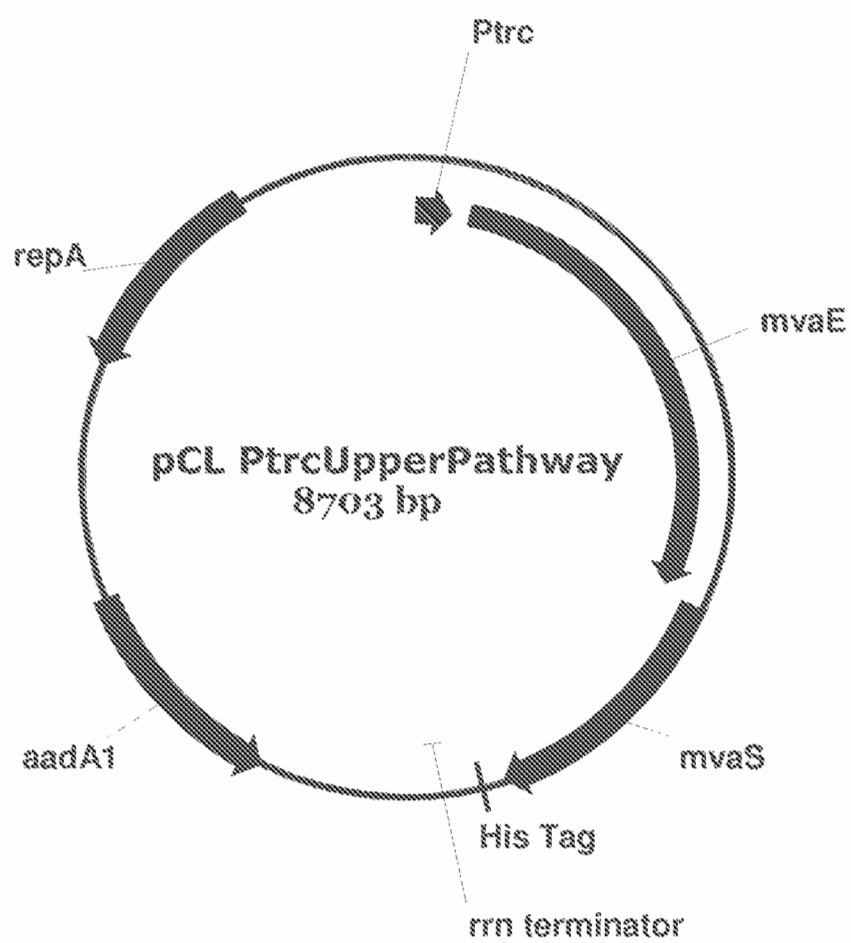


Figure 27A

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Figure 27B

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Figure 27C

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Figure 27D

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Figure 28

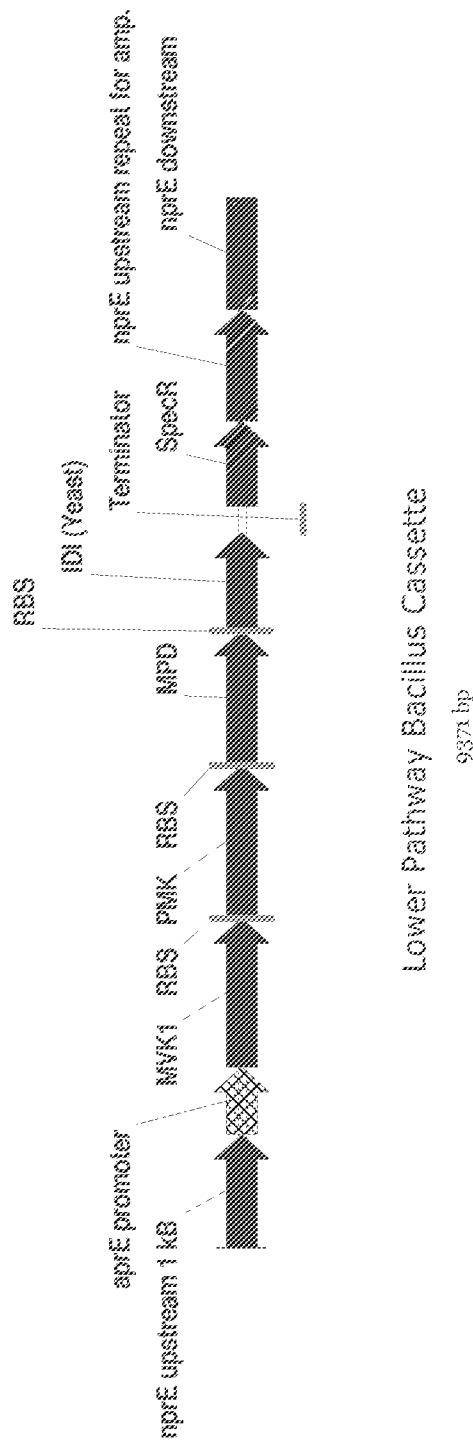


Figure 29A

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Figure 29B

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Figure 29C

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Figure 29D

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Figure 30

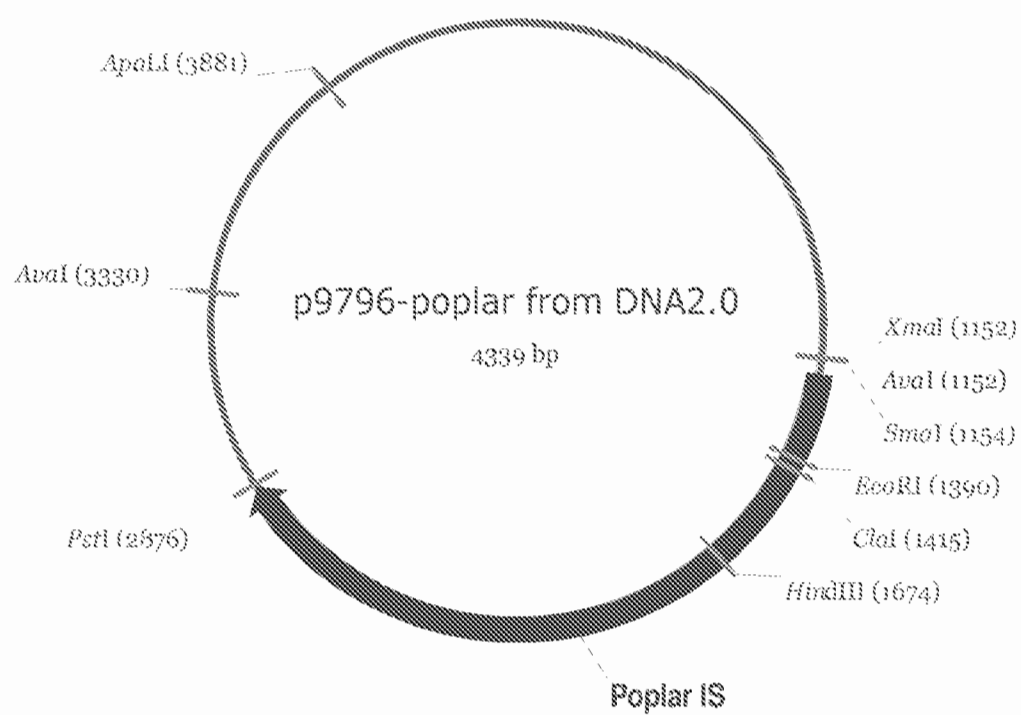


Figure 31A

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Figure 31B

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Figure 32

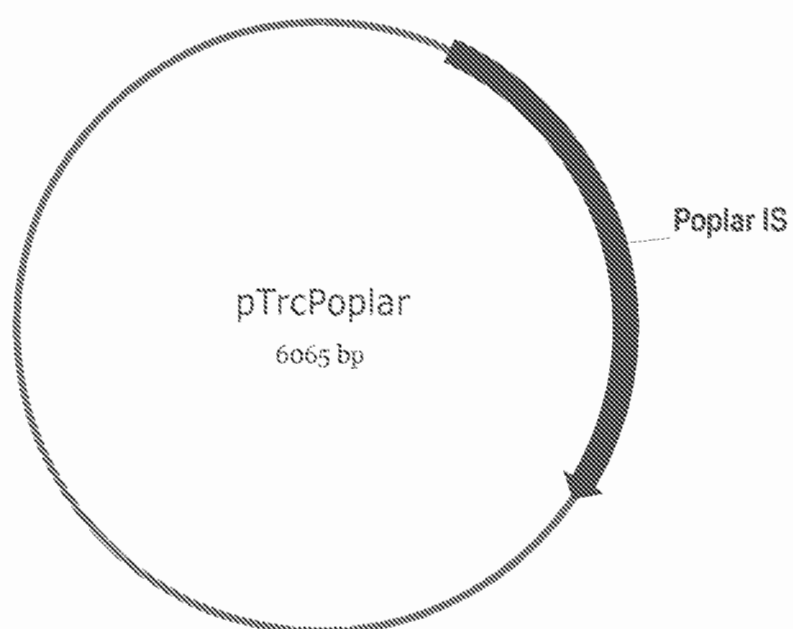


Figure 33A

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Figure 33B

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Figure 33C

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Figure 34

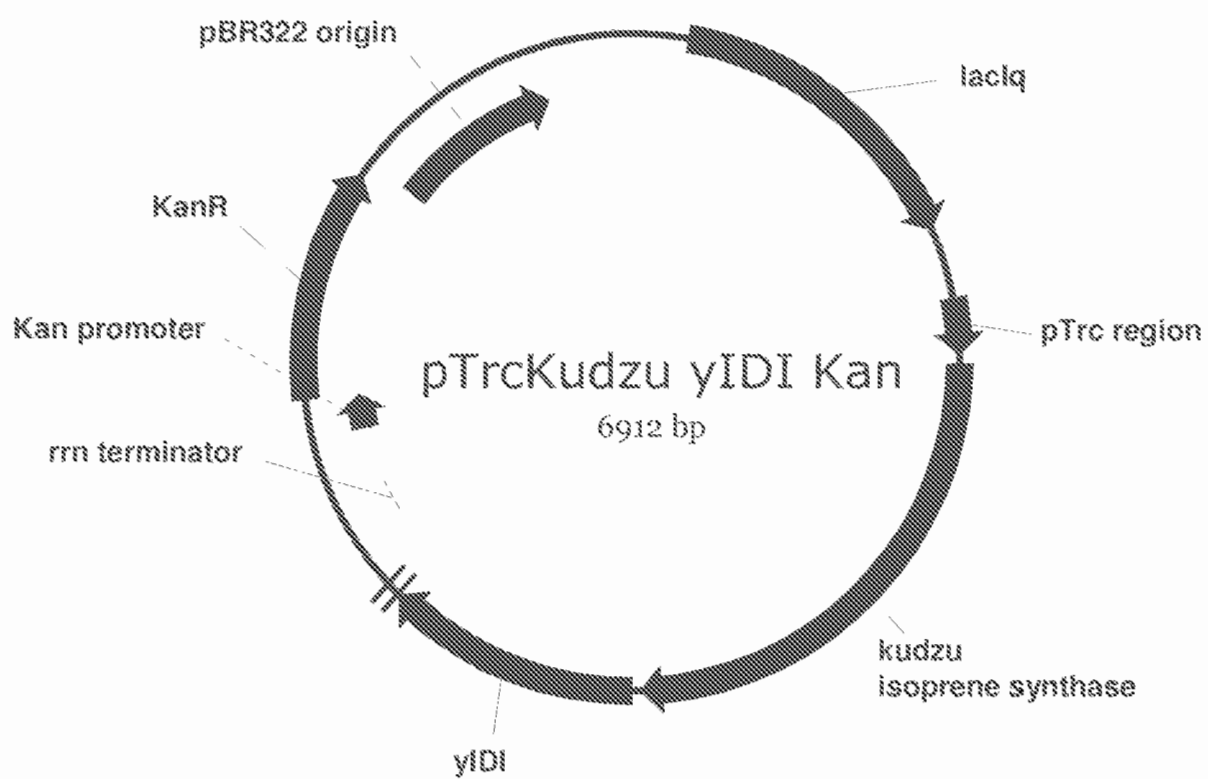


Figure 35A

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Figure 35B

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Figure 35C

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(SEQ ID NO:50)

Figure 36

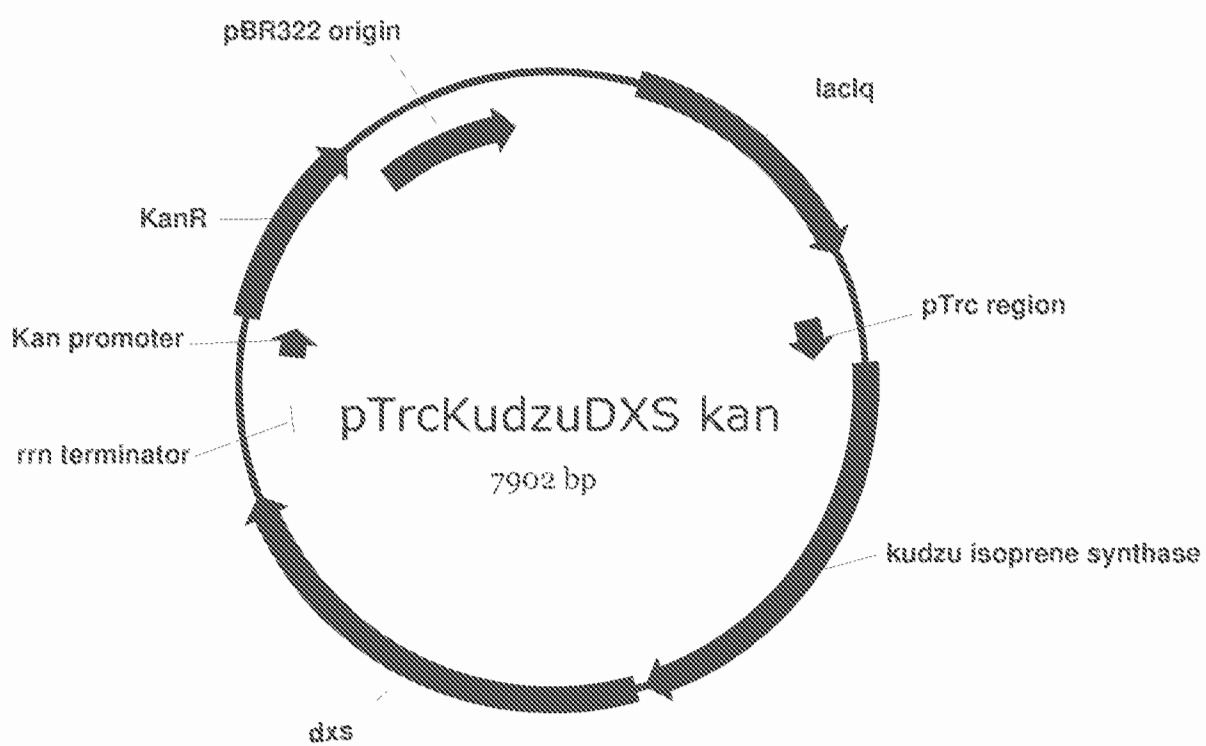


Figure 37A

5'-

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Figure 37B

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Figure 37C

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Figure 38

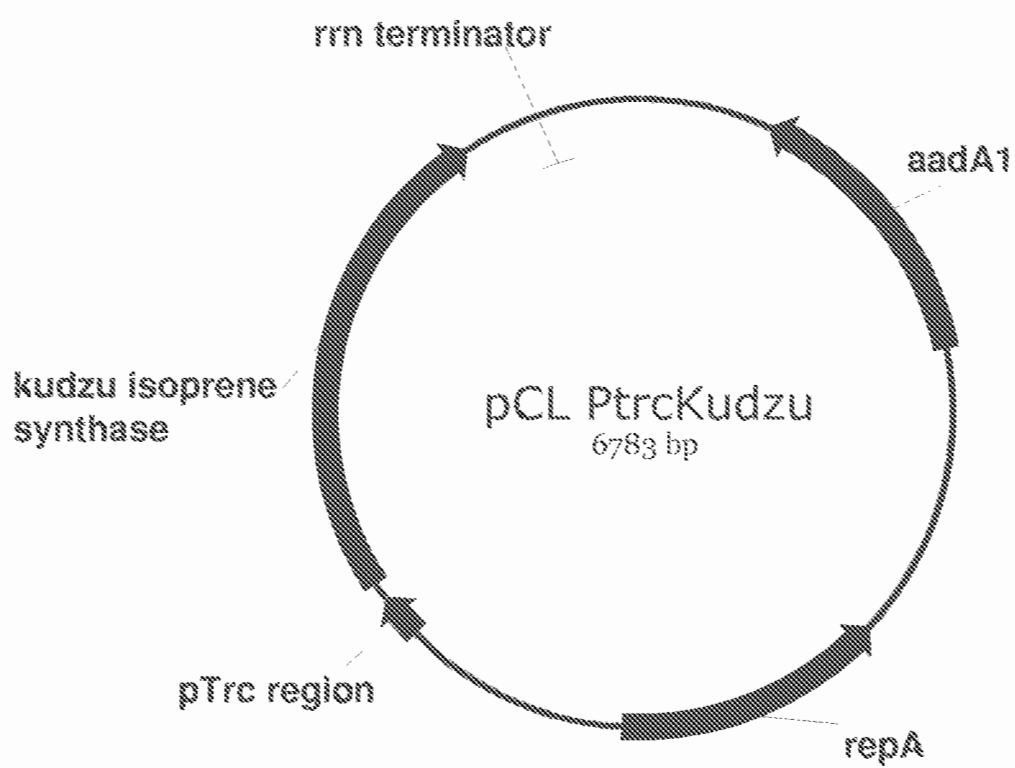


Figure 39A

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Figure 39B

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Figure 39C

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Figure 40

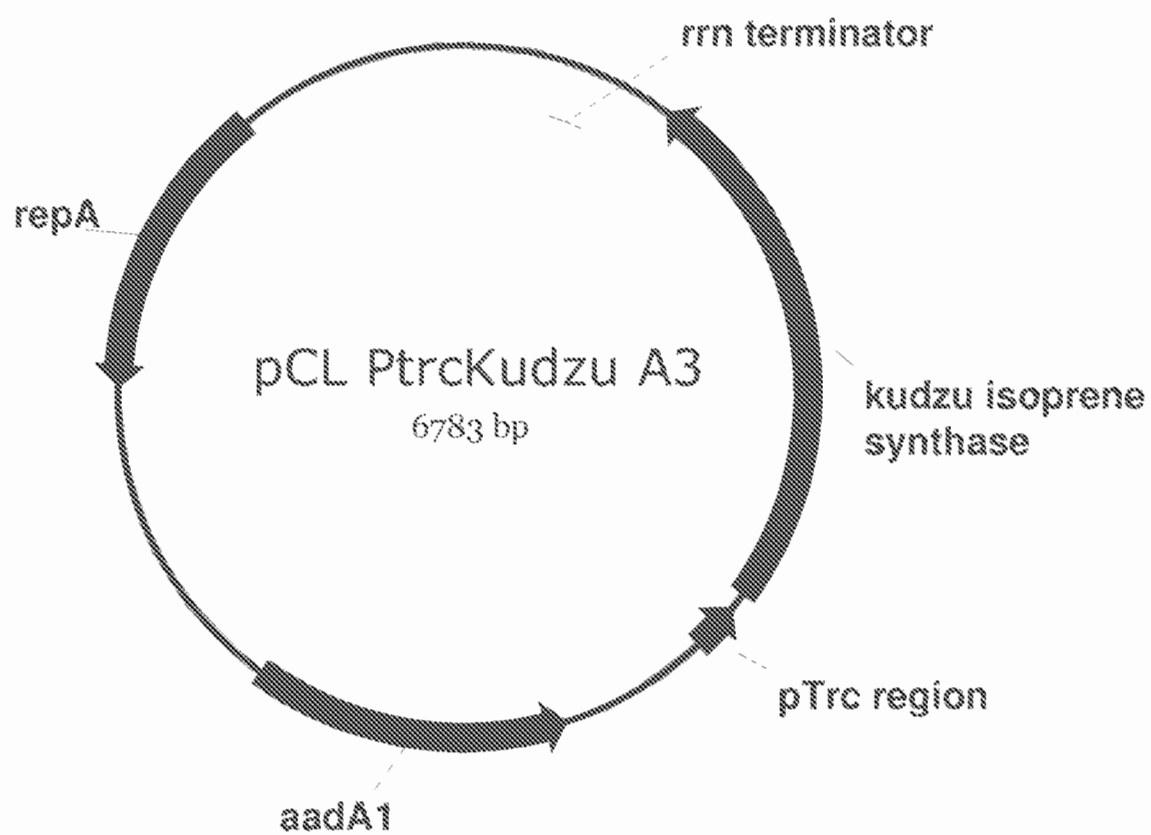


Figure 41A

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Figure 41C

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Figure 42

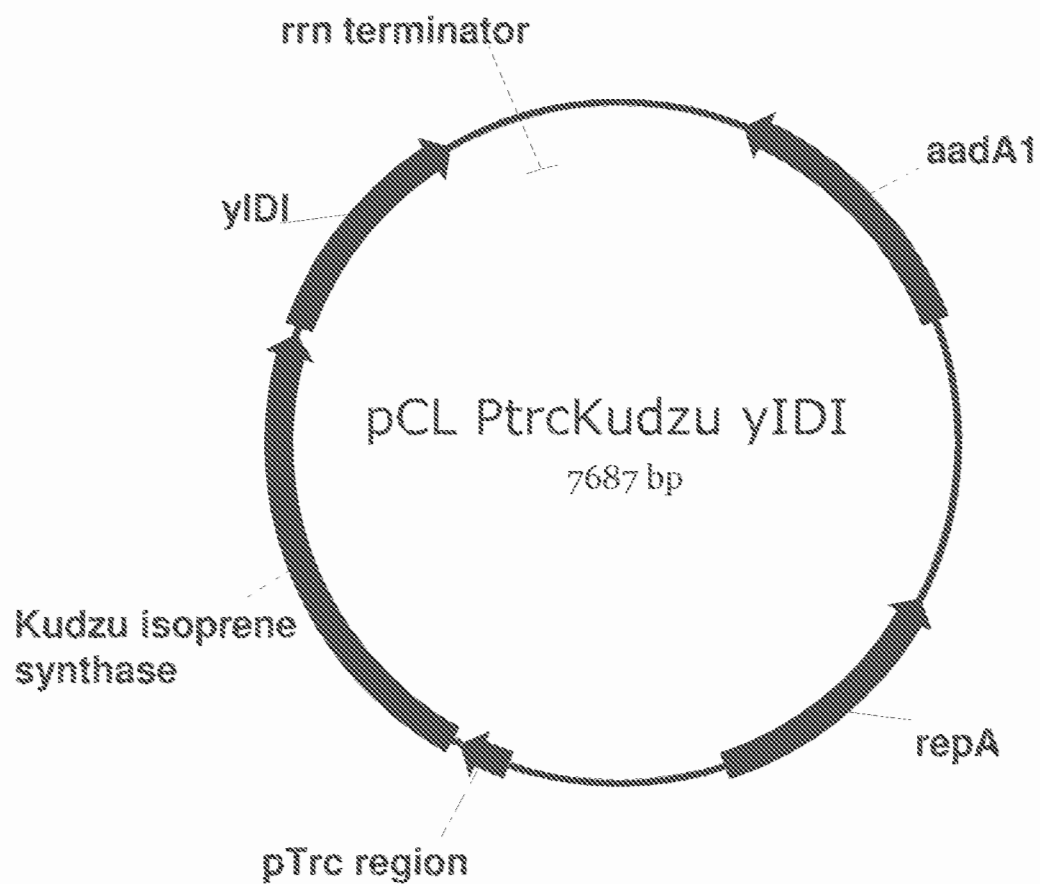


Figure 43A

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Figure 43B

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Figure 43C

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Figure 44

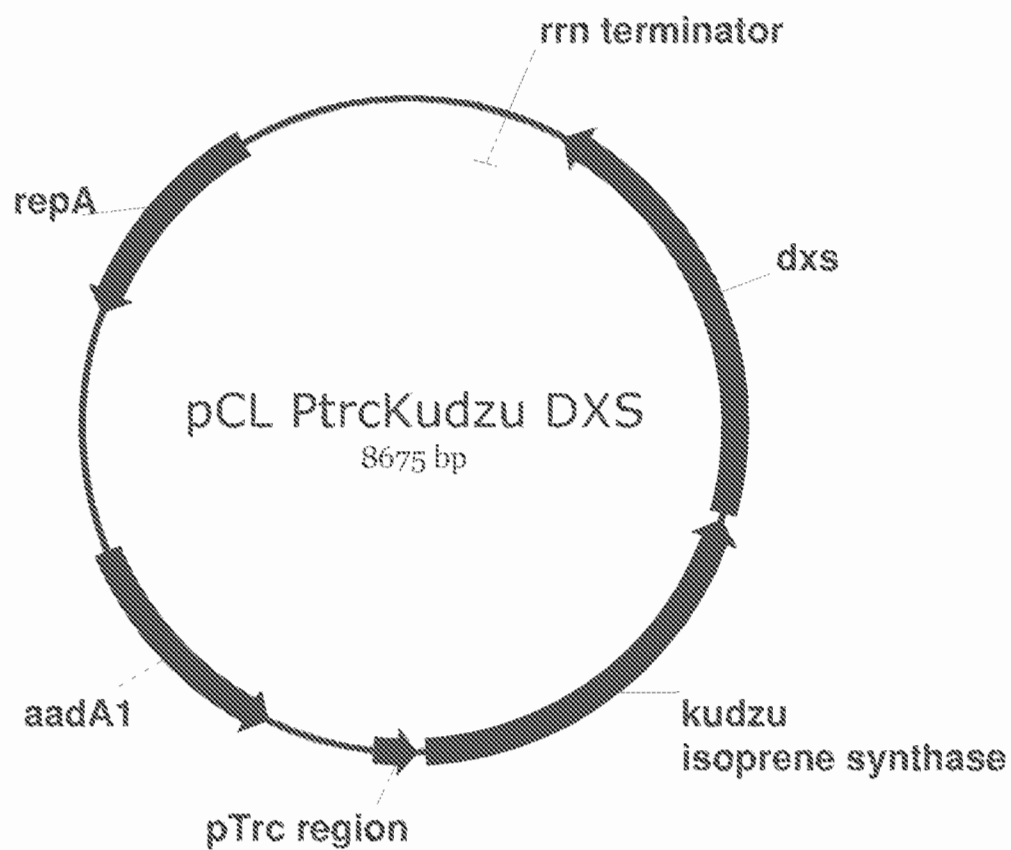


Figure 45A

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Figure 45B

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Figure 45C

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Figure 45D

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Figure 46A

A.

