

FIG. 1A

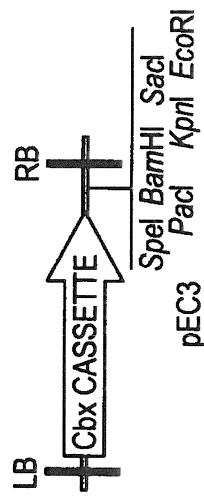


FIG. 1B

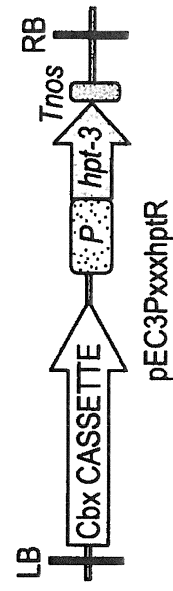


FIG. 1C

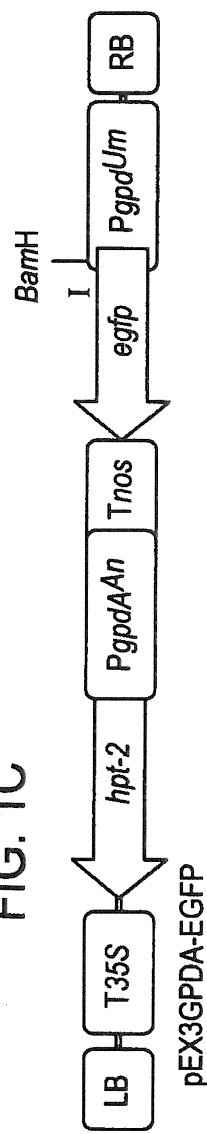


FIG. 1D

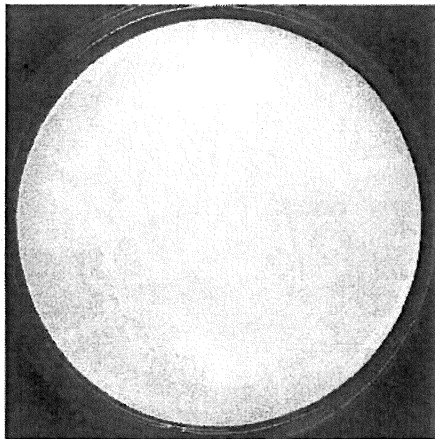


FIG. 2A

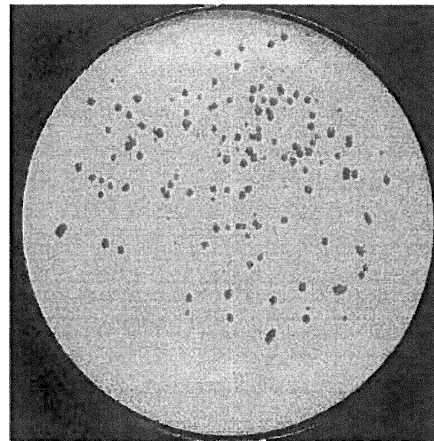
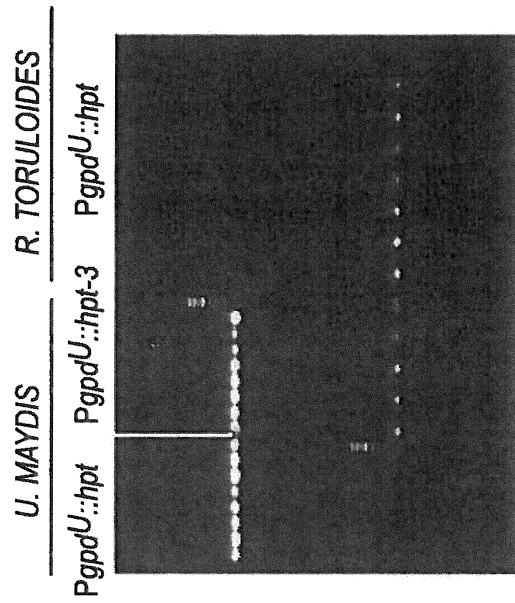


