

pJZ4

GAL1 promoter

1 CCATTATCTT AGCCTAAAA AACCTTCTCT TTGGAAC TTT CAGTAATACG
GGTAATAGAA TCGGATTTTT TTGGAAGAGA AACCTTGAAA GTCATTATGC

GAL1 promoter

51 CTTAACTGCT CATTGCTATA TTGAAGTACG GATTAGAAGC CGCCGAGCGG
GAATTGACGA GTAACGATAT AACTTCATGC CTAATCTTCG GCGGCTCGCC

GAL1 promoter

101 GTGACAGCCC TCCGAAGGAA GACTCTCCTC CGTGCGTCTT CGTCTTCACC
CACTGTCGGG AGGCTTCCTT CTGAGAGGAG GCACGCAGGA GCAGAAGTGG

AgeI

GAL1 promoter

151 GGTCGCGTTC CTGAAACGCA GATGTGCCTC GCGCCGCACT GCTCCGAACA
CCAGCGCAAG GACTTTGCGT CTACACGGAG CGCGGCGTGA CGAGGCTTGT

AgeI

GAL1 promoter

201 ATAAAGATTC TACAATACTA GCTTTTATGG TTATGAAGAG GAAAAATTGG
TATTTCTAAG ATGTTATGAT CGAAAATACC AATACTTCTC CTTTTTAACC

GAL1 promoter

251 CAGTAACCTG GCCCCACAAA CCTTCAAATG AACGAATCAA ATTAACAACC
GTCATTGGAC CGGGGTGTTT GGAAGTTTAC TTGCTTAGTT TAATTGTTGG

GAL1 promoter

301 ATAGGATGAT AATGCGATTA GTTTTTTAGC CTTATTTCTG GGGTAATTAA
TATCCTACTA TTACGCTAAT CAAAAATCG GAATAAAGAC CCCATTAATT

GAL1 promoter

351 TCAGCGAAGC GATGATTTTT GATCTATTAA CAGATATATA AATGCAAAAA
AGTCGCTTCG CTAATAAAAA CTAGATAATT GTCTATATAT TTACGTTTTT

GAL1 promoter

401 CTGCATAACC ACTTTAACTA ATACTTTCAA CATTTTCGGT TTGTATTACT
GACGTATTGG TGAAATTGAT TATGAAAGTT GTAAAAGCCA AACATAATGA

GAL1 promoter

451 TCTTATTCAA ATGTAATAAA AGTATCAACA AAAAATTGTT AATATACCTC
AGAATAAGTT TACATTATTT TCATAGTTGT TTTTAAACAA TTATATGGAG

GAL1 promoter

NLS

HindIII

+1

501 TATACTTTAA CGTCAAGGAG GAATTAAGCT TATGGGTGCT CCTCCAAAA
ATATGAAATT GCAGTTCCTC CTTAATTCGA ATACCCACGA GGAGGTTTTT

M G A P P K K .