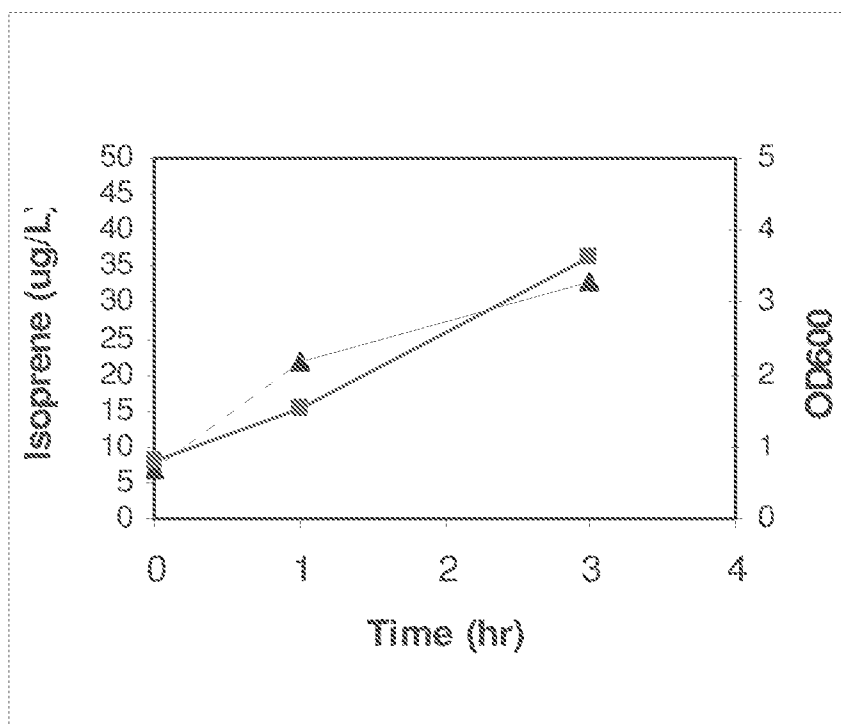


Figure 46B

B.

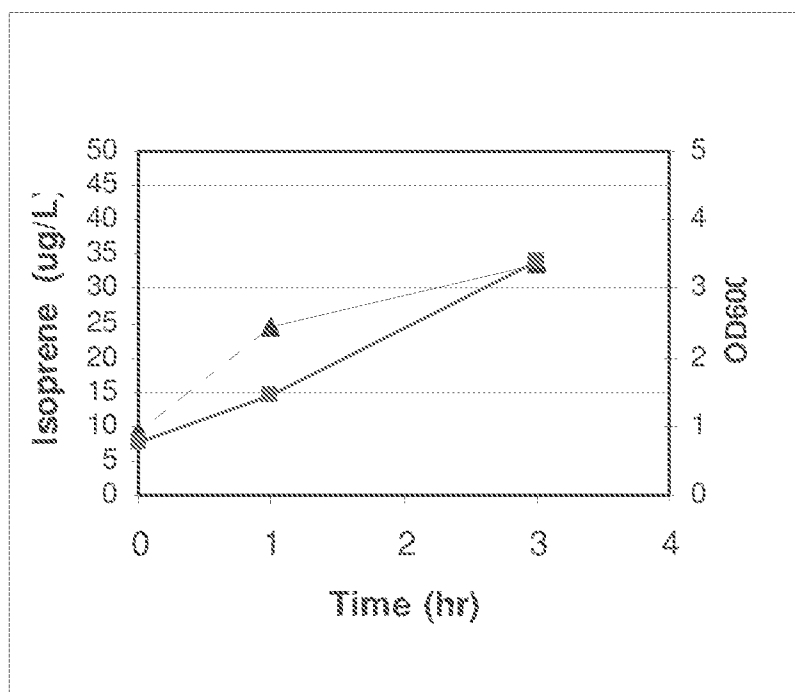


Figure 46C

C.

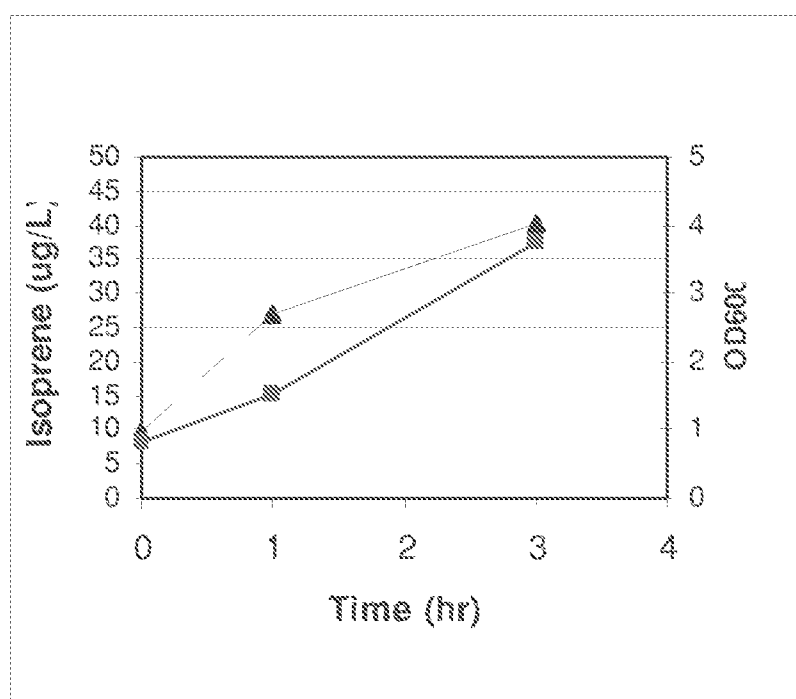


Figure 46D

D.

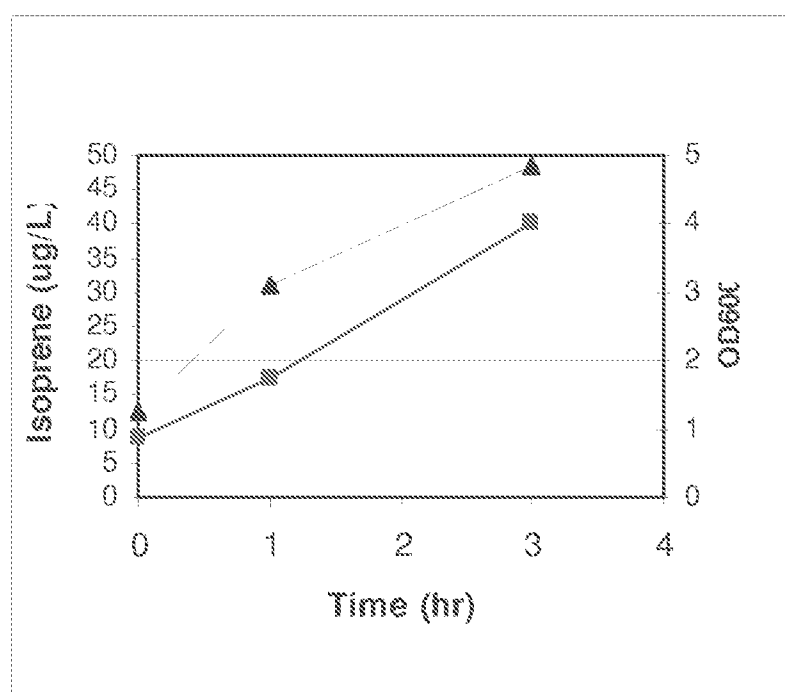


Figure 46E

E.