FIG. 2B



PgpdU::hpt-3
R. TORULOIDES

FIG. 2C

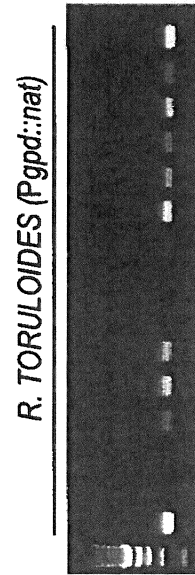


FIG. 2D

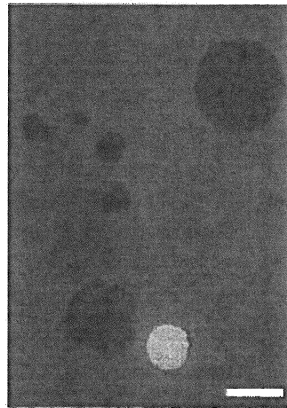


FIG. 3A

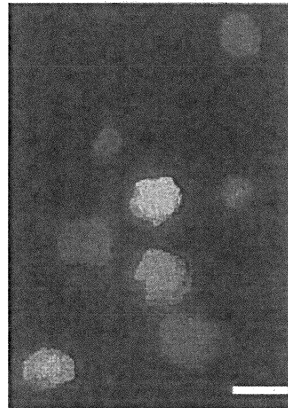


FIG. 3B

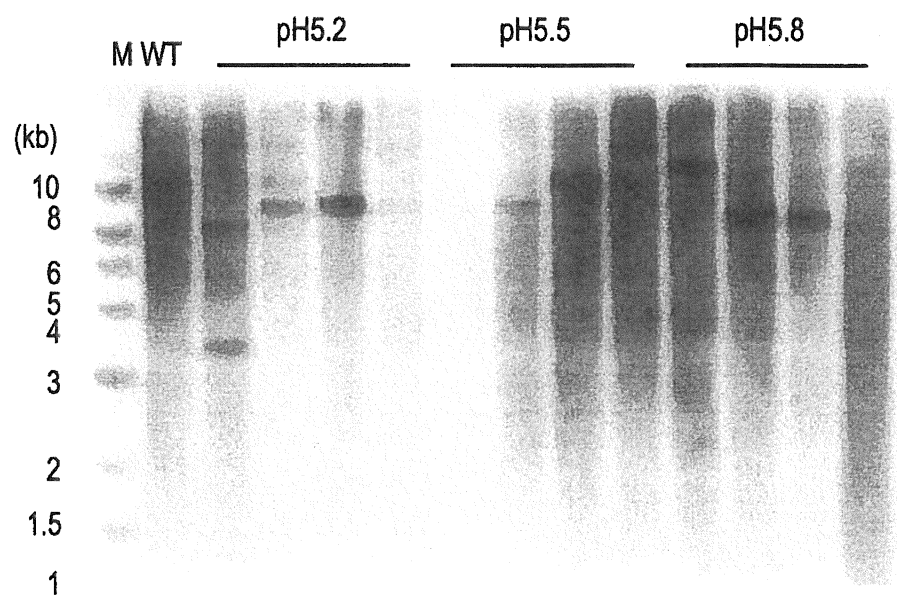


FIG. 4

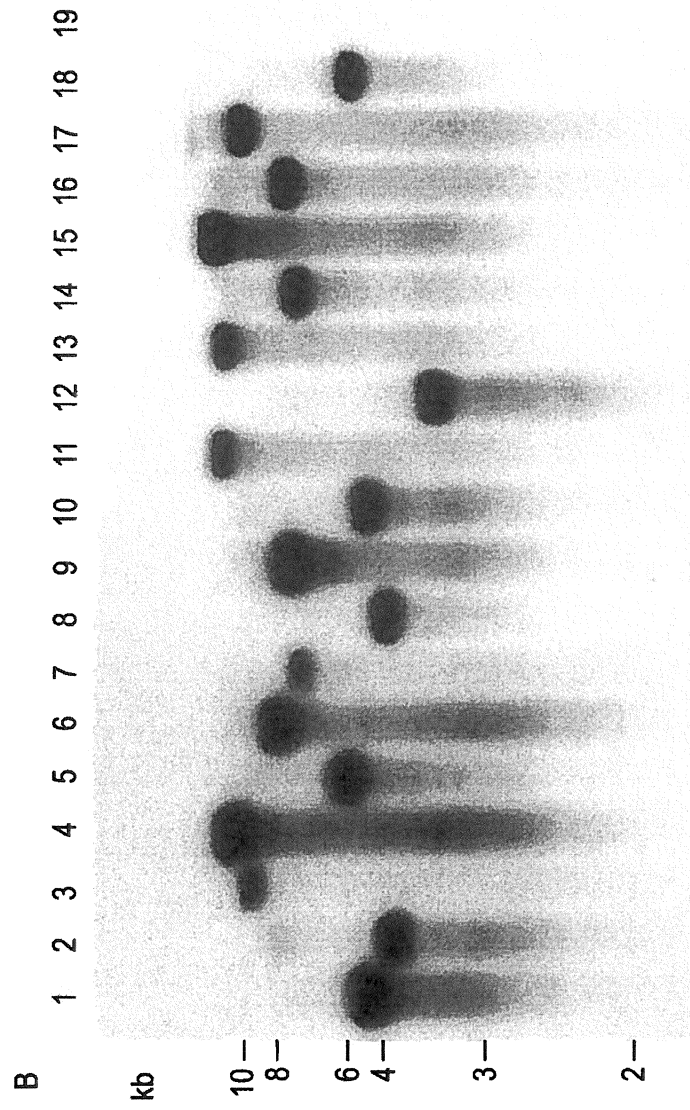


FIG. 5

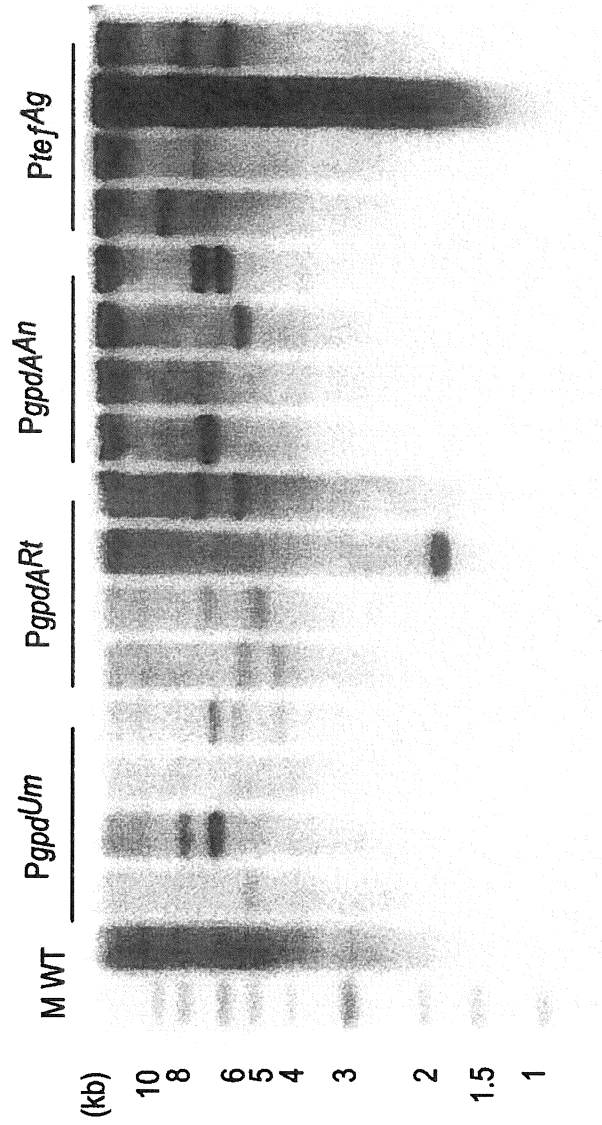
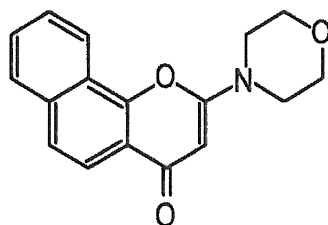


FIG. 6



2-(4-MORPHOLINYL)-4*H*-NAPHTHOL[1,2-*b*]PYRAN-4-ONE

FIG. 7

SEQUENCE LISTING

<110> Temasek Life Sciences Laboratory Limited

<120> Genetic Manipulation and Expression Systems for Pucciniomycotina and Ustilaginomycotina Subphyla

<130> SG4311A

<150> US 61/495,619

<151> 2011-06-10

<160> 58

<170> PatentIn version 3.5

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<211> 597

<212> DNA

<213> Ustilago maydis

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<210> 2

<211> 1434

<212> DNA

<213> Rhodosporidium toruloides

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tgggctggcc tgacatgtaa tgtgctccgc cgcaagtccg tcgtcgggtt caattcgacg	720
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 <211> 888
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 <213> *Aspergillus nidulans*