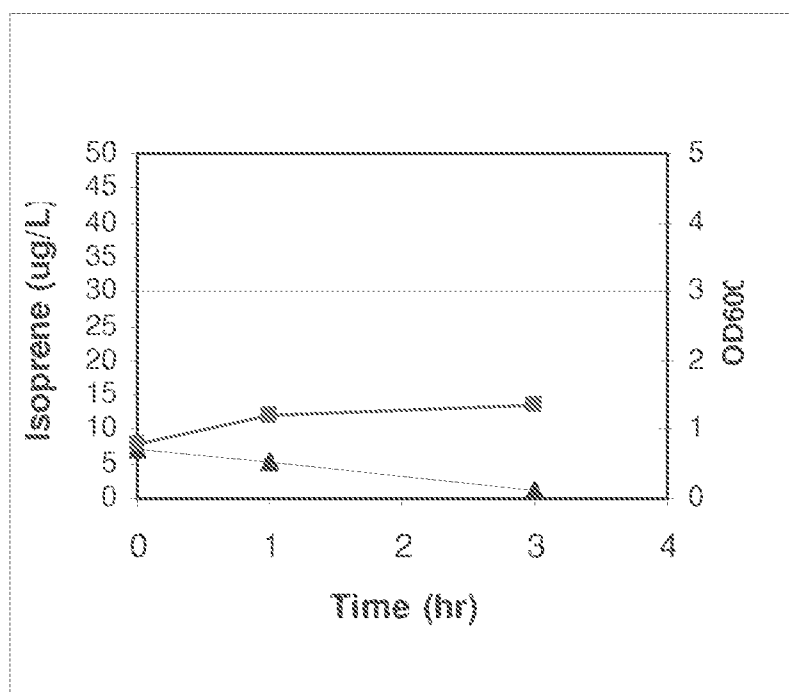


Figure 47A

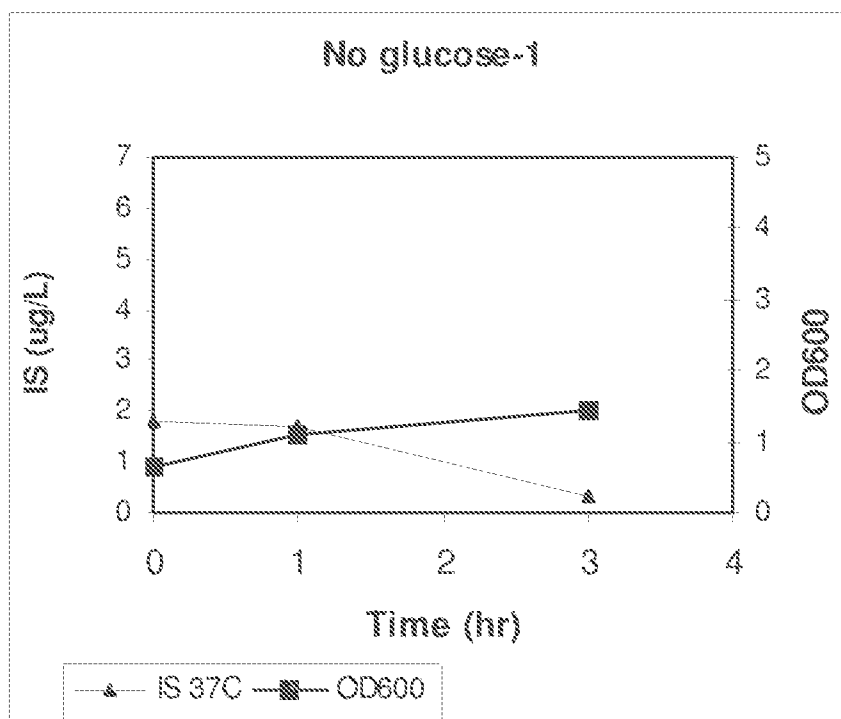


Figure 47B

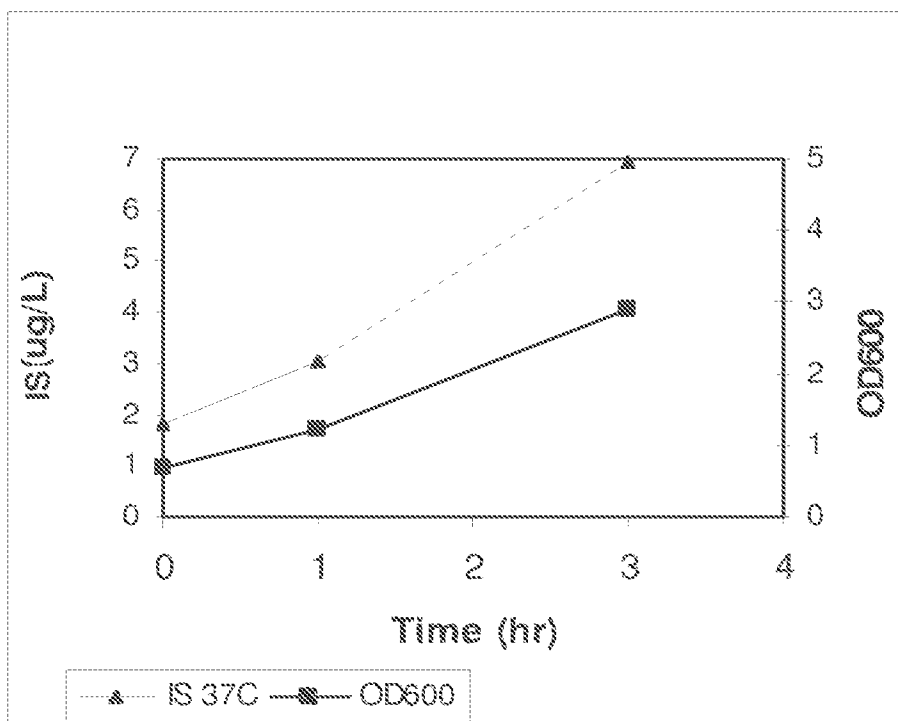


Figure 47C

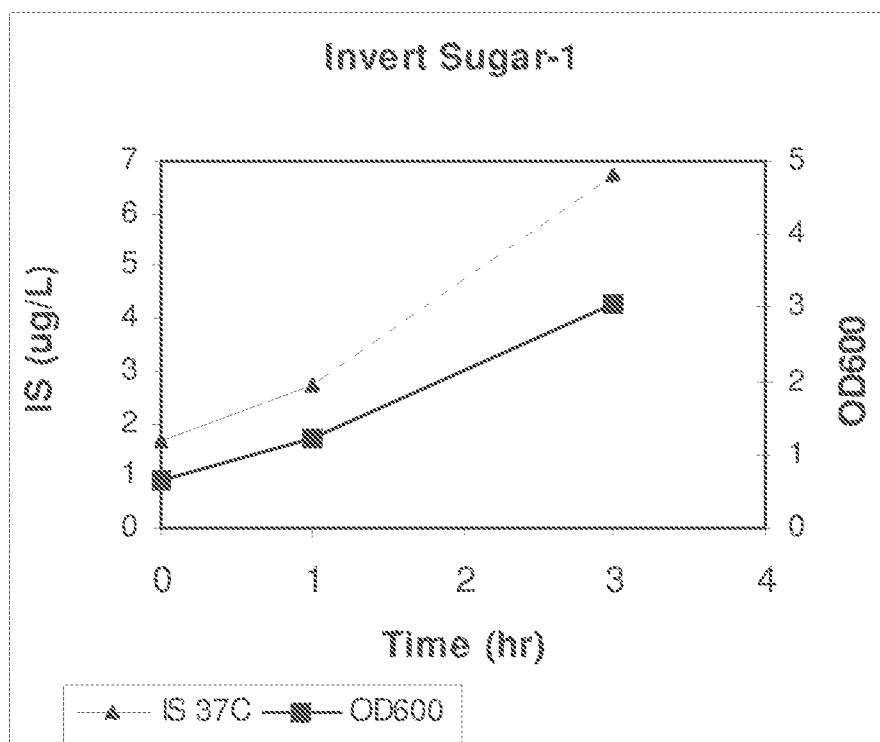


Figure 47D

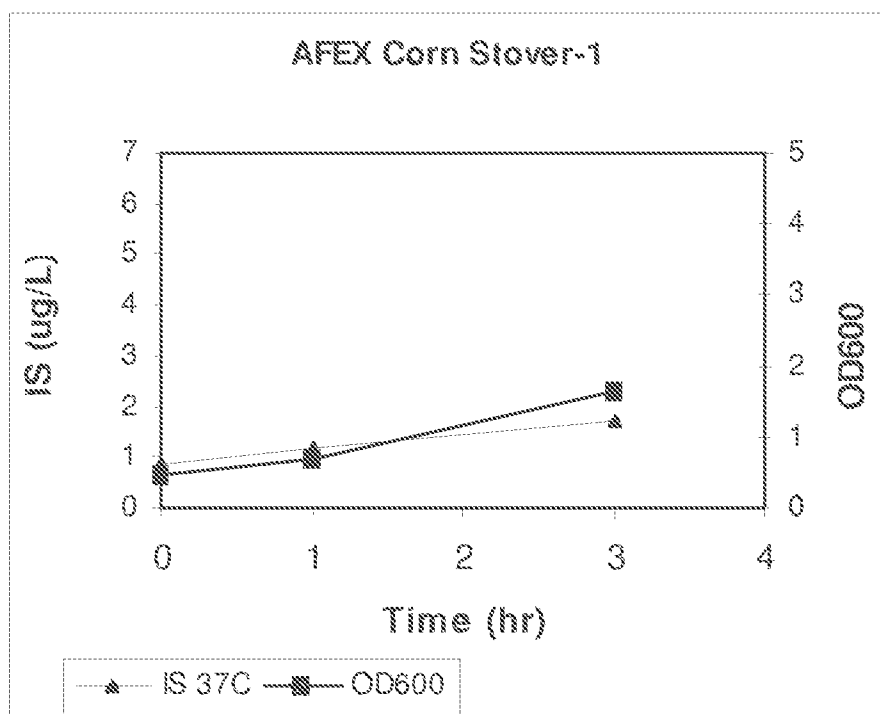


Figure 48A

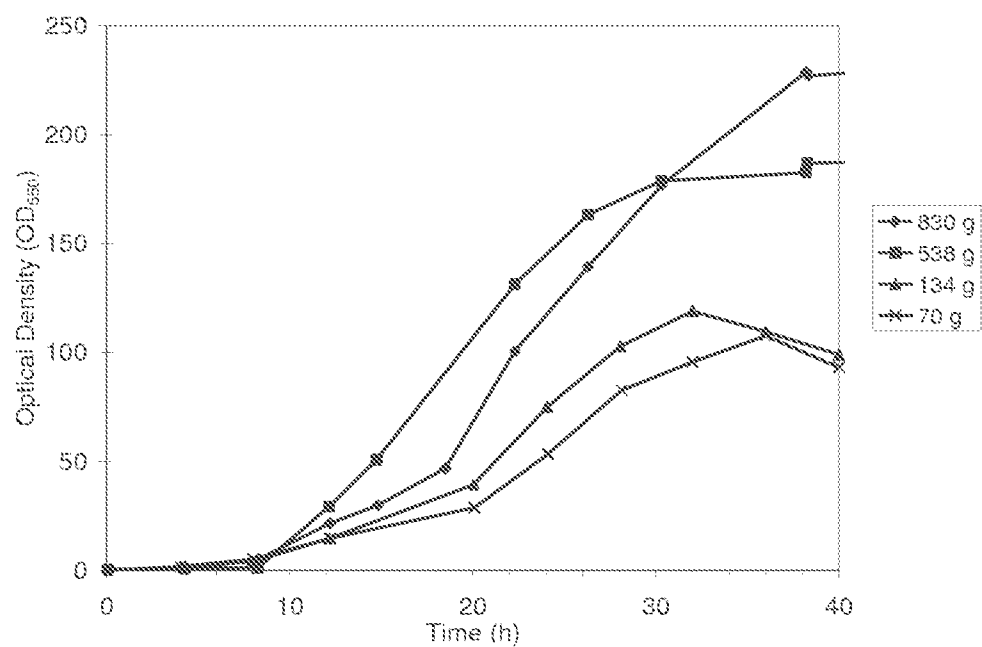


Figure 48B

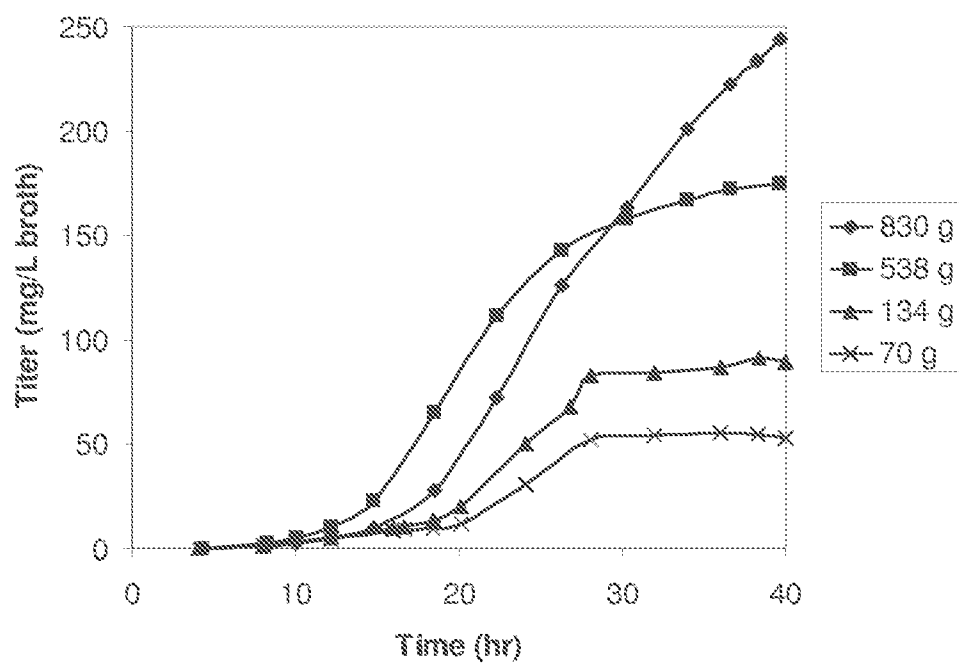


Figure 48C

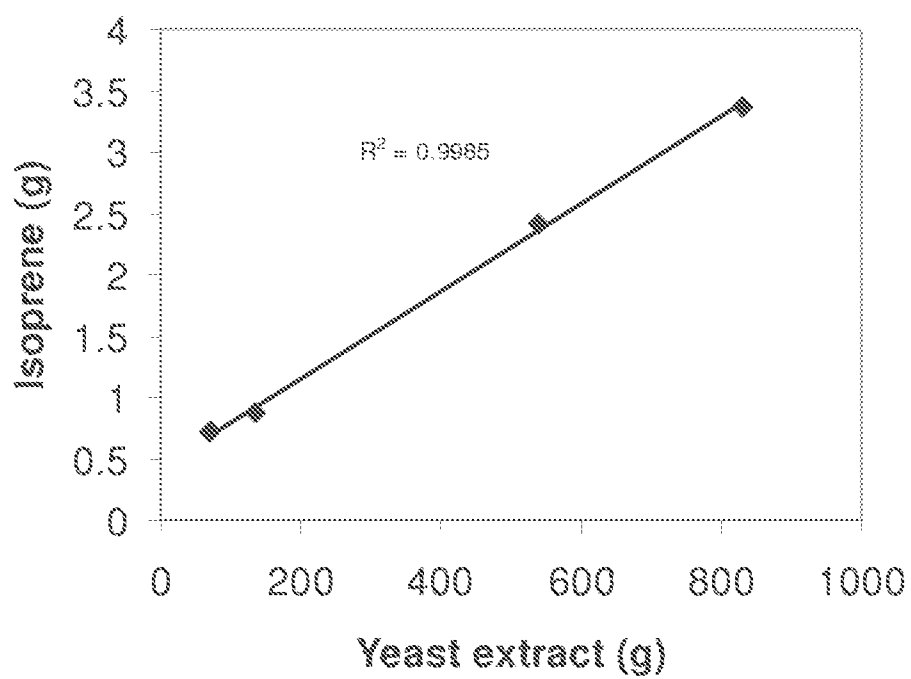


Figure 49A

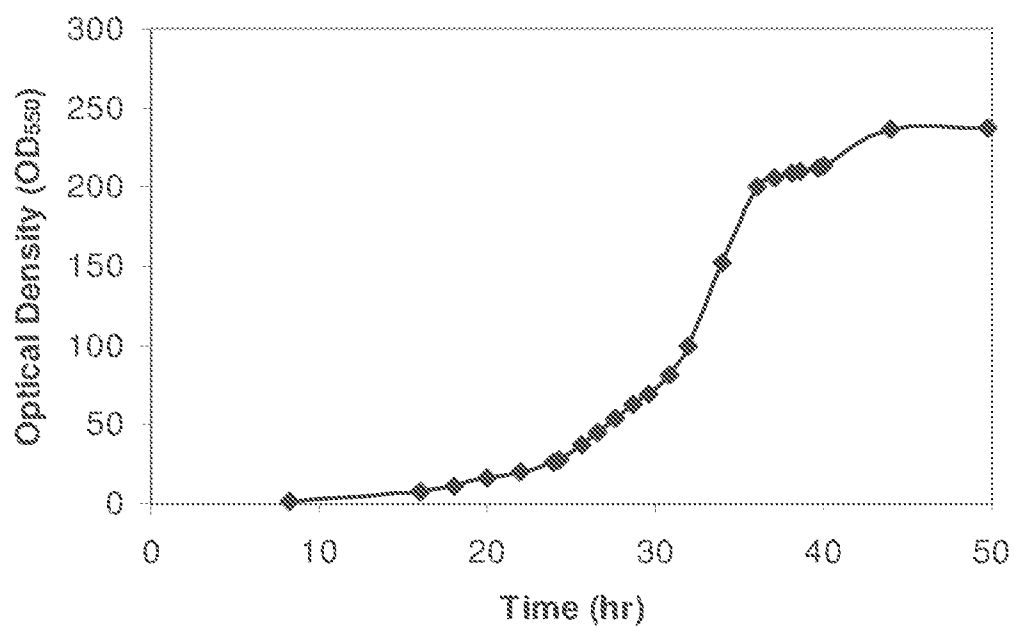


Figure 49B

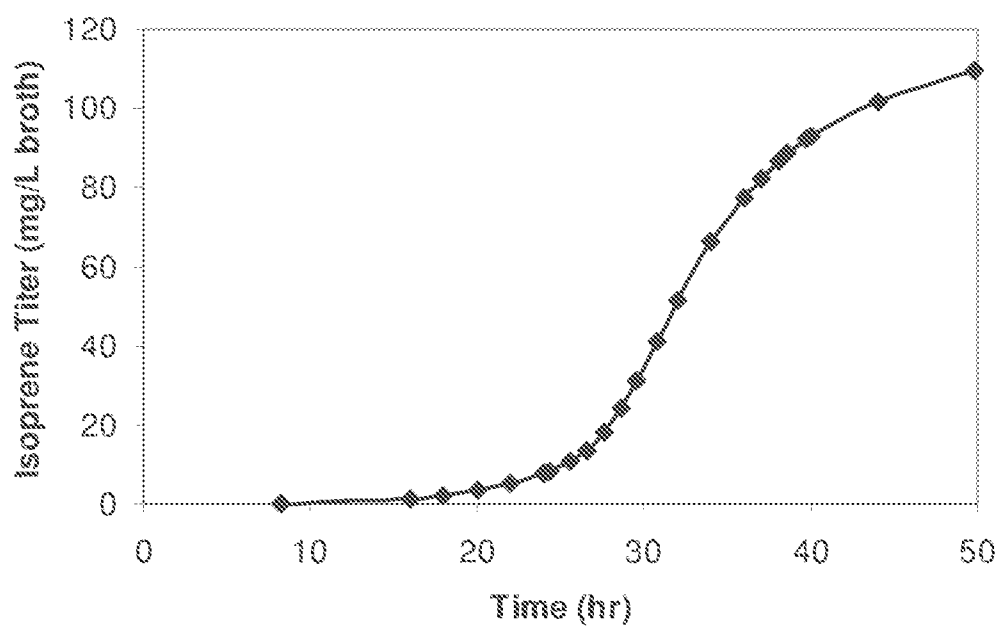


Figure 49C

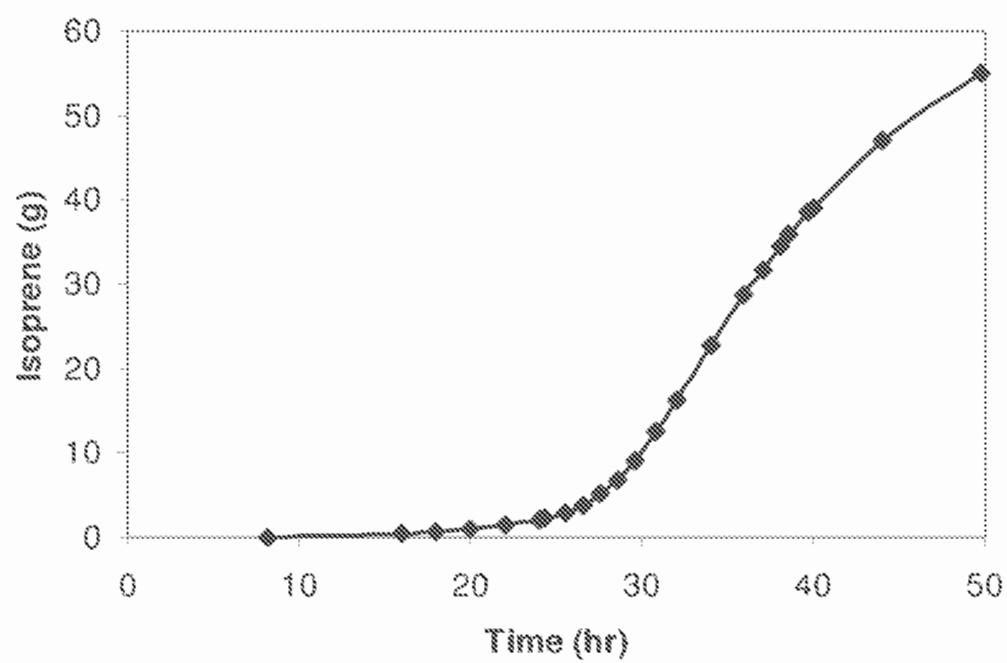


Figure 50

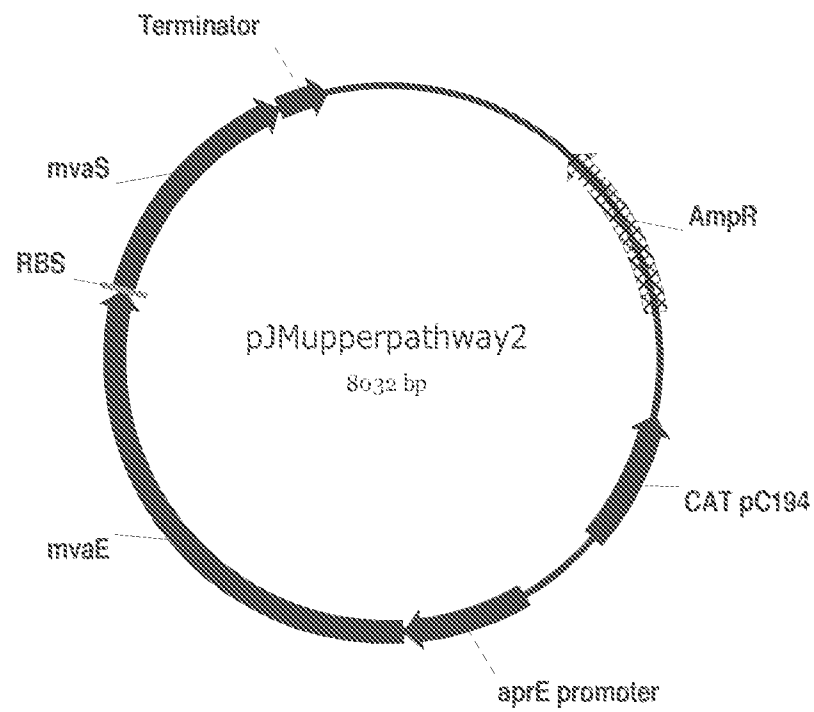


Figure 51A

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Figure 51B

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Figure 51C

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(SEQ ID NO:56)

Figure 52

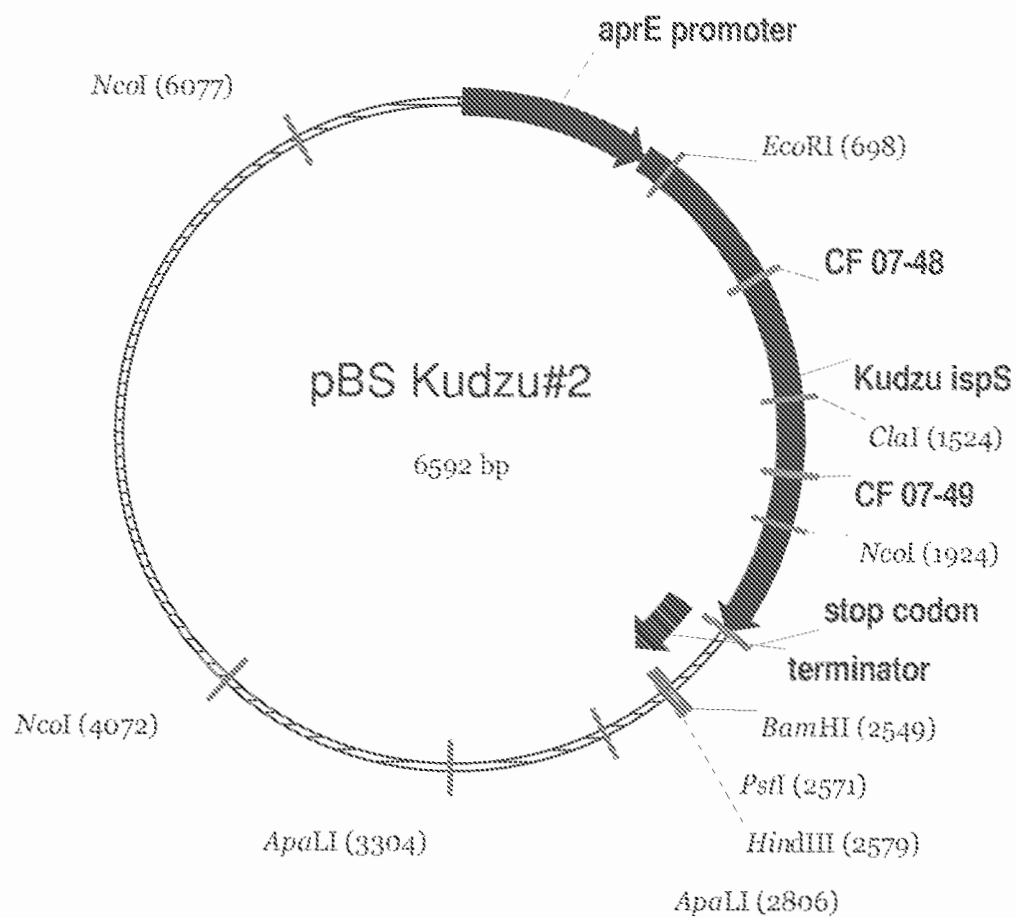


Figure 53A

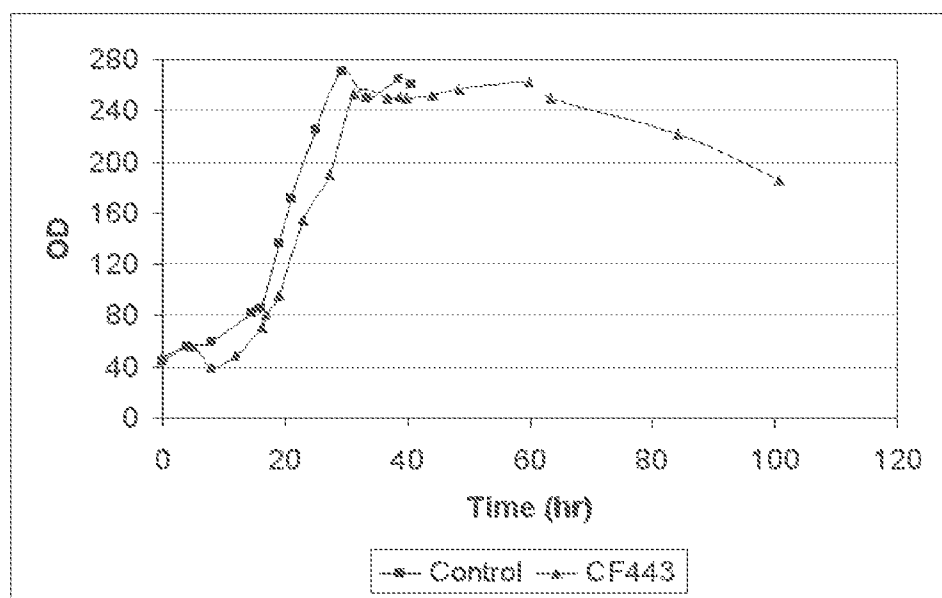


Figure 53B

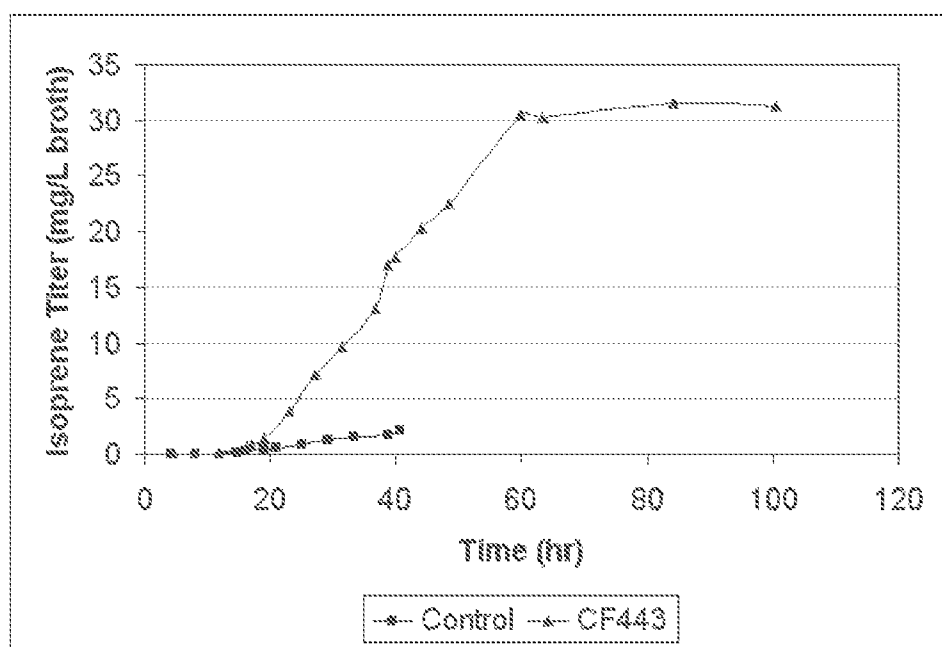


Figure 54

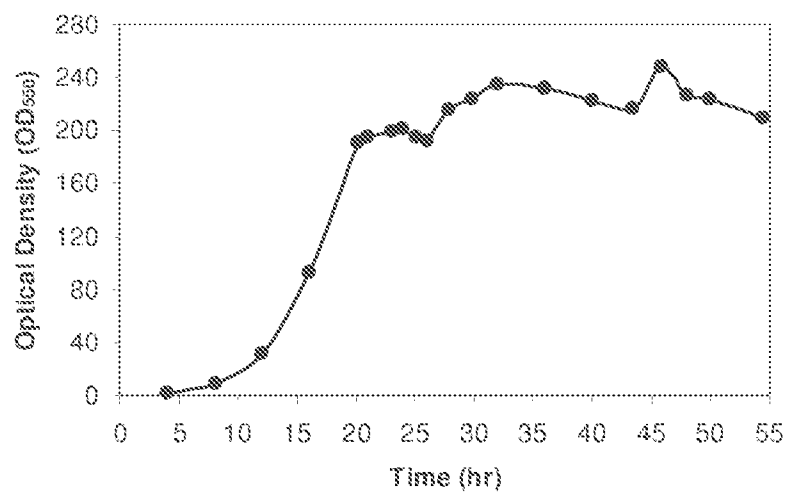


Figure 55

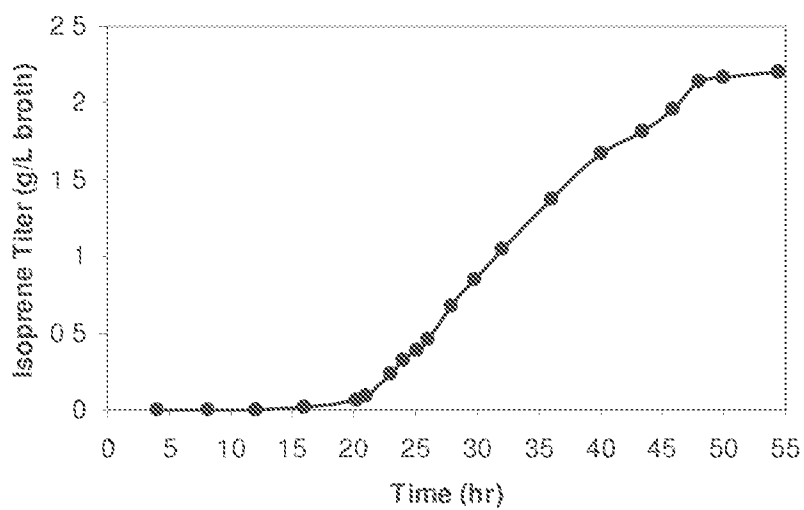


Figure 56

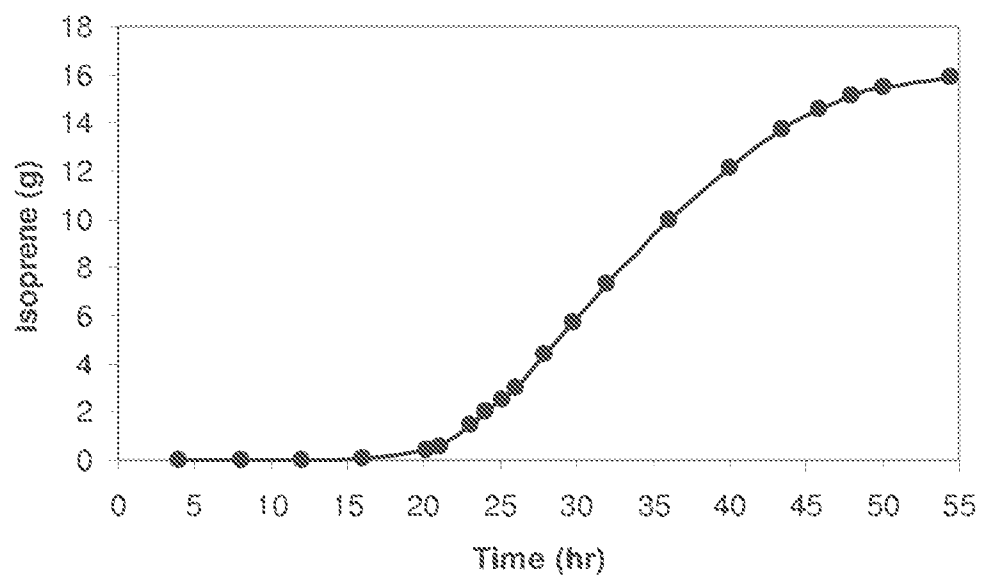


Figure 57

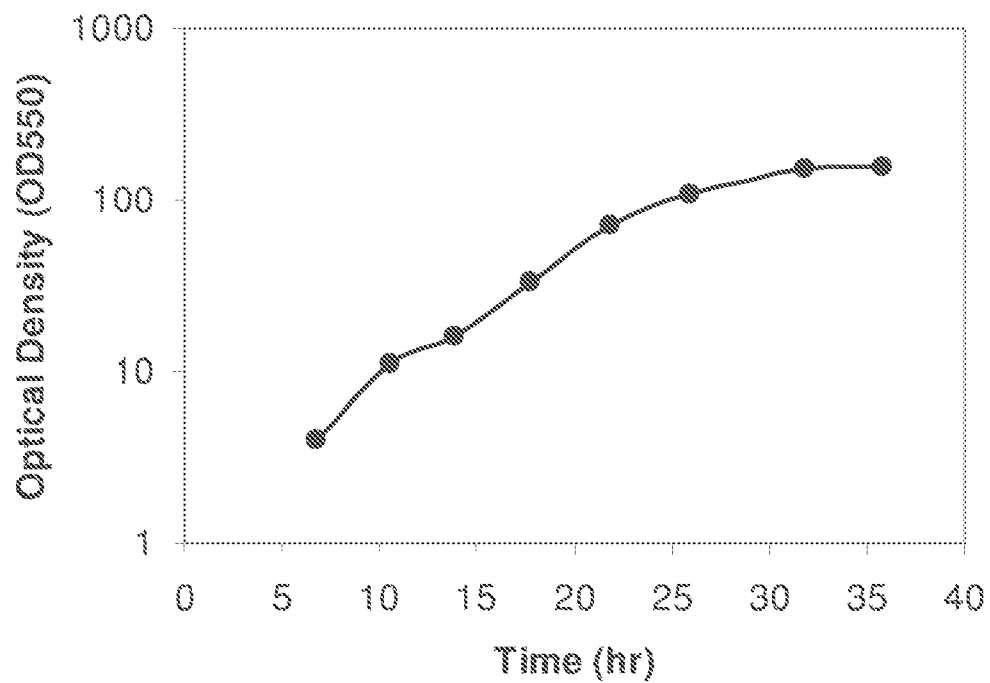


Figure 58

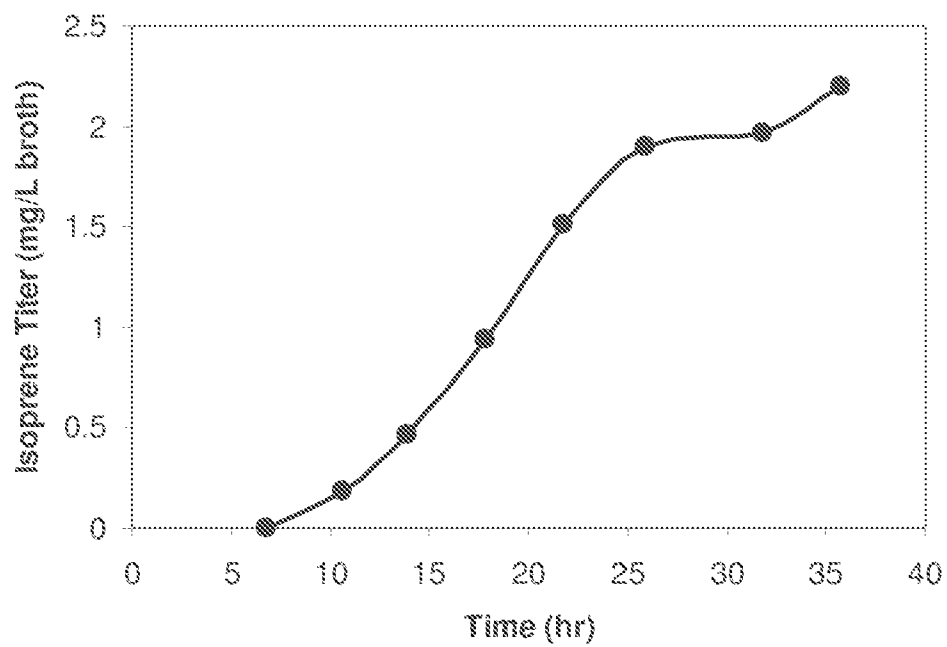


Figure 59

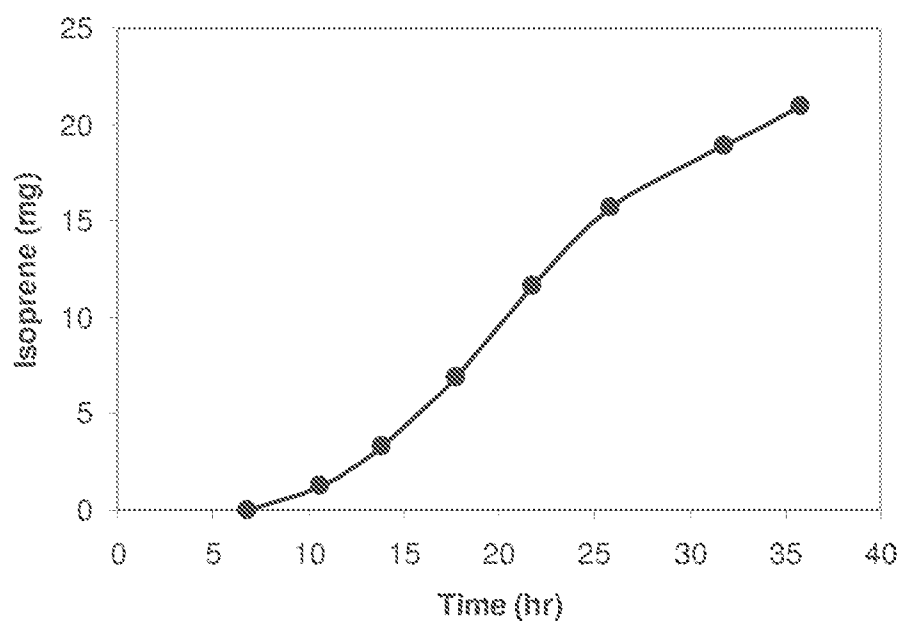


Figure 60

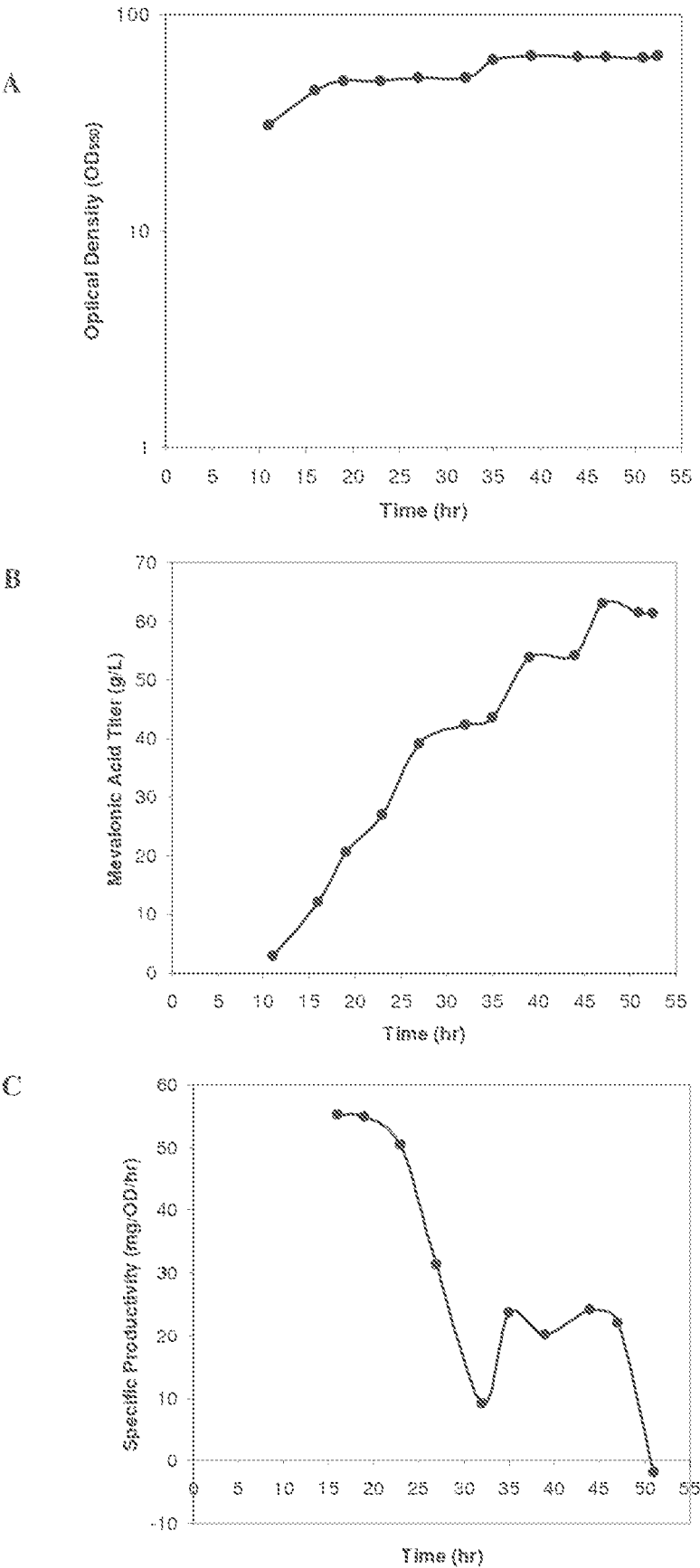


Figure 61

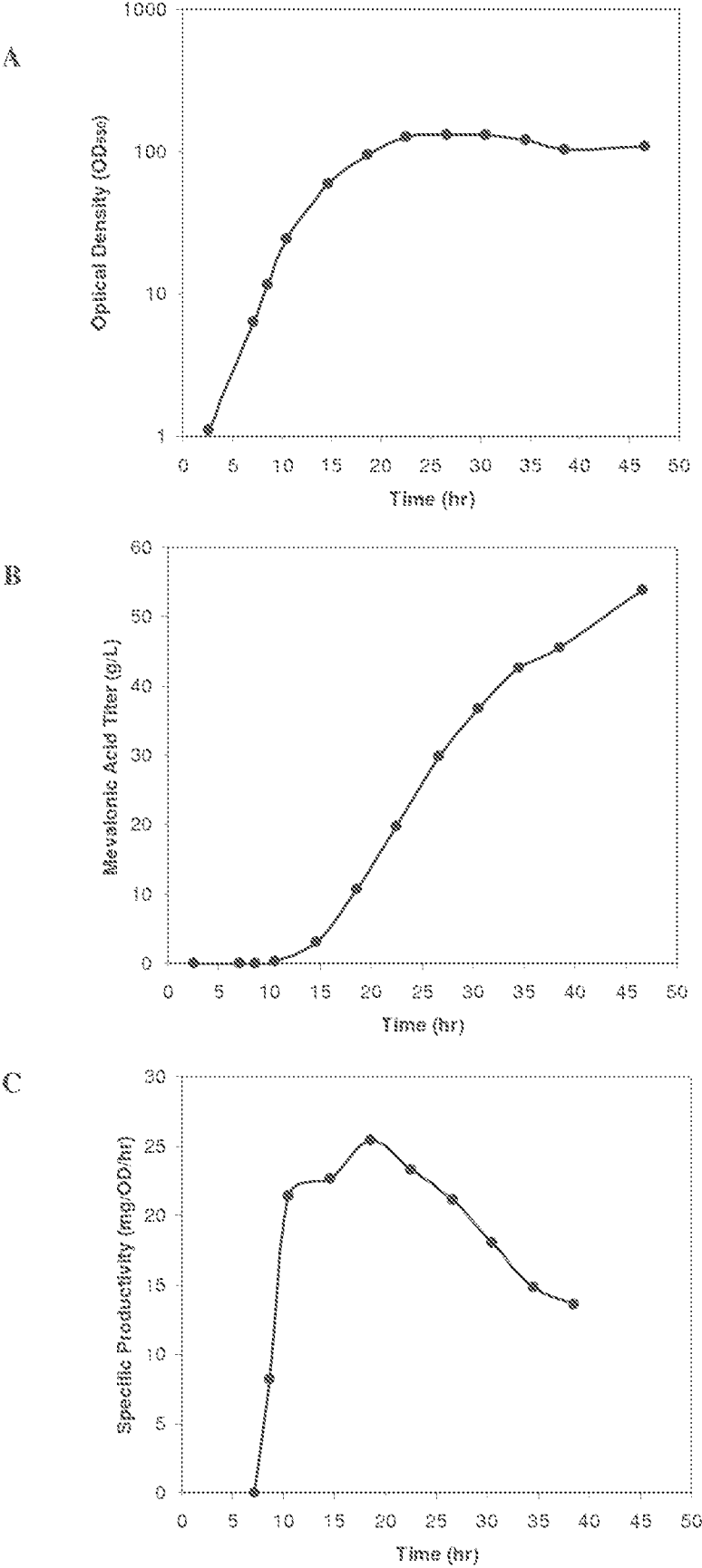
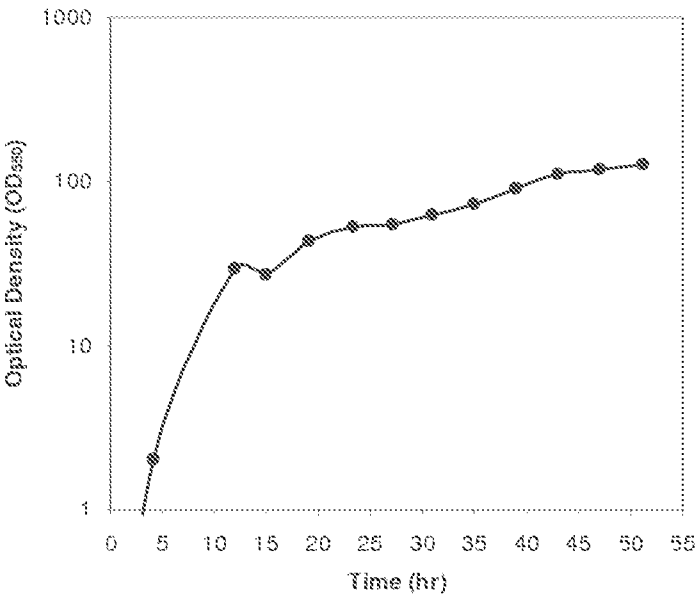
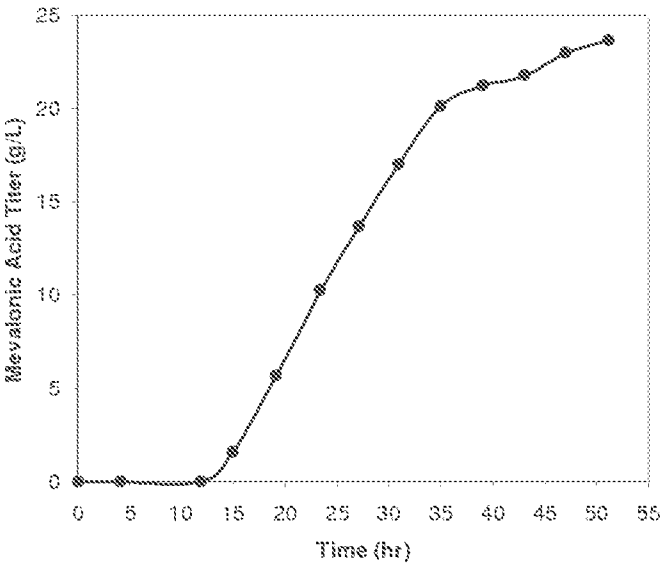


Figure 62

A



B



C

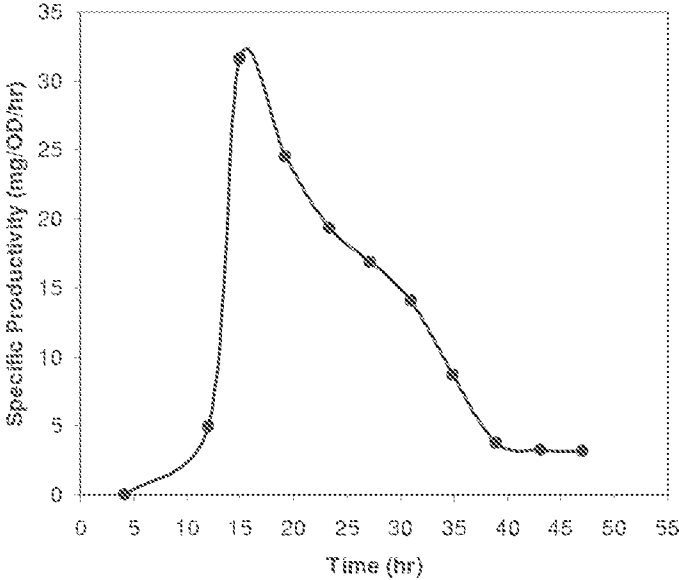
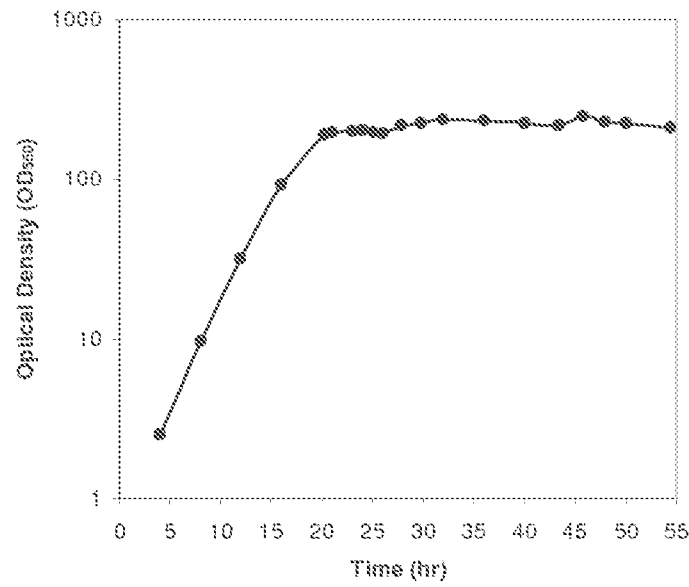
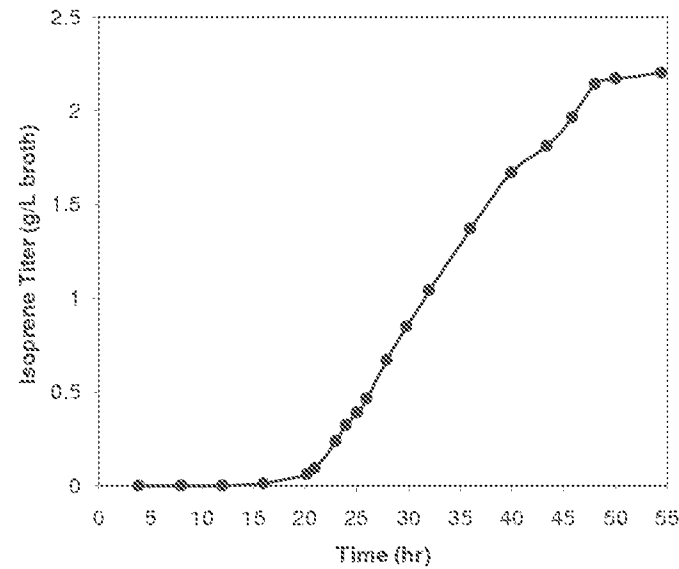


Figure 63

A



B



C

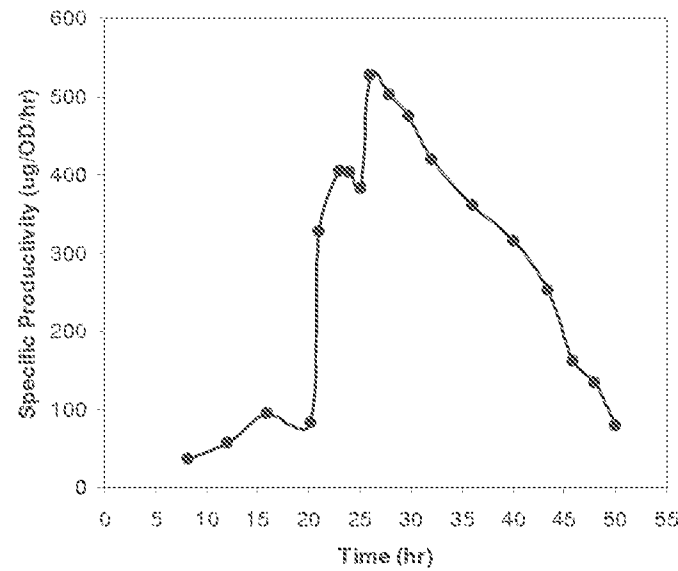


Figure 64

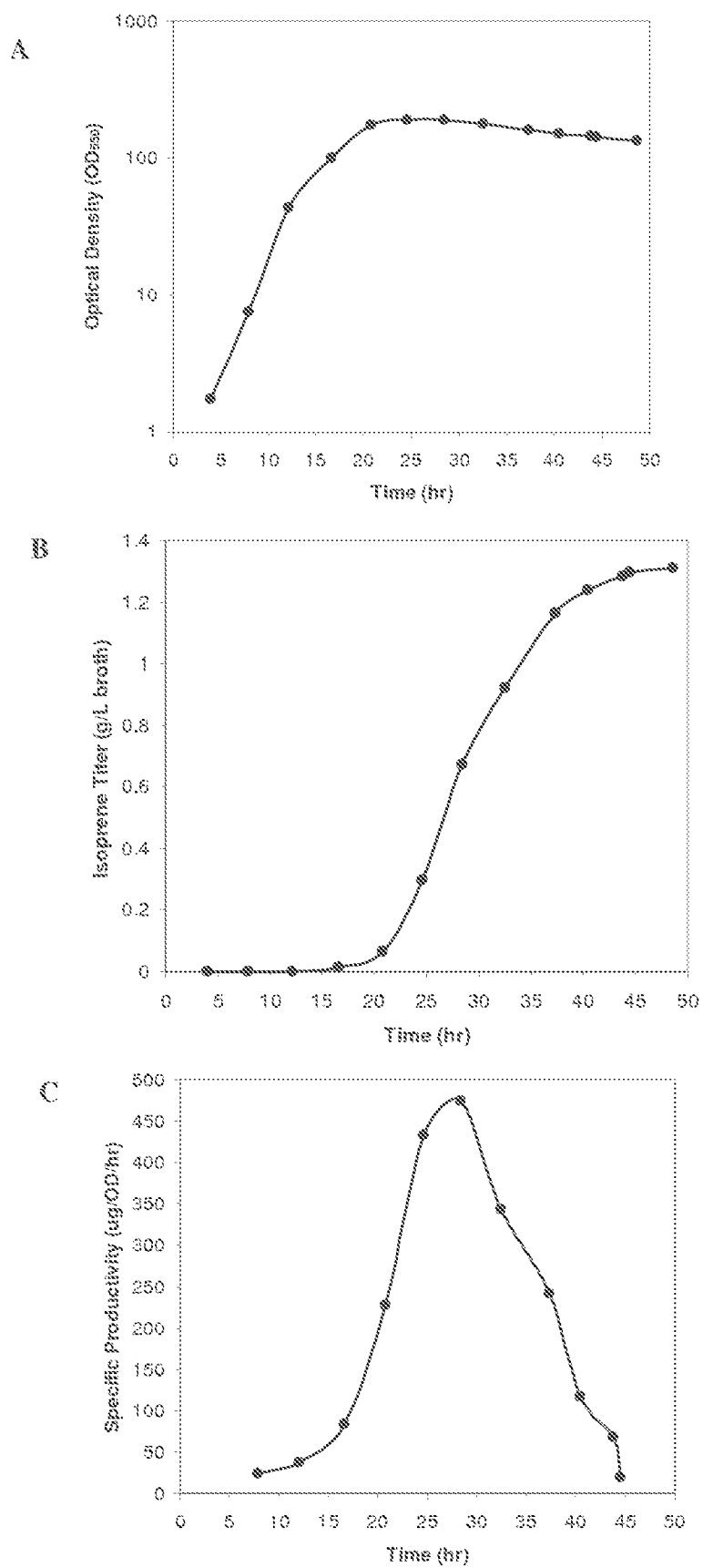
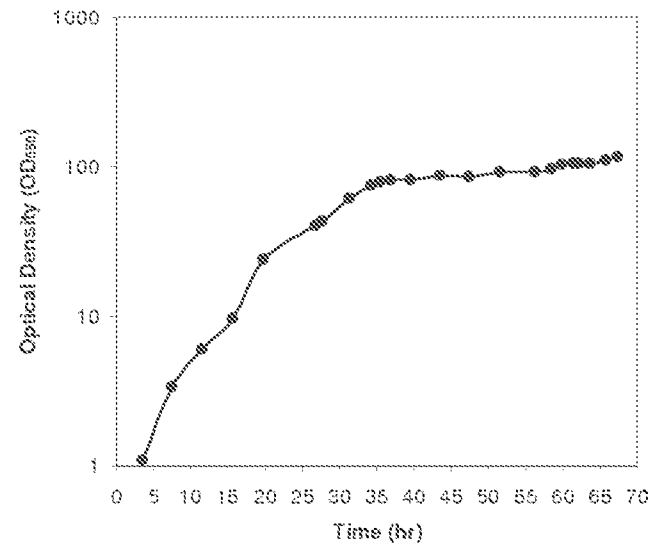
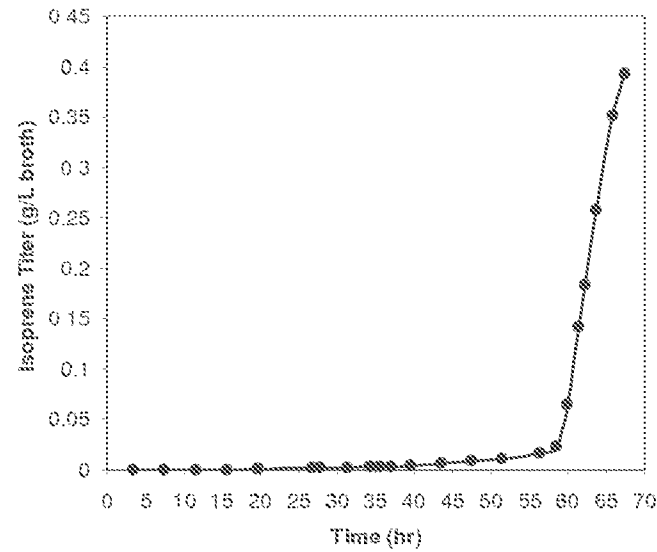


Figure 65

A



B



C

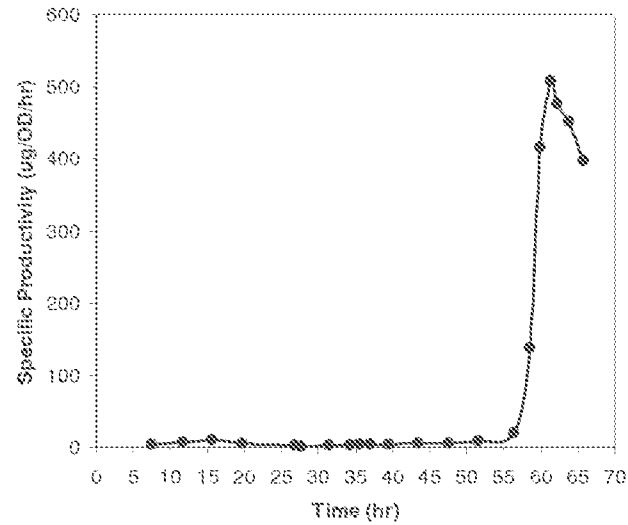
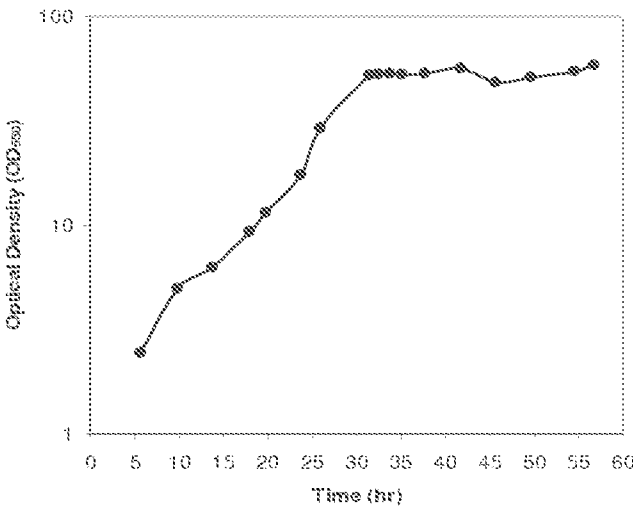
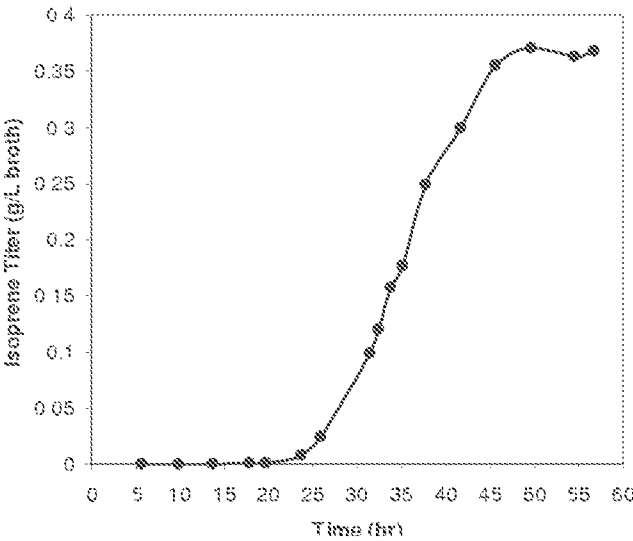