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attattaatc cgggaccggc cgccctccg ccccgaaagt gaaaggctgg tgtgccctc	180
gttgaccaag aatctattgc atcatcggag aatatggagc ttcatcgaat caccggcagt	240
aagcgaagga gaatgtgaag ccaggggtgt atagccgtcg gcgaaatagc atgccattaa	300
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atactccatc cttcccatcc ctattcctt tgaacctttc agttcgagct ttccacttc	840
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<210> 4

<211> 617
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 <213> *Aspergillus niger*

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<210> 5
 <211> 388
 <212> DNA
 <213> *Ashibia gossipii*

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 catcacatcc gaacataaac aaccatgg 388

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 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic hpt-2 coding sequence

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gccggcaccg tgggcaggac ccagatcgcc aggaggagcg ccgccgtgtg gaccgatggc	960
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aagtga	1026

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<220>
 <223> synthetic hpt-3 coding sequence

<400> 7	
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 <212> DNA
 <213> Unknown

<220>
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 caggcgctct acatgggcat gccctgcccc taa 573

<210> 9
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aaatag 1026

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 <212> DNA
 <213> Rhodosporidium toruloides

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<220>
 <223> oligonucleotide containing LoxP site

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 ttcgtataat gtatgctata cgaagttat 89

<210> 12
 <211> 89
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> oligonucleotide containing LoxP site

 <400> 12
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 tagcatacat tatacgaagt tatttattg 89

 <210> 13
 <211> 20
 <212> DNA
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 <220>
 <223> oligonucleotide PCR primer

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 cctgtggttg gcatgcacat 20

 <210> 14
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 <210> 15
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 <220>
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 <210> 16
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 <210> 18

<211> 36
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<210> 19
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 <220>
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<210> 20
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 <223> oligonucleotide PCR primer

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<220>
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<210> 22
 <211> 23

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<400> 22
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23

<210> 23
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 <212> PRT
 <213> Rhodosporidium toruloides

<400> 23

Asn Gly Phe Gly Arg Ile Gly Arg
 1 5

<210> 24
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 <213> Rhodosporidium toruloides

<400> 24

Thr Gly Ala Ala Lys Ala Val Gly
 1 5

<210> 25
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<220>
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<223> oligonucleotide PCR primer		
<400> 28		
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<210> 29		
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<210> 32
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 <212> DNA
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 <223> oligonucleotide PCR primer
 <400> 32
 aaaggtaccg tcgacatgga taggcacga 29

<210> 33
 <211> 29
 <212> DNA
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 <223> oligonucleotide PCR primer
 <400> 33
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<210> 34
 <211> 29
 <212> DNA
 <213> Artificial Sequence
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 <223> oligonucleotide PCR primer
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<210> 35
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 <212> DNA
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 <223> oligonucleotide PCR primer
 <400> 35
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<210> 36
 <211> 29
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> oligonucleotide PCR primer
 <400> 36
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<210> 37
 <211> 22
 <212> DNA

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<210>	39	
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 <223> n is a, c, g, or t

 <220>
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 <222> (27)..(29)
 <223> n is a, c, g, or t

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

 <220>
 <221> misc_feature
 <222> (28)..(30)
 <223> n is a, c, g, or t

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 <213> Artificial Sequence

 <220>
 <223> oligonucleotide PCR primer

 <400> 45
 acgatggact ccagag 16

 <210> 46
 <211> 20
 <212> DNA
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 <220>
 <223> oligonucleotide PCR primer

 <400> 46
 agatctcgct gtttcttcgg 20

 <210> 47

<211> 30
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<220>
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<400> 47
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<210> 48
 <211> 807
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> coding sequence for eGFP with C-terminal 2X HA and 6X His tag