Figure 66

A



B



C

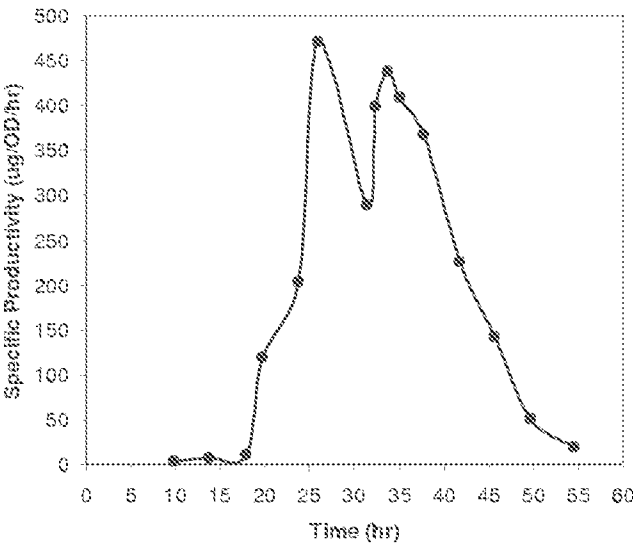


Figure 67

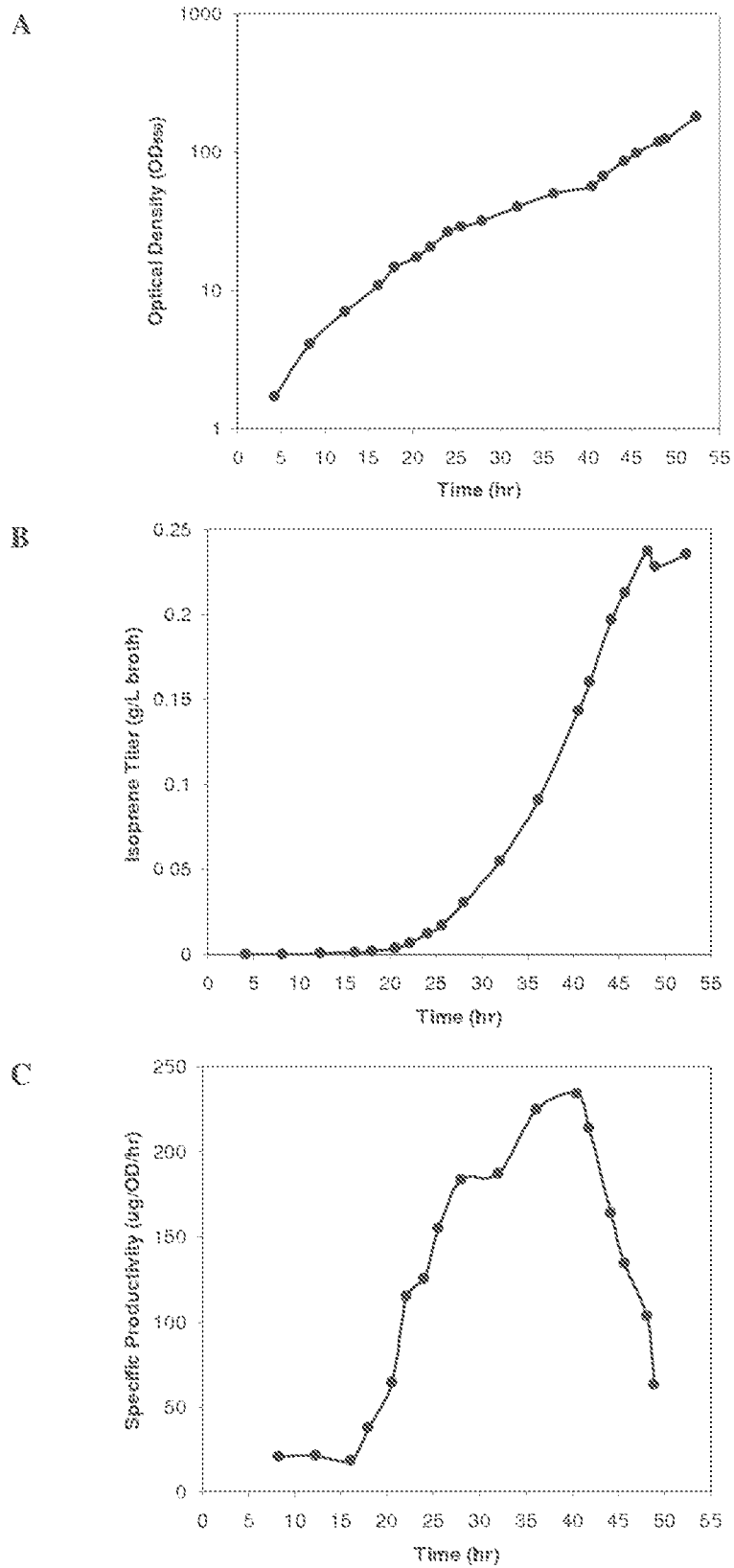


Figure 68

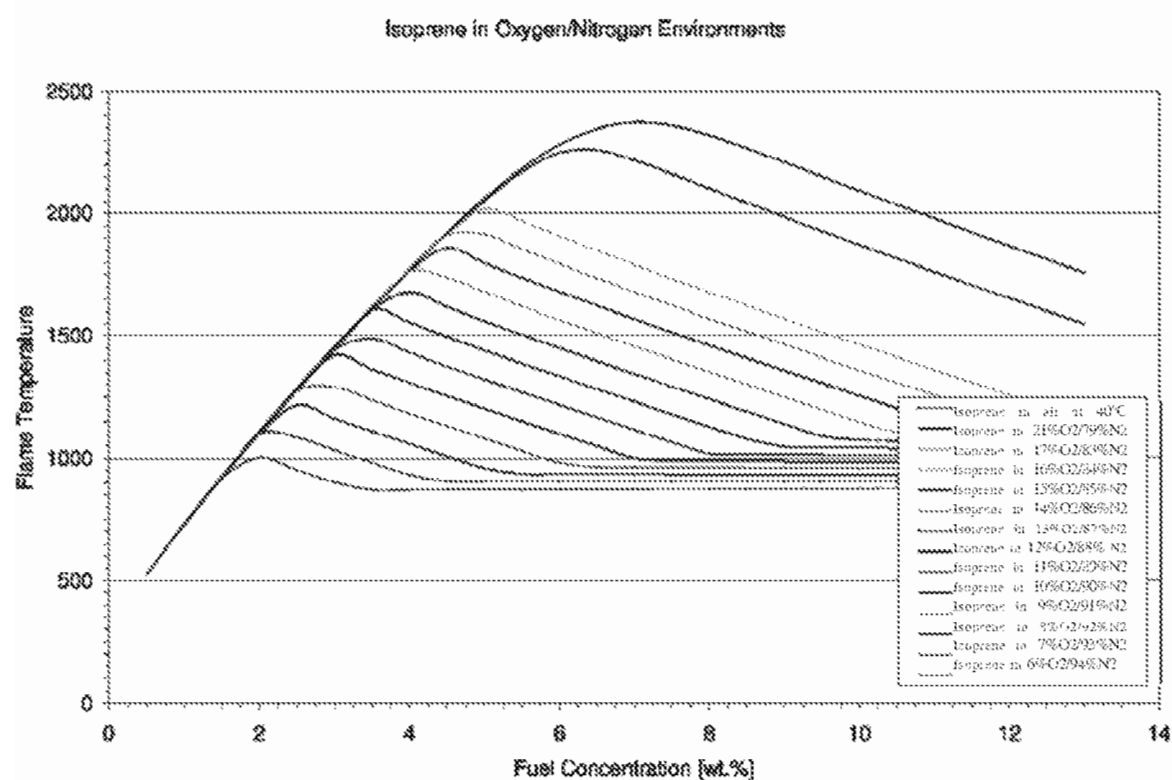


Figure 69

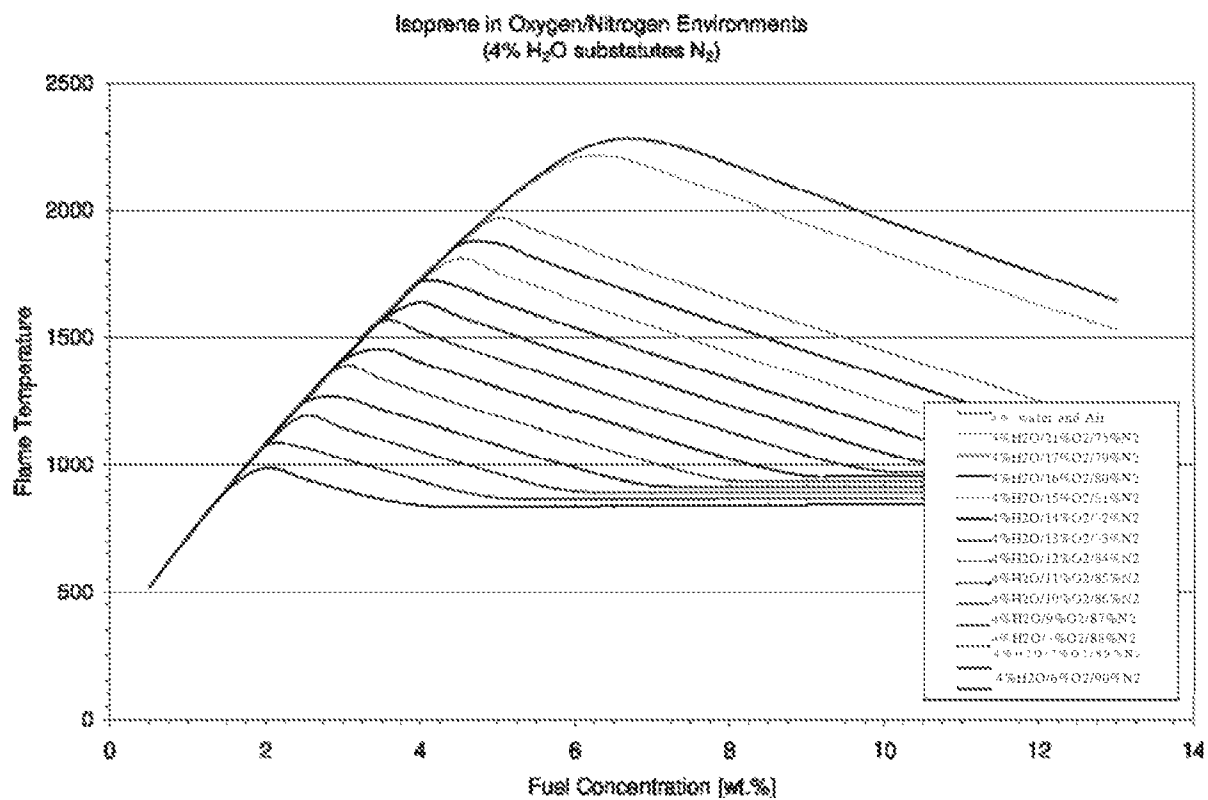


Figure 70

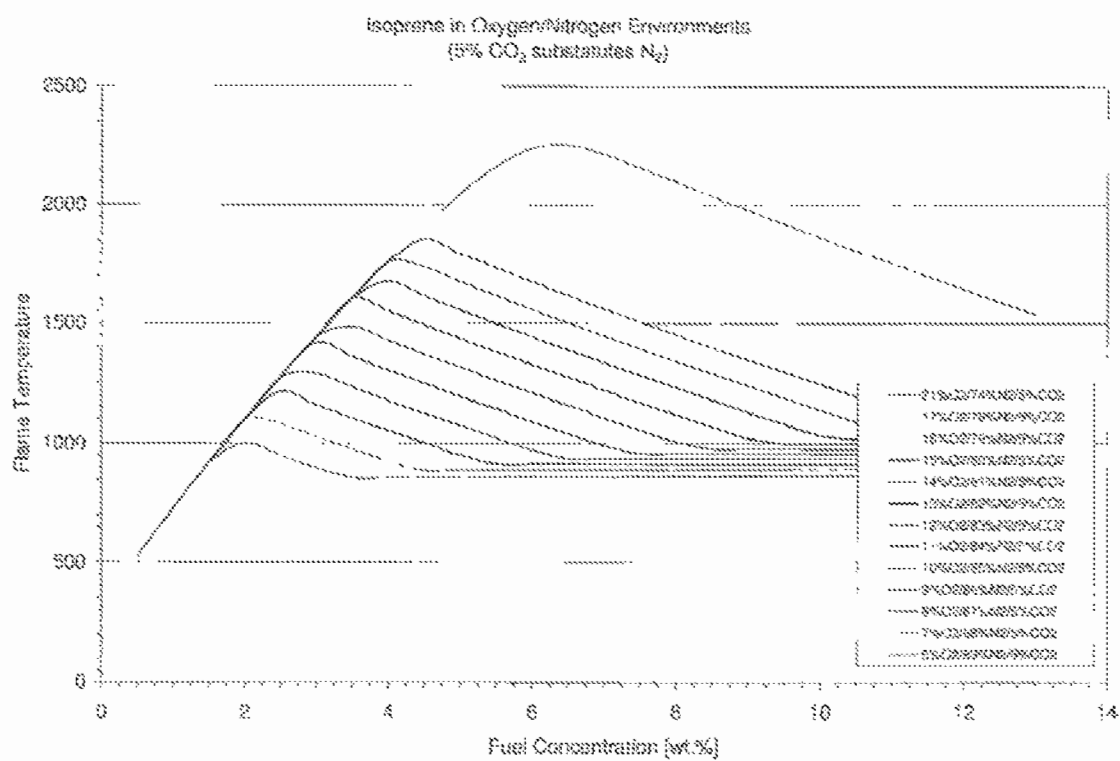


Figure 71

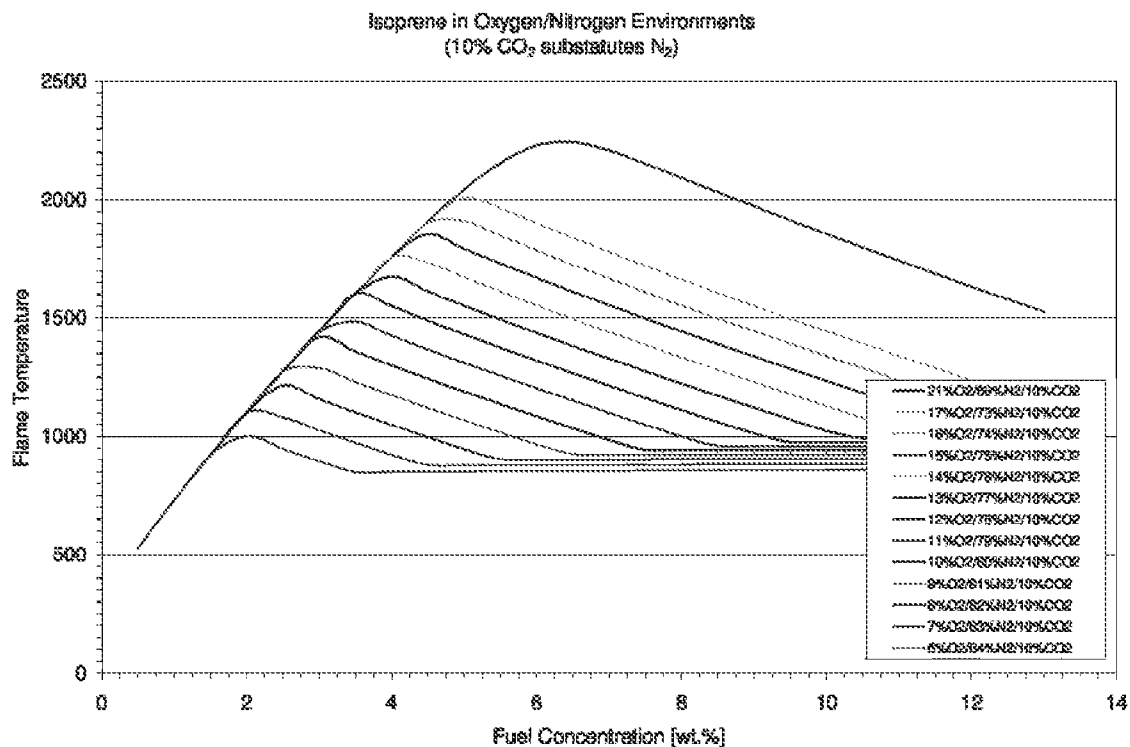


Figure 72

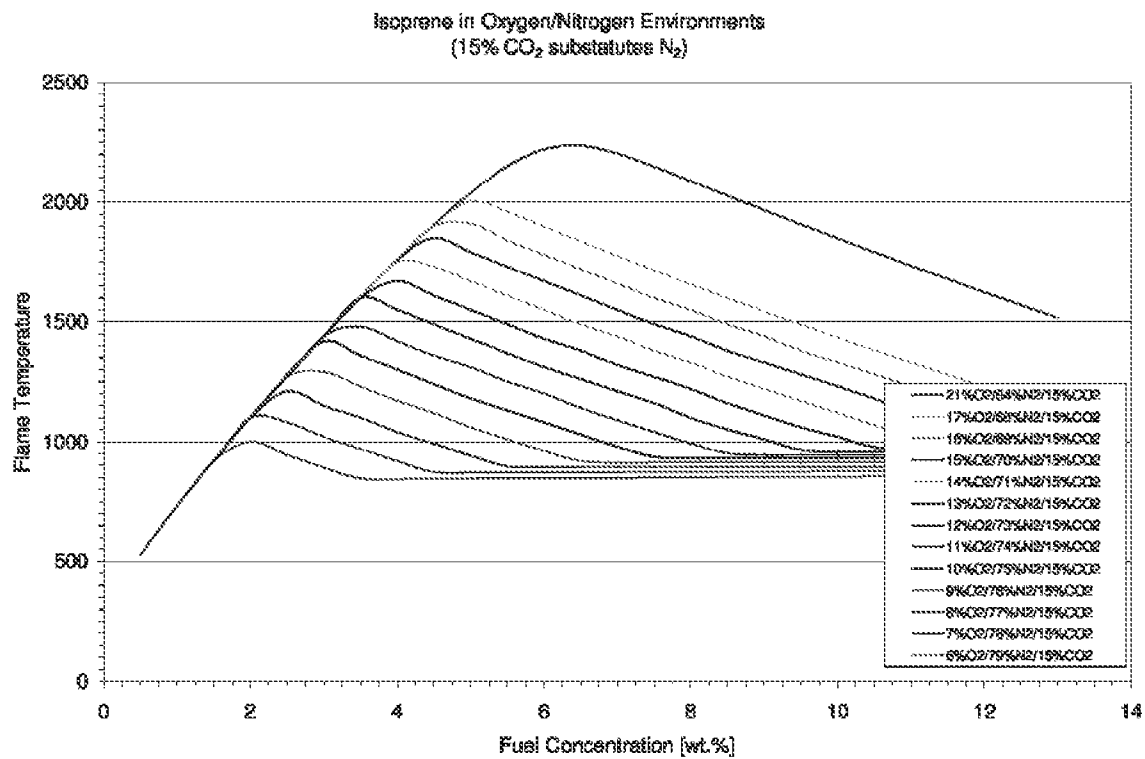


Figure 73

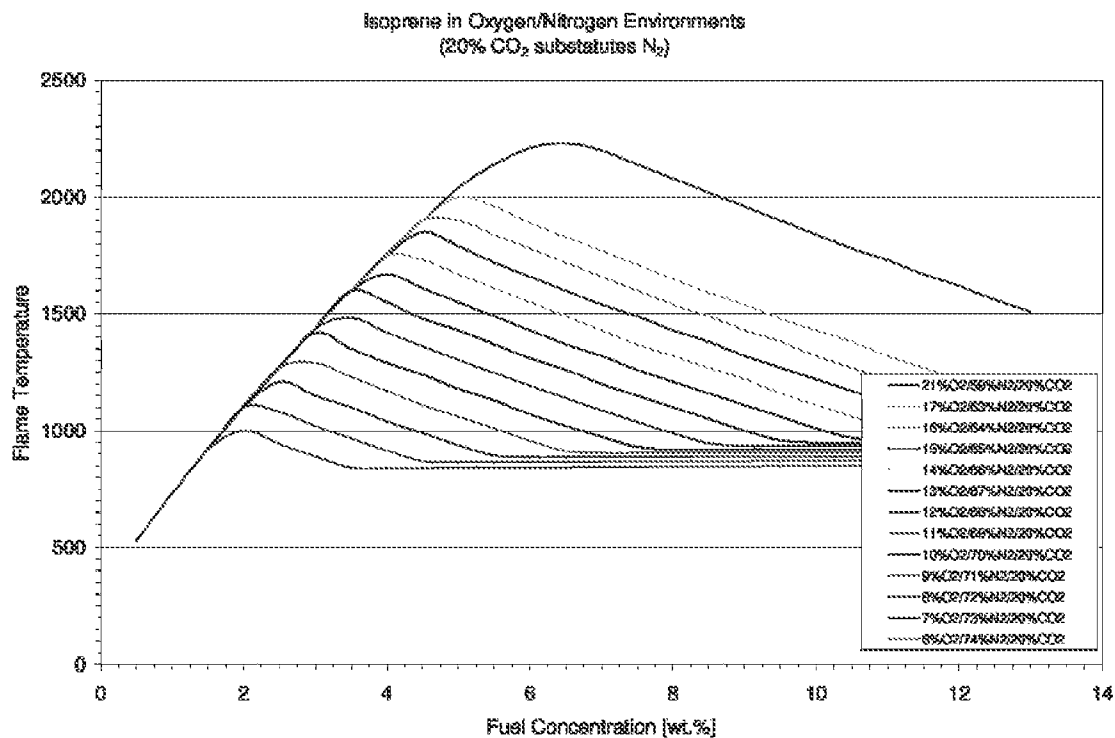


Figure 74

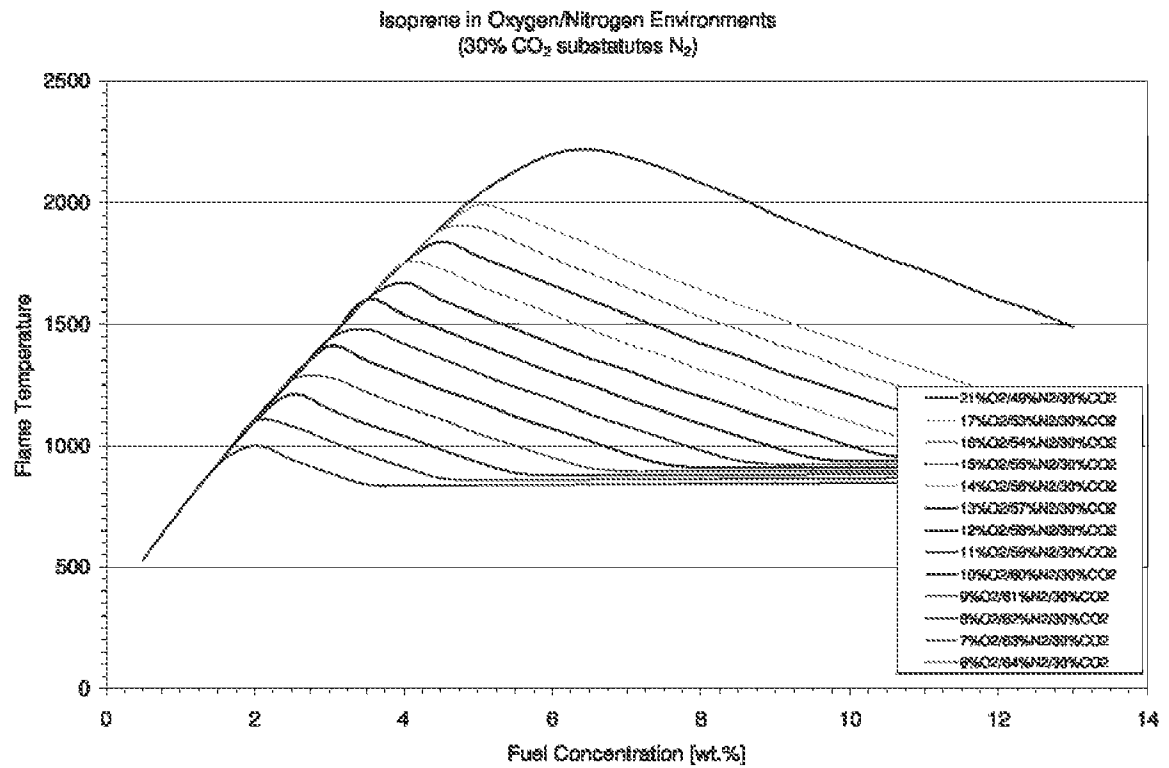


Figure 75A

Concentration at Deflagration															
Fuel Makeup				Oxidizer Makeup				Molar Concentration based on 100g of sample				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	297.52	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	16.62	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	86.91	0.00	
4.40	95.60	100	0	12	88	6.47	0.00	35.85	300.46	342.78	1.89	10.46	87.55	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	13.76	82.49	0.00	
9.50	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

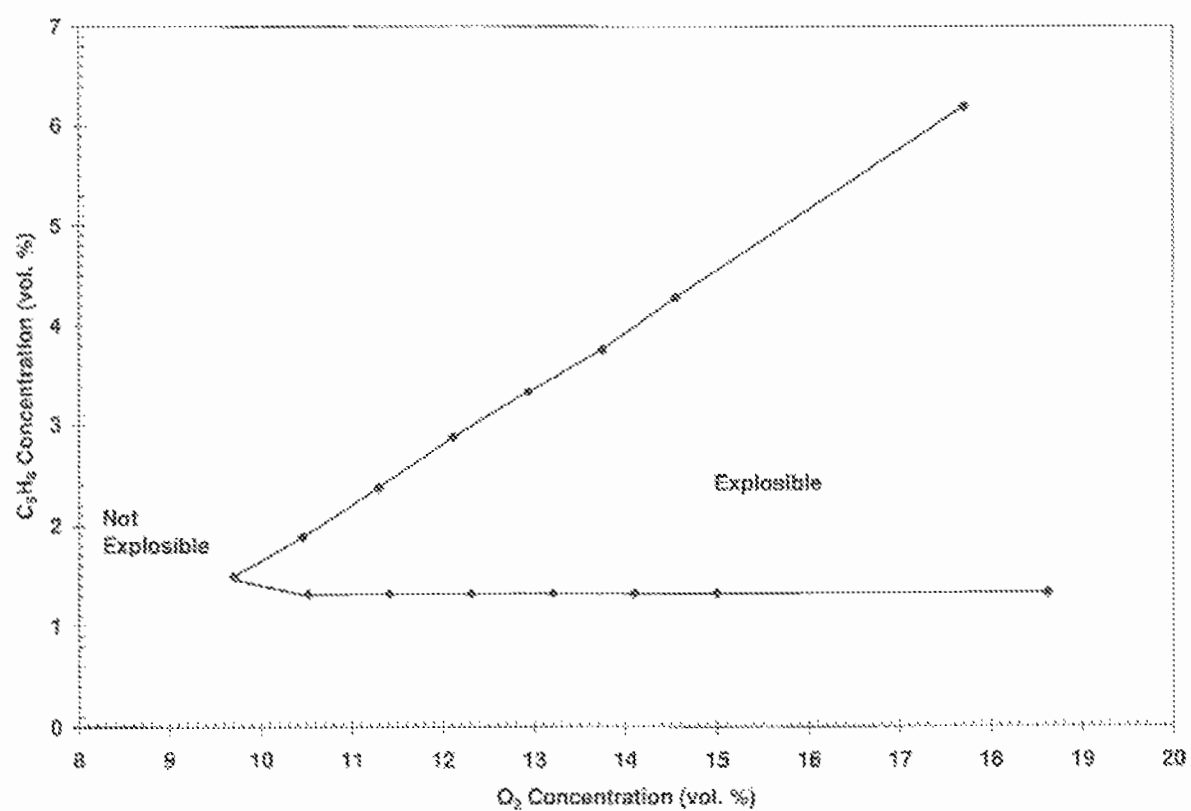


Figure 76A

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	351.49	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	16.19	74.26	6.16
3.500	96.500	100	4	11.5	84.5	5.15	21.44	94.68	291.22	352.49	1.46	9.84	82.62	6.08
4.200	95.800	100	4	12	84	6.18	21.29	95.93	287.40	350.79	1.76	10.24	81.93	6.07
5.900	94.700	100	4	13	83	7.79	21.04	98.47	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	267.38	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	46.13	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

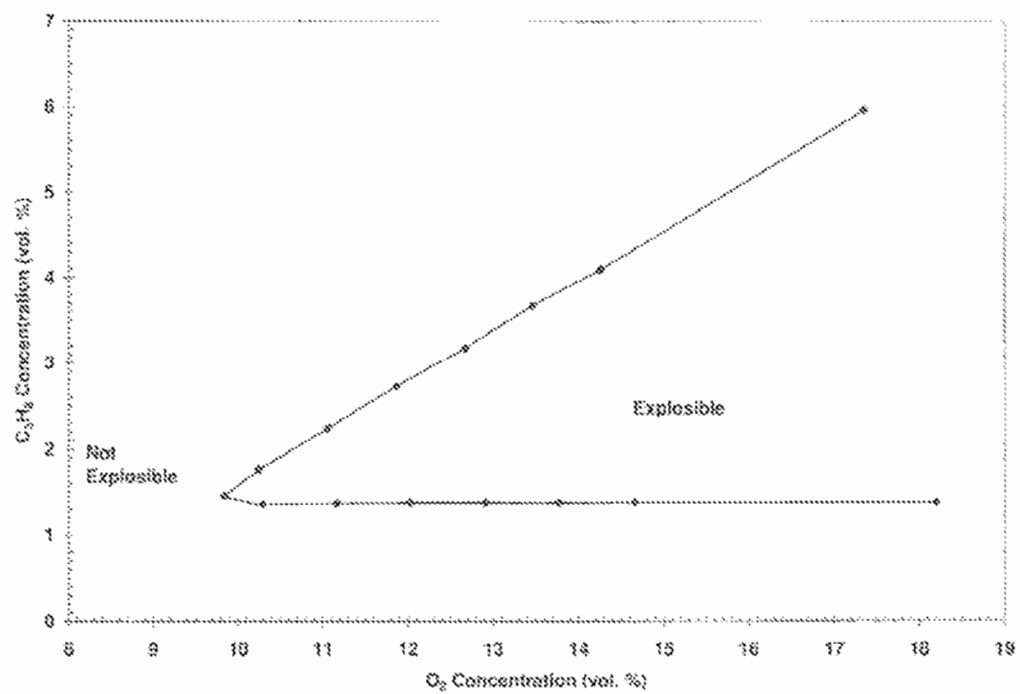


Figure 77

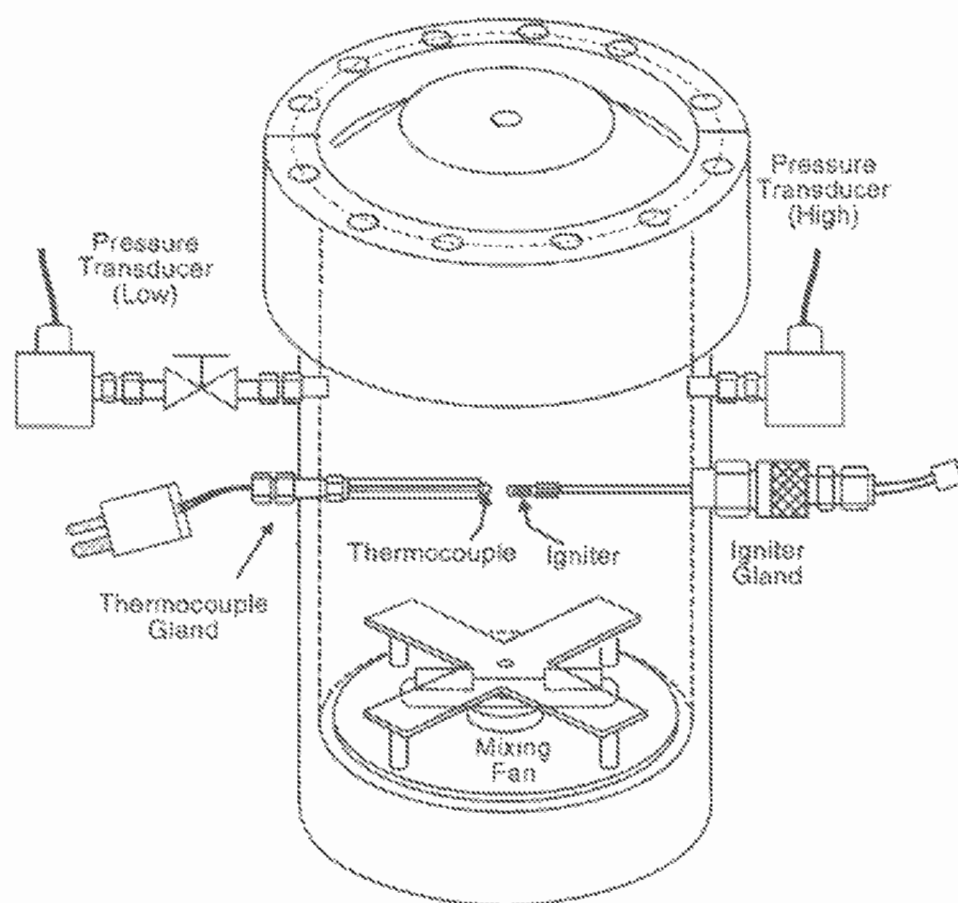


Figure 78A

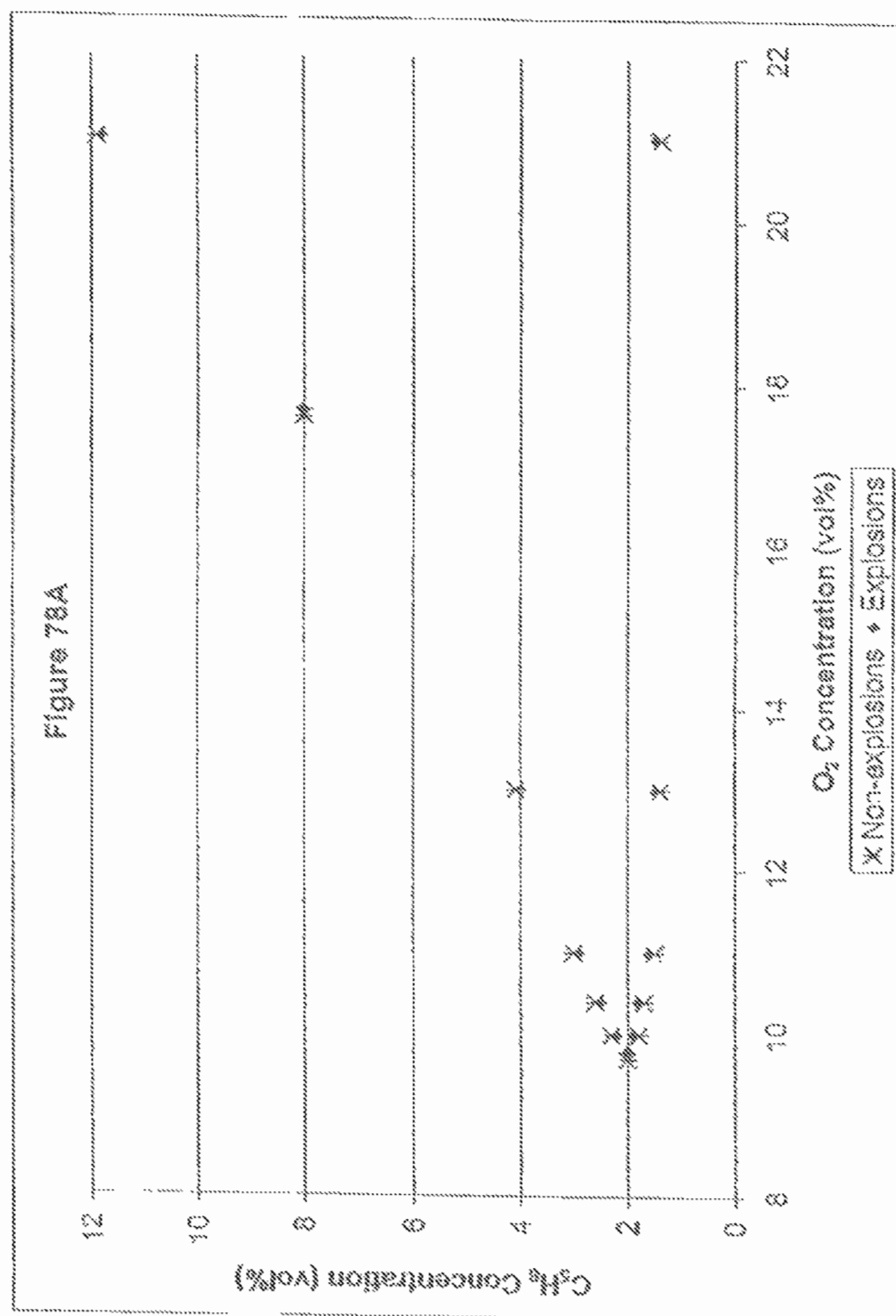
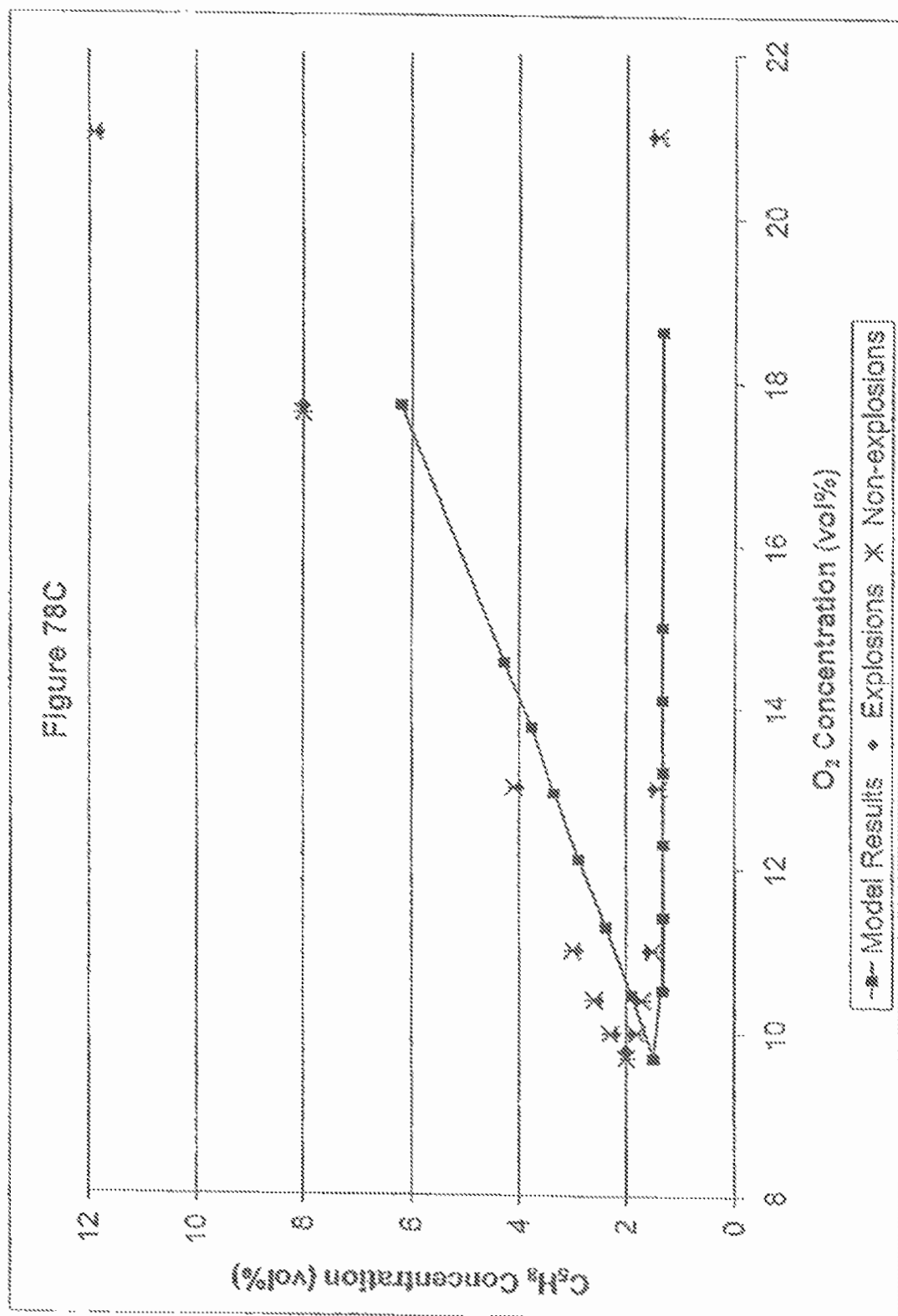


Figure 78B

Explosions		Non-explosions	
O ₂ Concentration (vol. %)	C ₅ H ₈ Concentration (vol. %)	O ₂ Concentration (vol. %)	C ₅ H ₈ Concentration (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



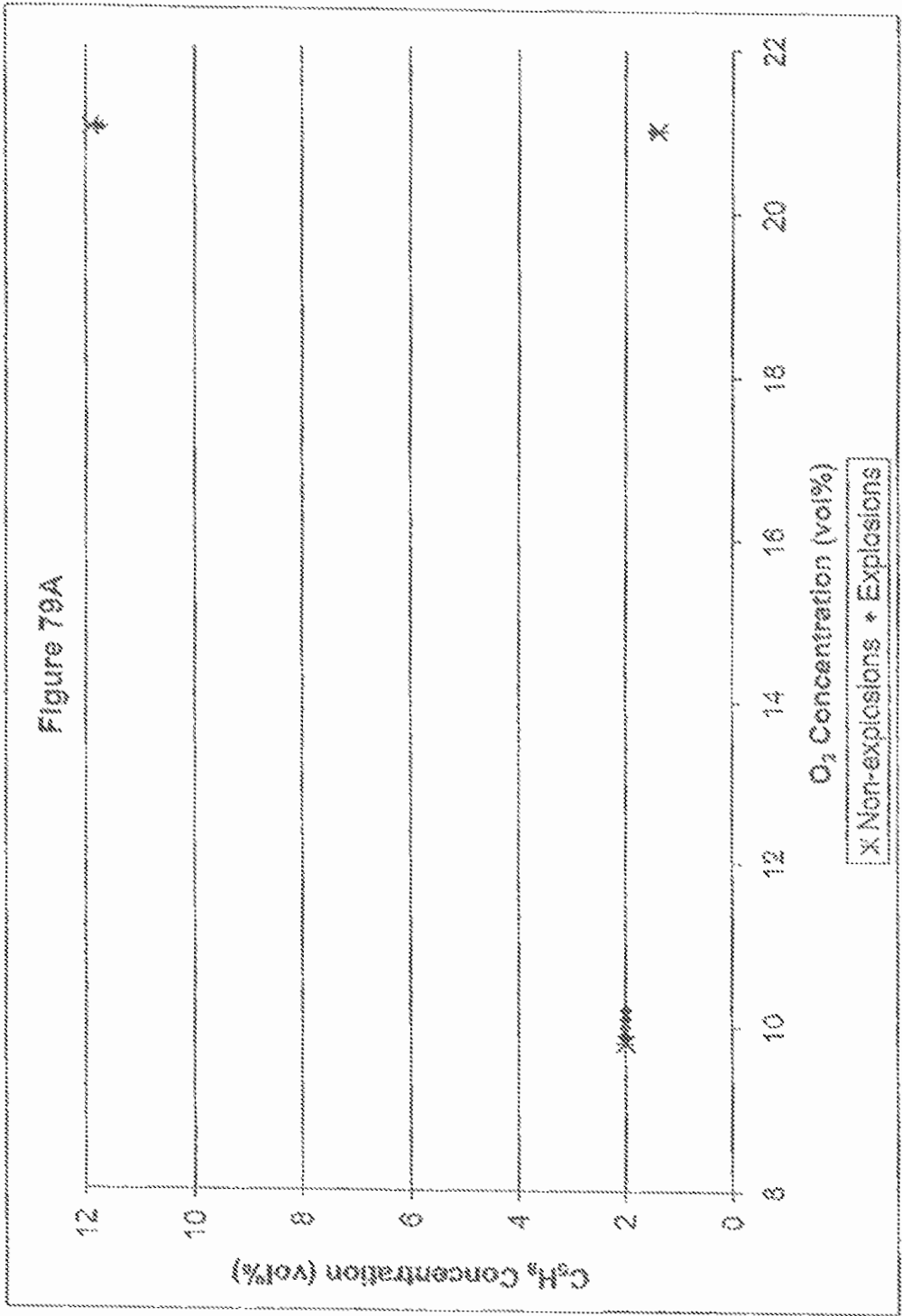


Figure 79B

Explosions		Non-explosions	
O ₂ Concentration (vol. %)	C ₅ H ₈ Concentration (vol. %)	O ₂ Concentration (vol. %)	C ₅ H ₈ Concentration (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 80A

TEST SERIES 1

Test	Data File Name	Temp °C	Initial Pressure bara	Partial Pressures			Concentrations			Result	P _{exp} bara
				C ₂ H ₂ mbar	N ₂ mbar	O ₂ mbar	C ₂ H ₂ 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	5.6
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	16	785	214	1.6	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	3.9	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	P _{ex} bara
				C ₃ H ₆ mbar	N ₂ mbar	O ₂ mbar	C ₃ H ₆ 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	18	886	112	1.8	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	888	96	2.0	88.6	9.5	Non-Explosion	1.05
50	T11140705	40	1.014	20	888	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	1.08
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	886	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	1.08
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	1.09
73	T11140728	40	1.014	20	895	99	2.0	88.3	9.8	Explosion	1.1
74	T11140729	40	1.014	20	896	96	2.0	88.4	9.7	Non-Explosion	1.06
75	T11140730	40	1.014	20	896	96	2.0	88.4	9.7	Non-Explosion	1.08
76	T11140731	40	1.014	20	896	96	2.0	88.4	9.7	Non-Explosion	1.07
77	T11140732	40	1.014	81	781	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	74.8	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	1.06
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	Per bara
				H ₂ O mbar	C ₂ H ₆ mbar	N ₂ mbar	O ₂ mbar	H ₂ O vol. %	C ₂ H ₆ 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	1.99
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	1.06
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	6.27
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	T11150700	40	1.014	41	14	746	213	4.0	1.4	73.6	21.0	Non-explosion	1.03
12	T11150701	40	1.014	41	20	850	103	4.0	2.0	83.8	10.2	Explosion	1.11
13	T11150702	40	1.014	41	20	851	102	4.0	2.0	83.9	10.1	Explosion	1.11
14	T11150703	40	1.014	41	20	852	101	4.0	2.0	84.0	10.0	Explosion	1.09
15	T11150704	40	1.014	41	20	853	100	4.0	2.0	84.1	9.9	Explosion	1.09
16	T11150705	40	1.014	41	20	854	99	4.0	2.0	84.2	9.8	Non-explosion	1.07
17	T11150706	40	1.014	40	20	855	99	3.9	2.0	84.3	9.8	Non-explosion	1.06
18	T11150707	40	1.014	41	20	854	99	4.0	2.0	84.2	9.8	Non-explosion	1.08