<400> 48
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 gccacctacg gcaagctgac cctgaagtcc atctgcacca ccggcaagct gcccgtgccc 180
 tggcccaccc tcgtgaccac cctgacctac ggcgtgcagt gcttcagccg ctaccccgcg 240
 cacatgaagc agcacgactt cttcaagtcc gccatgcccg aaggctacgt ccaggagcgc 300
 accatcttct tcaaggacga cggcaactac aagacccgcg ccgaggtgaa gttcgagggc 360
 gacaccctgg tgaaccgcat cgagctgaag ggcacgcact tcaaggagga cggcaacatc 420
 ctggggcaca agctggagta caactacaac agccacaacg tctatatcat ggccgacaag 480
 cagaagaacg gcatcaaggt gaacttcaag atccgccaca acatcgagga cggcagcgtg 540
 cagctcgccg accactacca gcagaacacc cccatcggcg acggccccgt gctgctgccc 600
 gacaaccact acctgagcac ccagtccgcc ctgagcaaag accccaacga gaagcgcgat 660
 cacatggtcc tgctggagtt cgtgaccgcc gccgggatca ctctcggcat ggacgagctg 720
 tacaagttaa ttaactaccc ctatgatgta cctgactatg cataccctta tgatgtacca 780
 gactatgctc accatcacca ccatcac 807

<210> 49
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> oligonucleotide PCR primer

<400> 49
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32

<210> 50
 <211> 29
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> oligonucleotide PCR primer

<400> 50

aaaccatggt tcgagctgga gaaaggtgg

29

<210> 51
<211> 963
<212> DNA
<213> Rhodoturulā grammis

<400> 51
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ccgcagccca acggcgtcga gaaggtgcac ccgctcggcg acctgacggc gttcgagaag 240
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tgg 963

<210> 52
<211> 720
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic eGFP coding sequence

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ggcgacgtca acggccacaa gttctcggtc tcgggcgagg gcgagggcga cgccacctac 120
ggcaagctca ccctcaagtt catctgcacc accggcaagc tcccgggtccc gtggccgacc 180
ctcgtcacca ccctcaccta cggcgtccag tgcttctcgc gctacccgga ccacatgaag 240
cagcacgact tcttcaagtc ggccatgccg gagggctacg tccaggagcg caccatcttc 300
ttcaaggacg acggcaacta caagaccgc gccgaggtca agttcgaggg cgacaccctc 360
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aagctcgagt acaactacaa ctgcacaac gtctacatca tggccgacaa gcagaagaac 480
ggcatcaagg tcaacttcaa gatccgccac aacatcgagg acggctcggc ccagctcgcc 540

gaccactacc agcagaacac cccgatcggc gacggcccgg tcctcctccc ggacaaccac	600
tacctctcga cccagtcggc cctctcgaag gacccgaacg agaagcgga ccacatggtc	660
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<210> 53
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<220>
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aaaggcgcg cgaagttata cctcagaggt ctcaaaaacg	40

<210> 54
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<210> 55
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 <212> DNA
 <213> Sporobolomyces roseus

<400> 55	
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ttgacgtgag gggtatttct cttcctctag tagtctacga gaatcgaaa gatcggaaaa	120
ctgatgcacg tttgtgttca cgggttagcg atttgatctt ttcgattccc aaaatcgat	180
cgttcctgtc gcagggaaact acgctcaaag ccggcactct gatcatcacg ggagtgaagt	240
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gacgtcttca gggtcgagat ctcgggaggg atcgggaggt tgggtcaaca gatcgaatat	480
gaaaagtaga taatccgtta ctcagggtcaa tgggtatggc tcgaagatgc tggaaatcagc	540
cggaaagcaa agctggagag aaaaatcgag attgcgaaac gtgcgatgtc atttcgtttc	600
gagctcgcaa ccatctcgta tccctctgag ctacatacaa acgtcactac ggcctcggag	660
tgactccctg cgagcggatt gaaggagatc acggtcgaat cagctagacc ttcgcaacgt	720
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ggcaattcgg agcttcccgg aacgttccaa ggagagggat tttccgagag attacgattg	900
cgagatagaa aaaaggctag ctttcgattt cgagagagat tactttcaag ttcgctgctt	960

ccaactcttg ctccaacccc ctccactcct tctctacaaa acaccatgg 1009

<210> 56
<211> 2148
<212> DNA
<213> Rhodotorula glutinis ATCC 204091

<400> 56
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gggctcacgg actgtcaca tcgtttgtgt gcgtcgctgt gcatgtccac gcaccactcc 120
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cttcgtcctc accgcttccc ggagaacttt gctgtactct gcttctccct tcacactctc	2040
acaccactc acacaccctt ccatccacac acaagctatc cgcacacctc tcacaccga	2100
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<220>
 <223> oligoculeotide PCR primer

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<210> 58
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 <213> Artificial Sequence

<220>
 <223> oligonucleotide PCR primer

<400> 58	
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