Figure 82

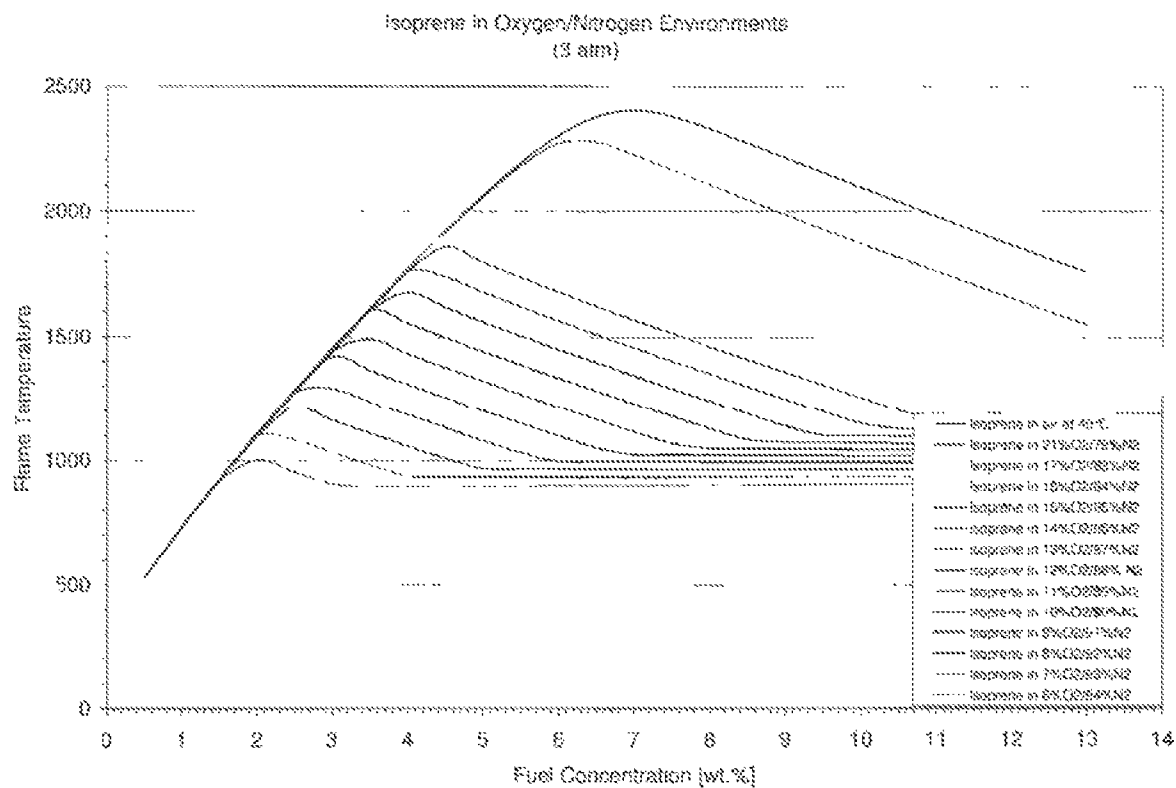


Figure 83

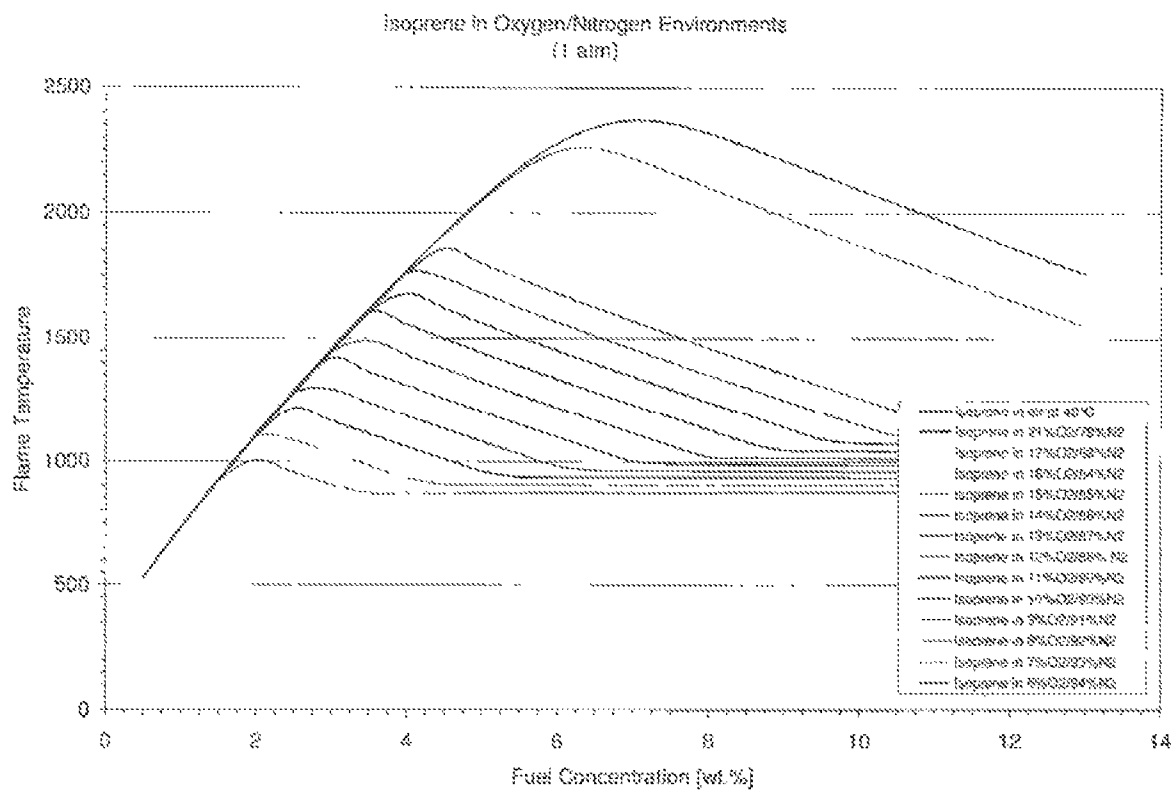


Figure 84

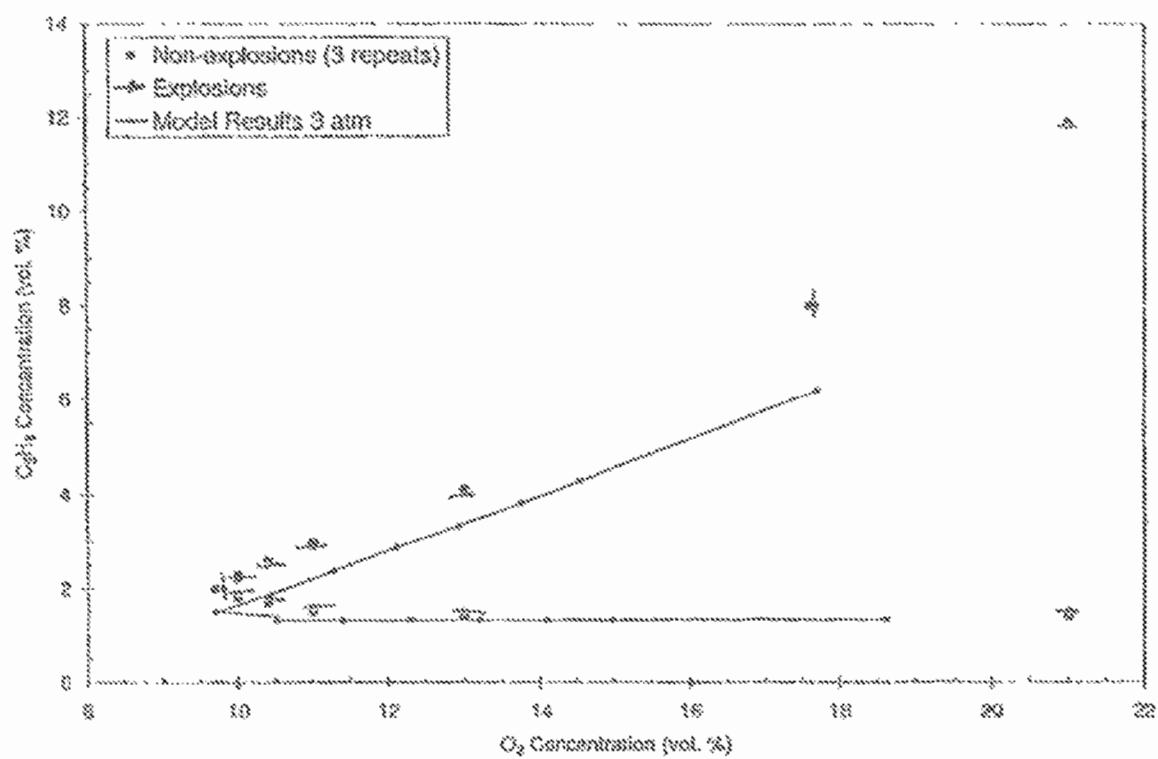


Figure 85

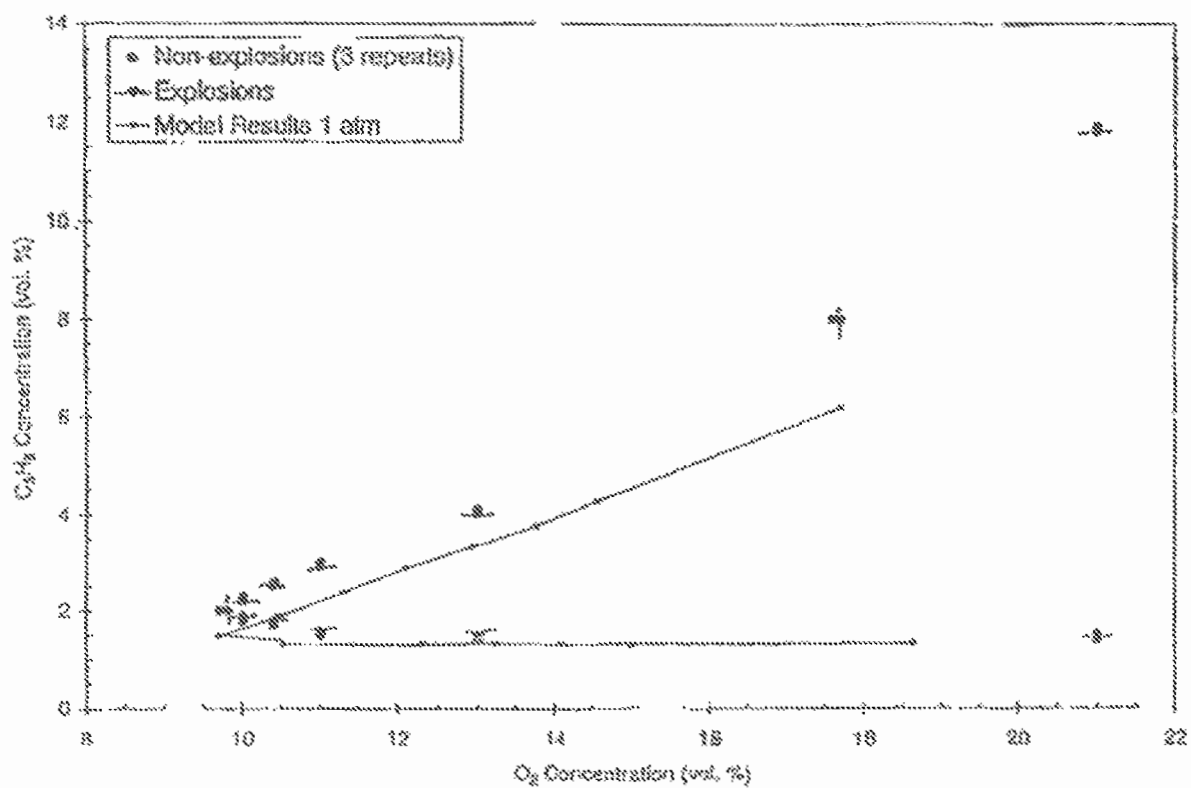


Figure 86A

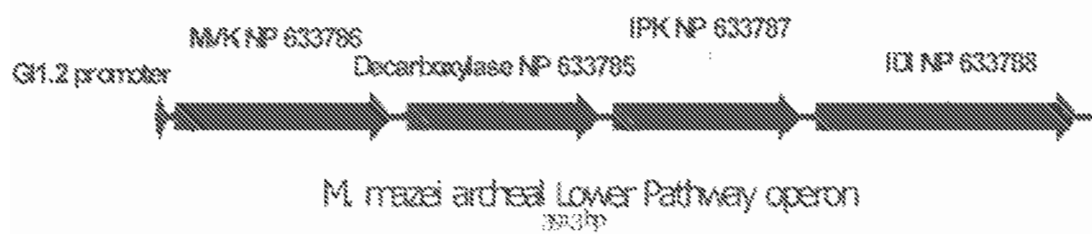


Figure 86C

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Figure 87A

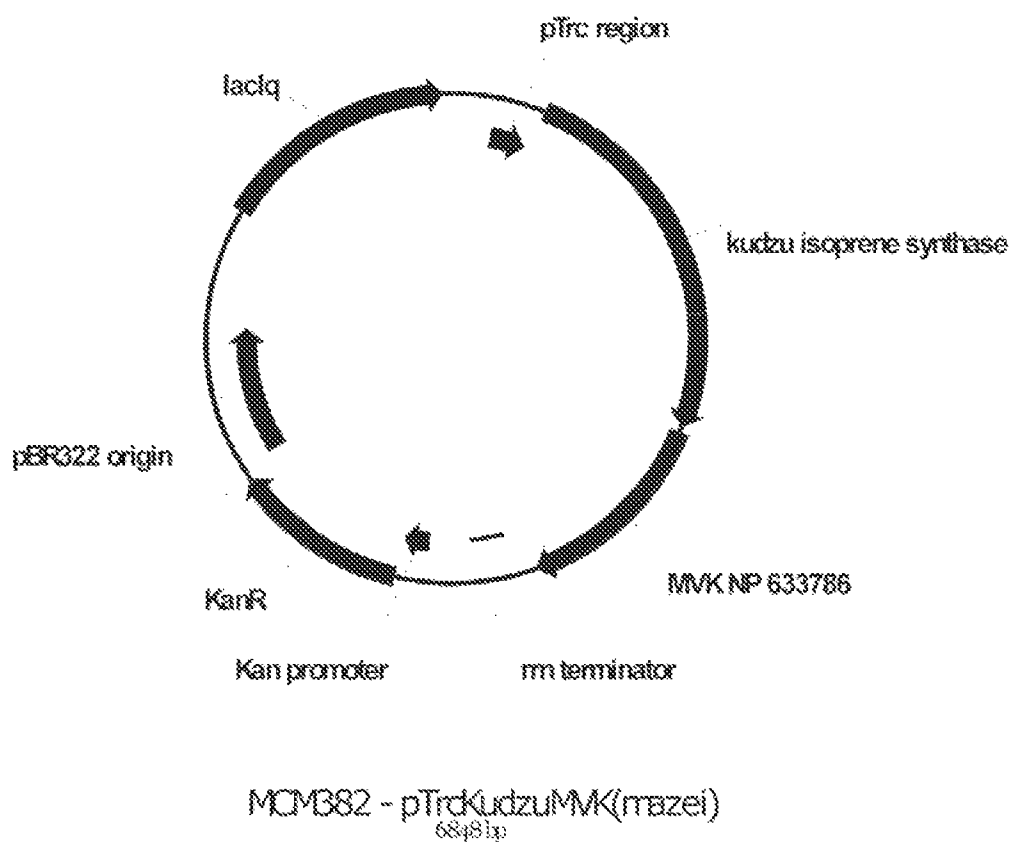


Figure 87C

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(SEQ ID NO:103)

Figure 88A

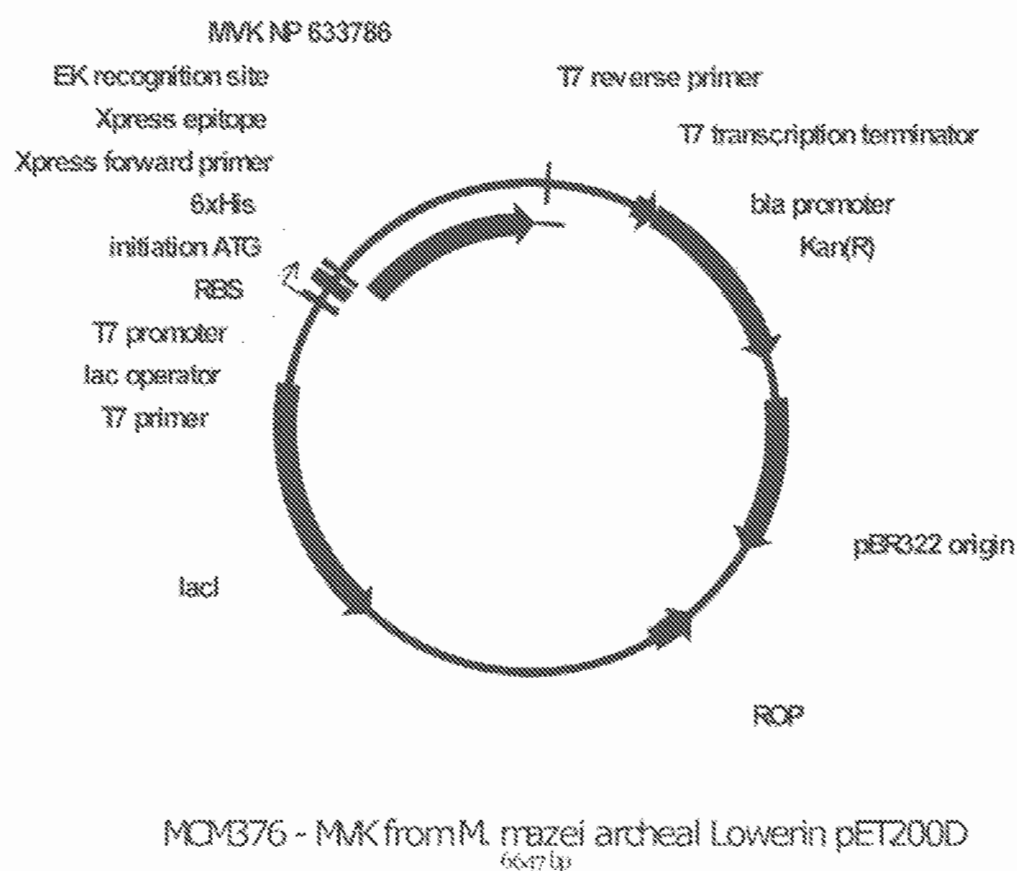


Figure 88C

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Figure 89A

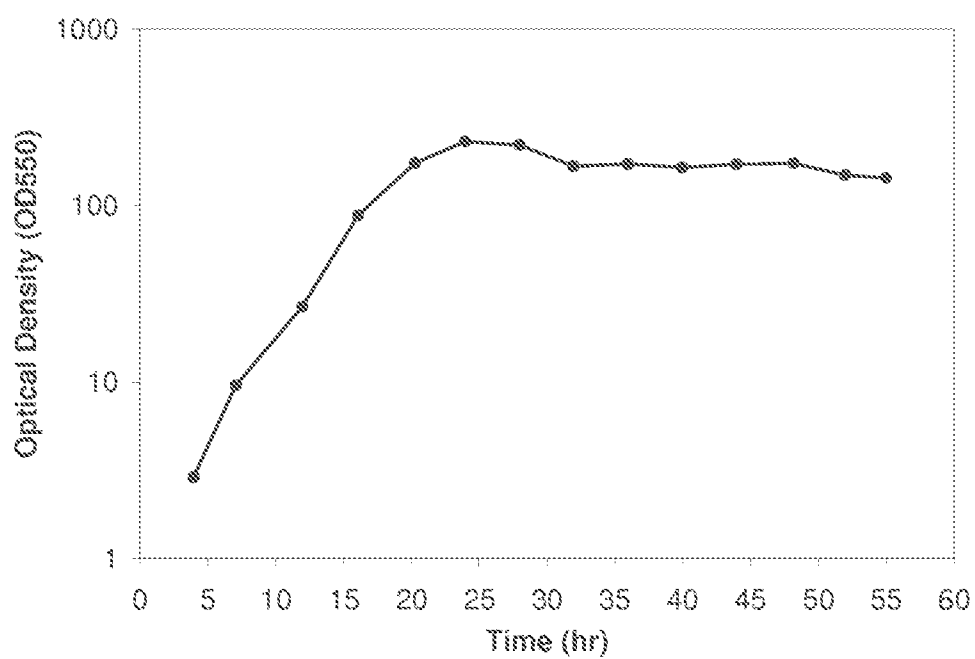


Figure 89B

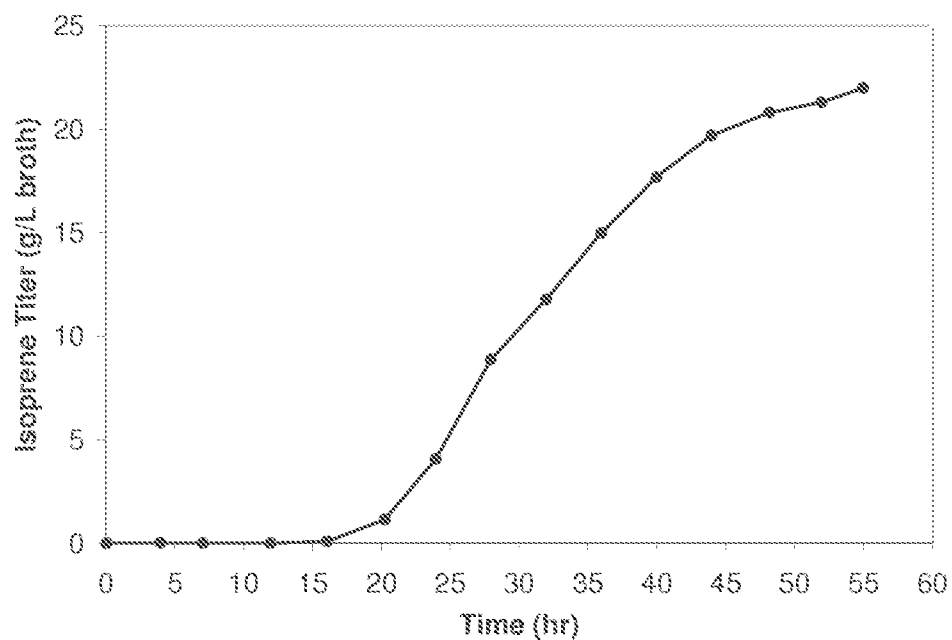


Figure 89C

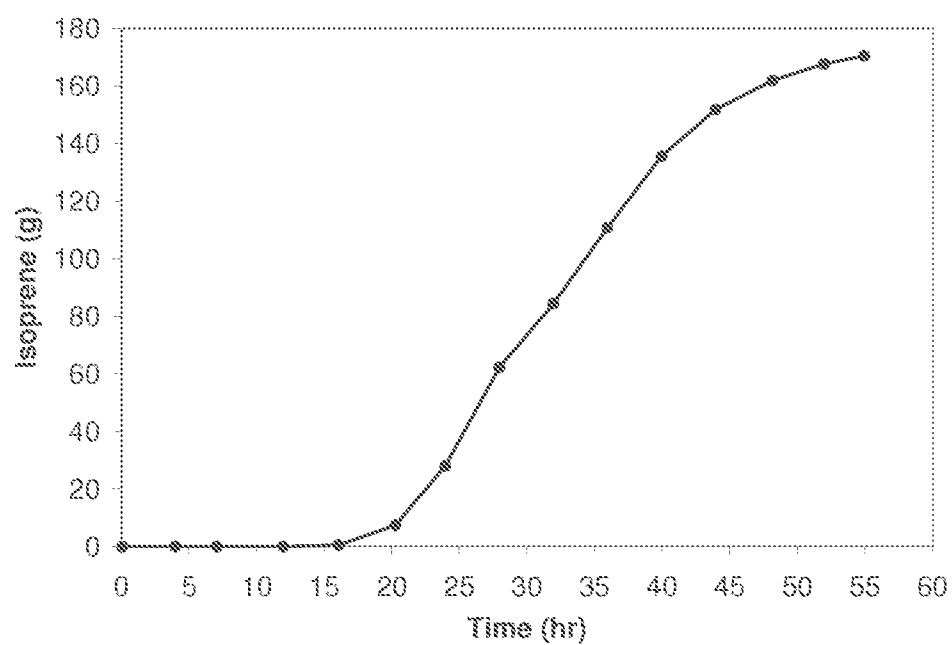
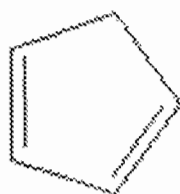
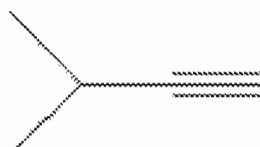


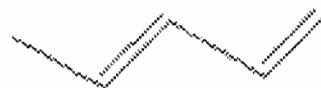
Figure 90



cyclopentadiene



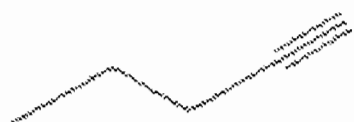
"isopryne" = 3-Me-1-butyne



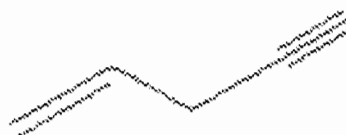
trans-piperylene



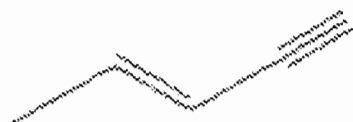
cis-piperylene



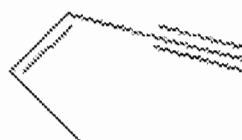
1-pentyne



pent-4-ene-1-yne



trans-pent-3-ene-1-yne



cis-pent-3-ene-1-yne

Figure 91

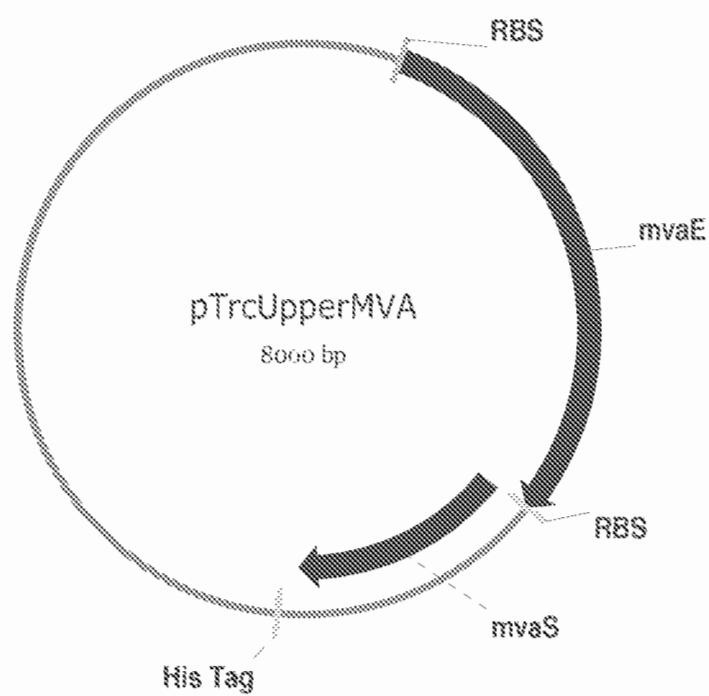


Figure 92C

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(SEQ ID NO:86)

Figure 93

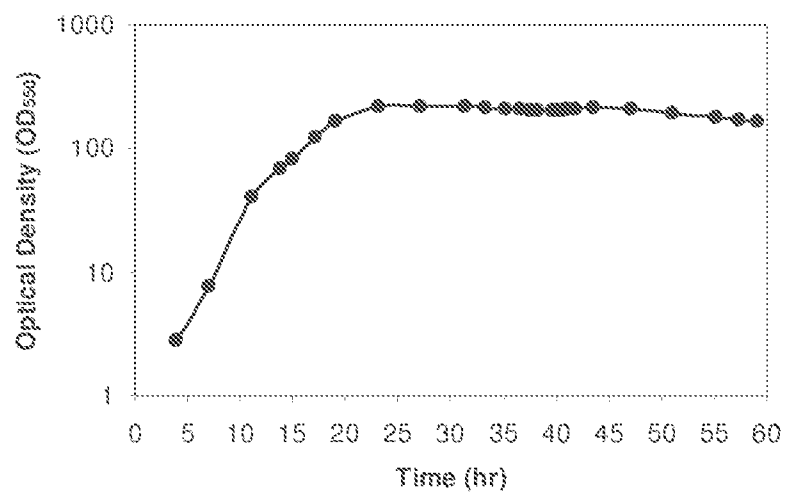


Figure 94

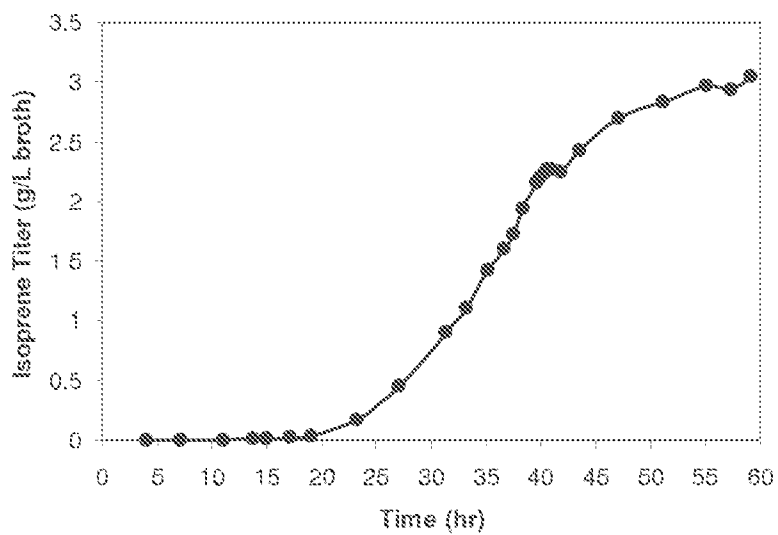


Figure 95

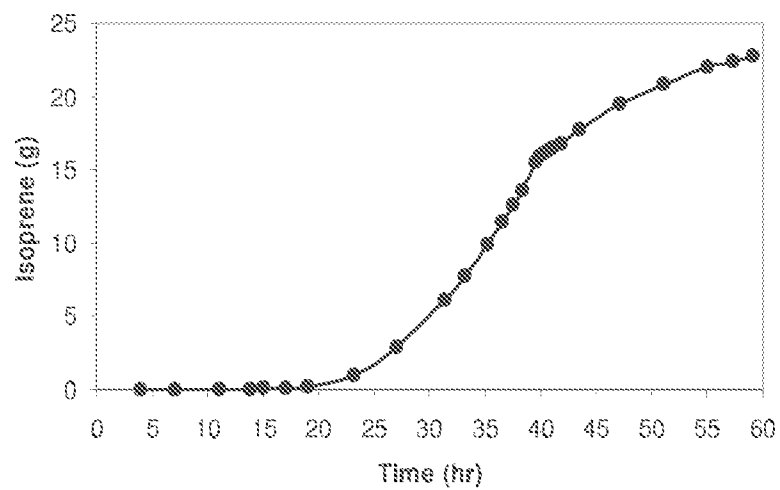


Figure 96

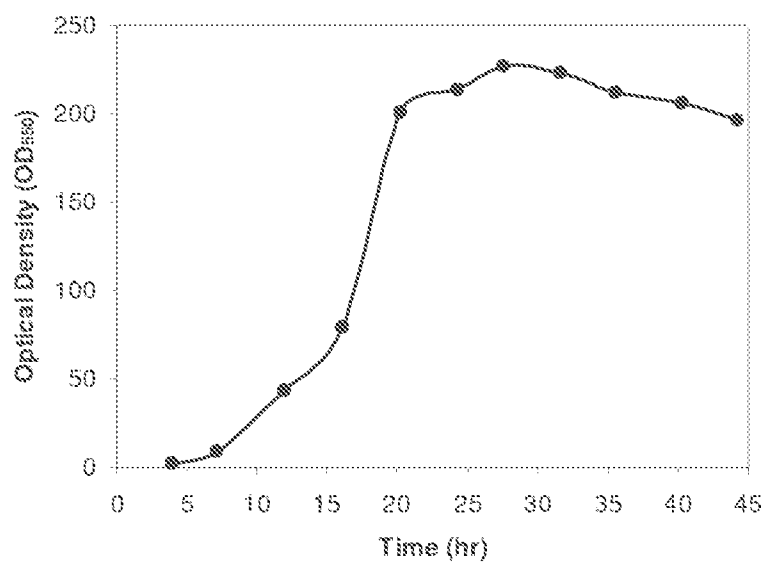


Figure 97

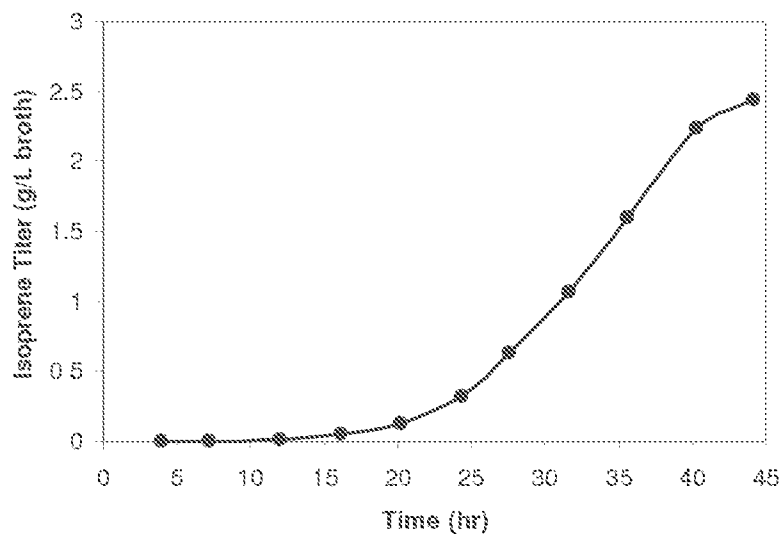


Figure 98

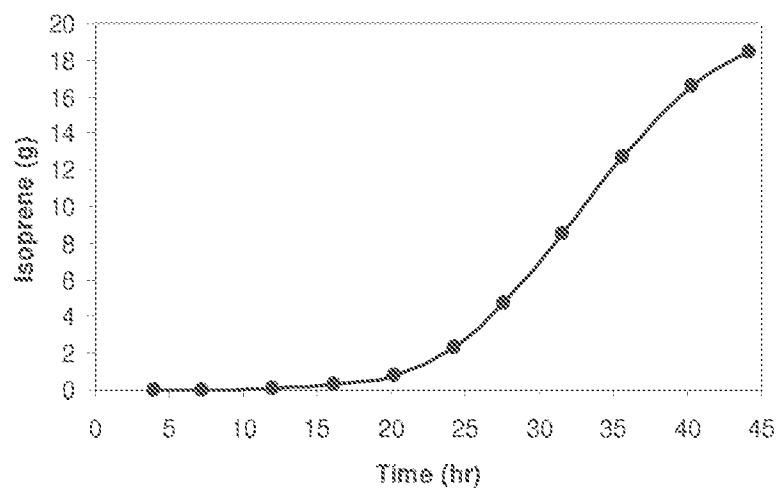


Figure 99

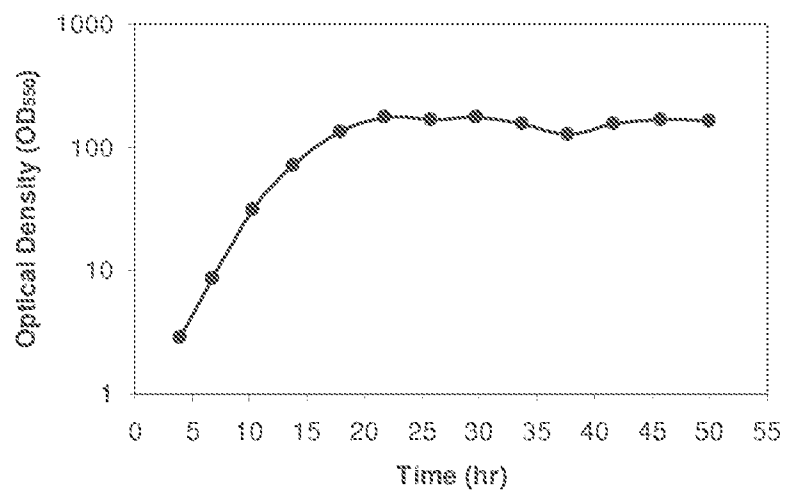


Figure 100

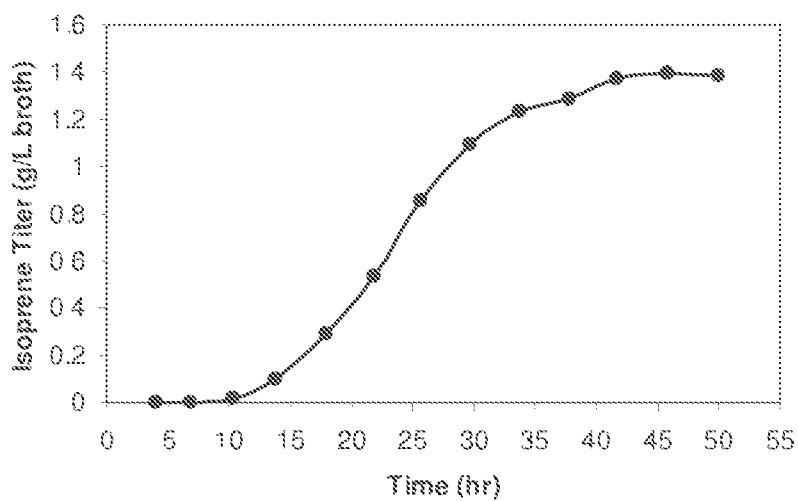


Figure 101

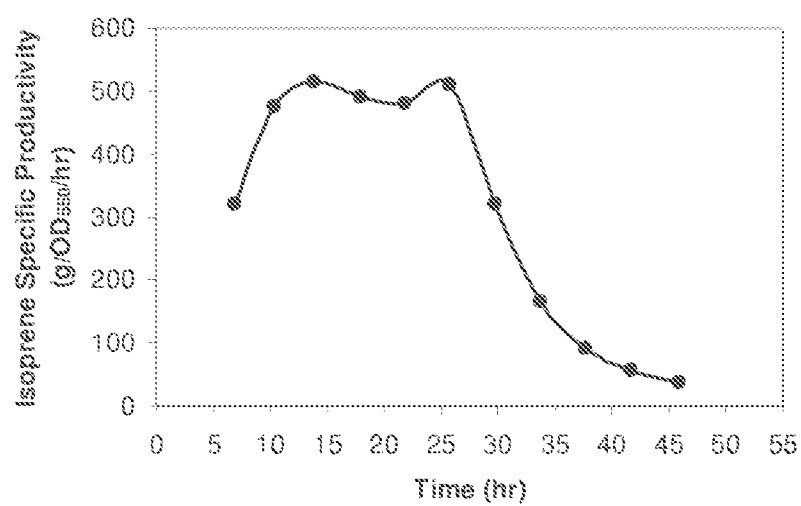


Figure 102

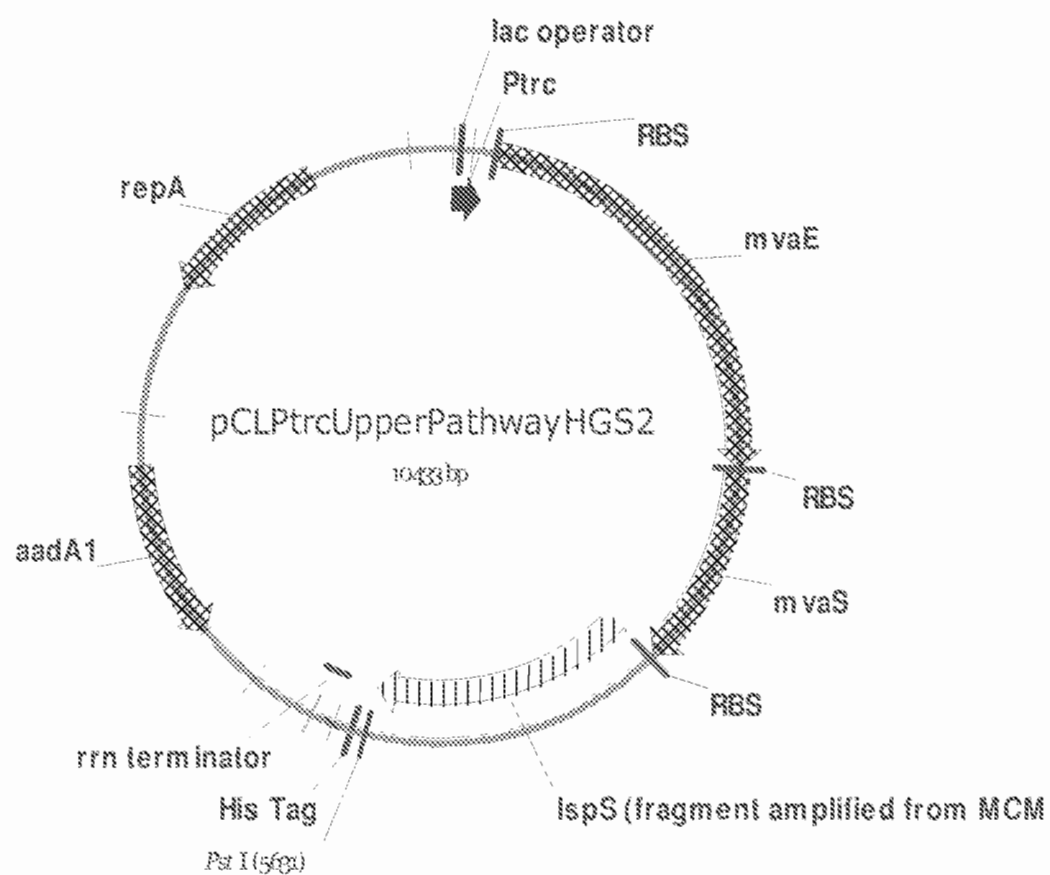


Figure 104

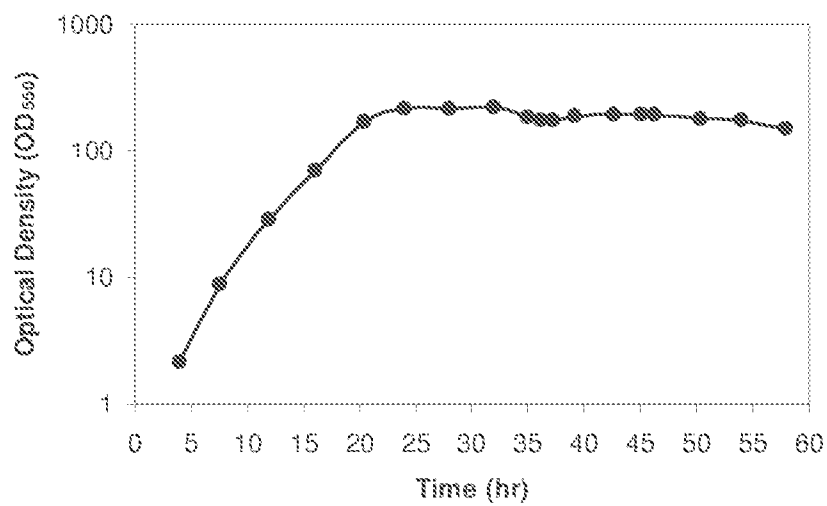


Figure 105

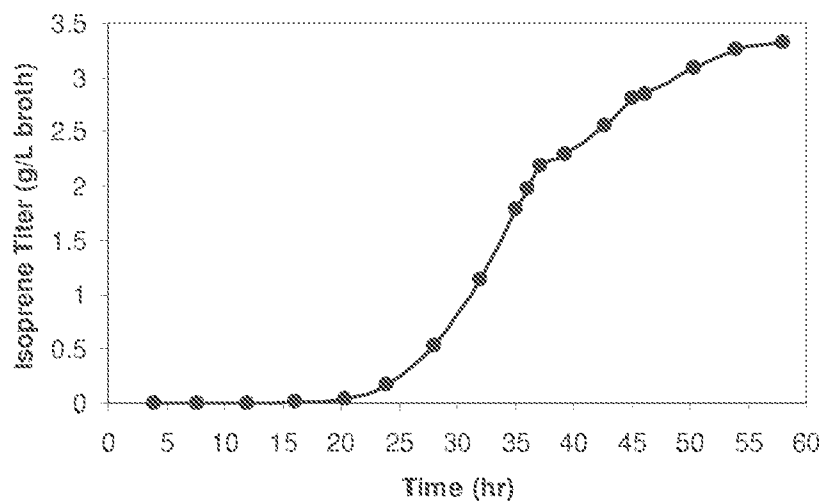


Figure 106

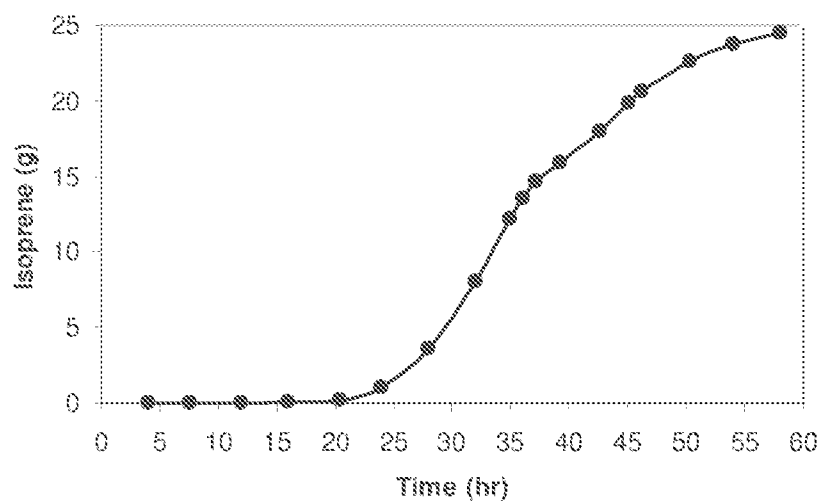
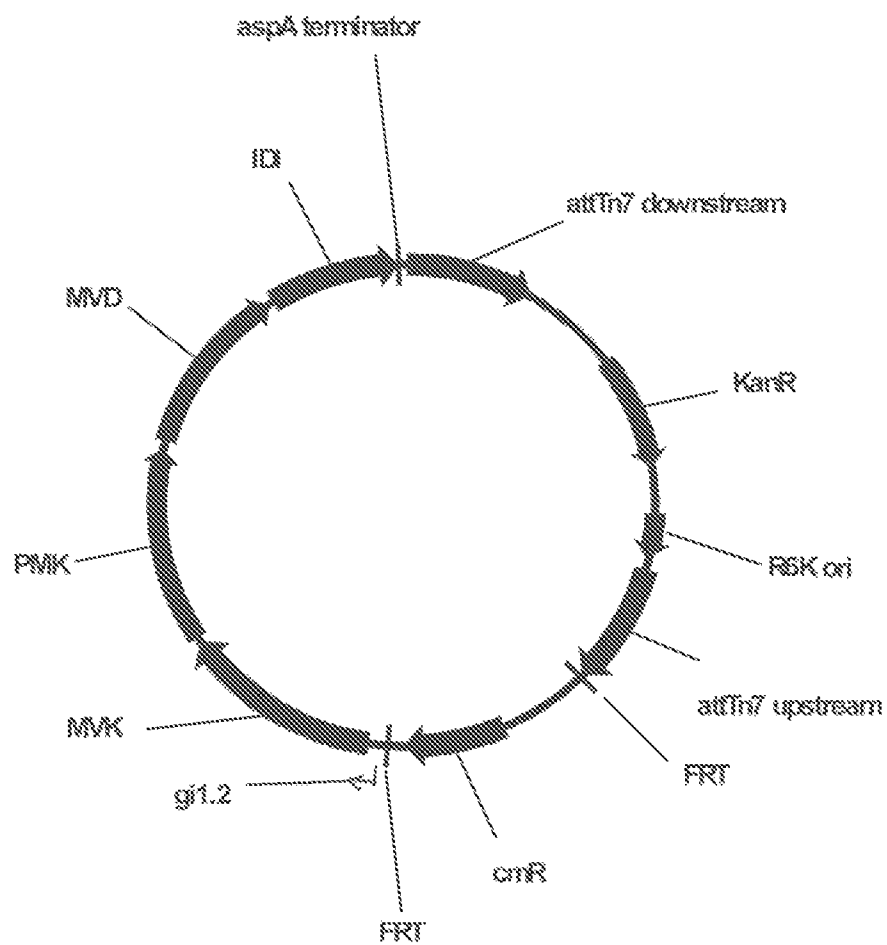


Figure 107



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

10350 bp

Figure 108C

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(SEQ ID NO:90)

Figure 109

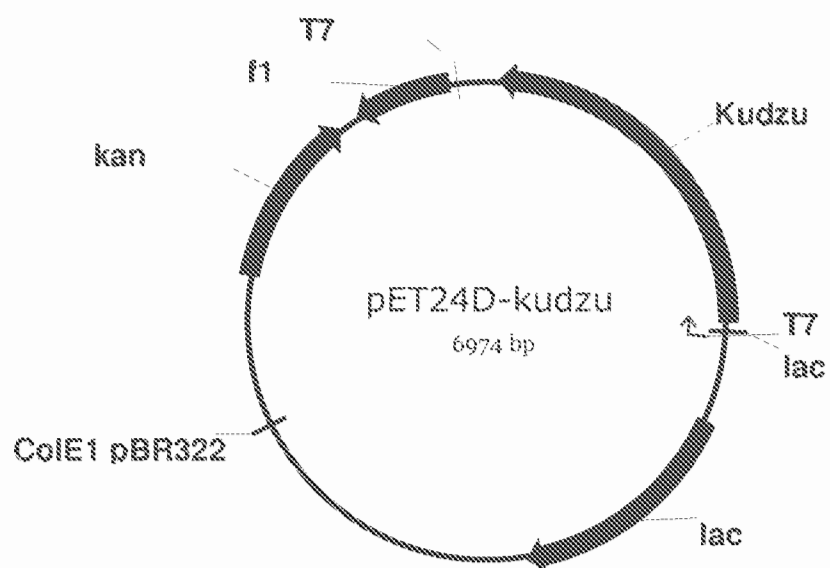


Figure 110A

1-

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Figure 111A

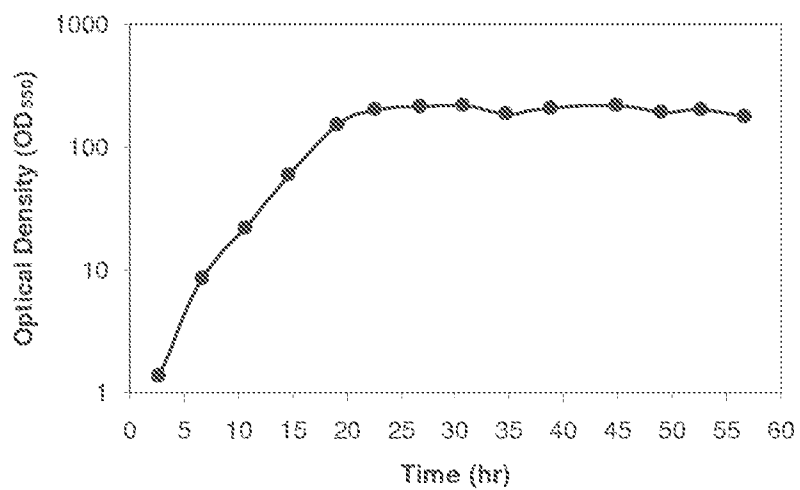


Figure 111B

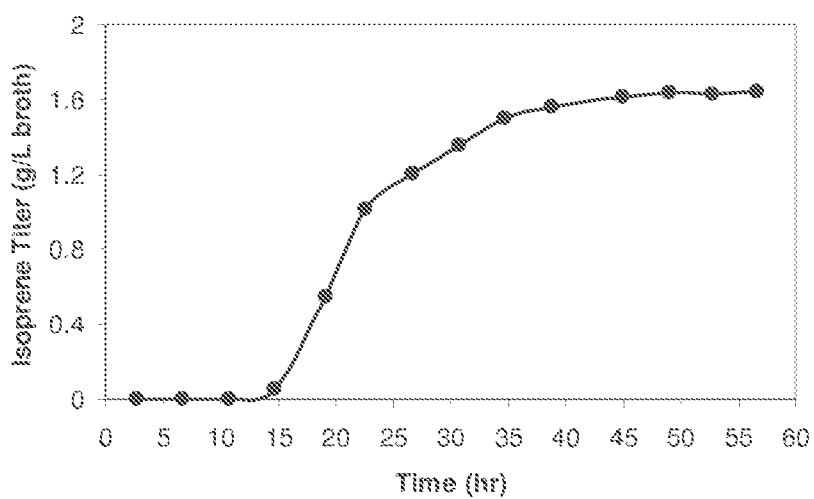


Figure 111C

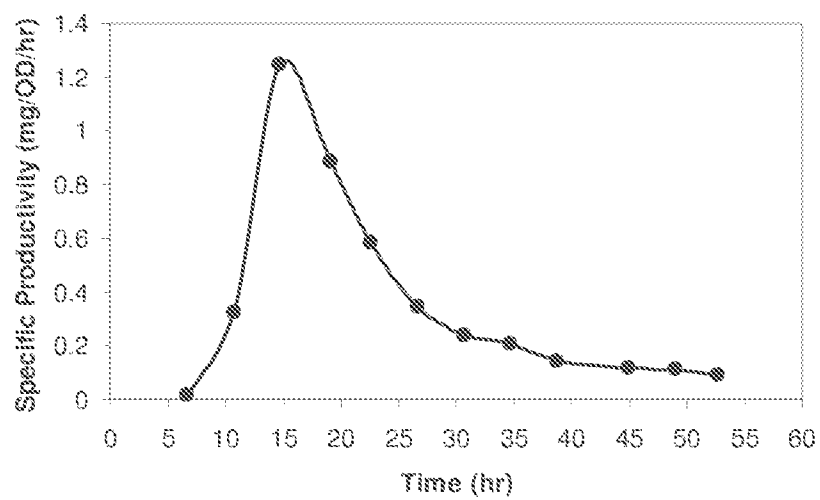


Figure 112