pJZ4

NLS

B42AD

+1 • K K R K V A G I N K D I E E C N A

551 AGAAGAGAAA GGTAGCTGGT ATCAATAAAG ATATCGAGGA GTGCAATGCC
TCTTCTCTTT CCATCGACCA TAGTTATTTT TATAGCTCCT CACGTTACGG

B42AD

+1 I I E Q F I D Y L R T G Q E M P M •

601 ATCATTGAGC AGTTTATCGA CTACCTGCGC ACCGGACAGG AGATGCCGAT
TAGTAACTCG TCAAATAGCT GATGGACGCG TGGCCTGTCC TCTACGGCTA

B42AD

+1 • M E M A D Q A I N V V P G M T P K T •

651 GGAAATGGCG GATCAGGCGA TTAACGTGGT GCCGGGCATG ACGCCGAAAA
CCTTTACCGC CTAGTCCGCT AATTGCACCA CGGCCCGTAC TCGGGCTTTT

B42AD

+1 • T I L H A G P P I Q P D W L K S N

701 CCATTCTTCA CGCCGGGCCG CCGATCCAGC CTGACTGGCT GAAATCGAAT
GGTAAGAAGT GCGGCCCGGC GGCTAGGTCG GACTGACCGA CTTTAGCTTA

B42AD

+1 G F H E I E A D V N D T S L L L S •

751 GGTTTTCATG AAATTGAAGC GGATGTTAAC GATACCAGCC TCTTGCTGAG
CCAAAAGTAC TTAACTTCG CCTACAATTG CTATGGTCGG AGAACGACTC

HA tag

B42AD

+1 • S G D A S Y P Y D V P D Y A S

801 TGGAGATGCC TCCTACCCTT ATGATGTGCC AGATTATGCC TCTCCCGAAT
ACCTCTACGG AGGATGGGAA TACTACACGG TCTAATACGG AGAGGGCTTA

PmeI

EcoRI

SfiI

851 TGCCTGCAGG CTGTTTAAAC GAATTCCTAG GCGCGCCGGC CCTAGGGGCC
ACGGACGTCC GACAAATTTG CTTAAGGATC CGCGCGGCCG GGATCCCCGG

XhoI

CYC1 Terminator

901 GAGCTCGAGG GCGCGCCTAG GCCGGCCATC ATGTAATTAG TTATGTCACG
CTCGAGCTCC CGCGCGGATC CGGCCGGTAG TACATTAATC AATACAGTGC

CYC1 Terminator

951 CTTACATTCA CGCCCTCCCC CCACATCCGC TCTAACCGAA AAGGAAGGAG
GAATGTAAGT GCGGGAGGGG GGTGTAGGCG AGATTGGCTT TTCCTTCCTC

CYC1 Terminator

1001 TTAGACAACC TGAAGTCTAG GTCCCTATTT ATTTTTTTTAT AGTTATGTTA
AATCTGTTGG ACTTCAGATC CAGGGATAAA TAAAAAATA TCAATACAAT

pJZ4

CYC1 Terminator

1051 GTATTAAGAA CGTTATTTAT ATTTCAAATT TTTCTTTTTT TTCTGTACAG
CATAATTCTT GCAATAAATA TAAAGTTTAA AAAGAAAAAA AAGACATGTC

CYC1 Terminator

1101 ACGCGTGTAC GCATGTAACA TTATACTGAA AACCTTGCTT GAGAAGGTTT
TGCGCACATG CGTACATTGT AATATGACTT TTGGAACGAA CTCTTCCAAA

CYC1 Terminator

F1 Ori

1151 TGGGACGCTC GAAGGCTTTA ATTTGCGTCG ACAATTGTAA ACGTTAATAT
ACCCTGCGAG CTTCCGAAAT TAAACGCAGC TGTTAACATT TGCAATTATA

F1 Ori

1201 TTTGTTAAAA TTCGCGTTAA ATTTTTGTTA AATCAGCTCA TTTTTTAACG
AAACAATTTT AAGCGCAATT TAAAAACAAT TTAGTCGAGT AAAAAATTGC

F1 Ori

1251 AATAGCCCGA AATCGGCAAA ATCCCTTATA AATCAAAAGA ATAGACCGAG
TTATCGGGCT TTAGCCGTTT TAGGGAATAT TTAGTTTTCT TATCTGGCTC

F1 Ori

1301 ATAGGGTTGA GTGTTGTTCC AGTTTCCAAC AAGAGTCCAC TATTAAAGAA
TATCCCAACT CACAACAAGG TCAAAGGTTG TTCTCAGGTG ATAATTTCTT

F1 Ori

1351 CGTGGACTCC AACGTCAAAG GCGGAAAAG GGTCTATCAG GCGGATGGCC
GCACCTGAGG TTGCAGTTTC CCGCTTTTTT CCAGATAGTC CCGCTACCGG

F1 Ori

1401 CACTACGTGA ACCATCACCC TAATCAAGTT TTTTGGGGTC GAGGTGCCGT
GTGATGCACT TGGTAGTGGG ATTAGTTCAA AAAACCCCGAG CTCCACGGCA

F1 Ori

1451 AAAGCAGTAA ATCGGAAGGG TAAACGGATG CCCCATTTA GAGCTTGACG
TTTCGTCATT TAGCCTTCCC ATTTGCCTAC GGGGGTAAAT CTCGAACTGC

F1 Ori

1501 GGGAAAGCCG GCGAACGTGG CGAGAAAGGA AGGGAAGAAA GCGAAAGGAG
CCTTTTCGGC CGCTTGCACC GCTCTTTCCT TCCCTTCTTT CGCTTTCCTC

F1 Ori

NotI

1551 CGGGGTCGAC TAGCGGCCGC TTCGACCTGC AGCAATTCTG AACCAGTCCT
GCCCCAGCTG ATCGCCGGCG AAGCTGGACG TCGTTAAGAC TTGGTCAGGA

1601 AAAACGAGTA AATAGGACCG GCAATTCTTC AAGCAATAAA CAGGAATACC
TTTTGCTCAT TTATCCTGGC CGTTAAGAAG TTCGTTATTT GTCCTTATGG

2 µm Ori

HindIII

1651 AATTATTAAA AGATAACTTA GTCAGATCGT ACAATAAAGC TTTGAAGAAA
TTAATAATTT TCTATTGAAT CAGTCTAGCA TGTTATTTTCG AAACCTTCTTT

pJZ4

2 μ m Ori

1701 AATGCGCCTT ATTCAATCTT TGCTATAAAA AATGGCCCAA AATCTCACAT
TTACGCGGAA TAAGTTAGAA ACGATATTTT TTACCGGGTT TTAGAGTGTA

2 μ m Ori

1751 TGGAAGACAT TTGATGACCT CATTTCCTTC AATGAAGGGC CTAACGGAGT
ACCTTCTGTA AACTACTGGA GTAAAGAAAG TTACTTCCCG GATTGCCTCA

2 μ m Ori

1801 TGACTAATGT TGTGGGAAAT TGGAGCGATA AGCGTGCTTC TGCCGTGGCC
ACTGATTACA ACACCCTTTA ACCTCGCTAT TCGCACGAAG ACGGCACCGG

2 μ m Ori

1851 AGGACAACGT ATACTCATCA GATAACAGCA ATACCTGATC ACTACTTCGC
TCCTGTTGCA TATGAGTAGT CTATTGTCGT TATGGACTAG TGATGAAGCG

2 μ m Ori

1901 ACTAGTTTCT CGGTACTIONG CATATGATCC AATATCAAAG GAAATGATAG
TGATCAAAGA GCCATGATAC GTATACTAGG TTATAGTTTC CTTTACTATC

2 μ m Ori

1951 CATTGAAGGA TGAGACTAAT CCAATTGAGG AGTGGCAGCA TATAGAACAG
GTAACCTCCT ACTCTGATTA GGTAACTCC TCACCGTCGT ATATCTTGTC

2 μ m Ori

2001 CTAAAGGGTA GTGCTGAAGG AAGCATAACGA TACCCCGCAT GGAATGGGAT
GATTTCCCAT CACGACTTCC TTCGTATGCT ATGGGGCGTA CCTTACCCTA

2 μ m Ori

2051 AATATCACAG GAGGTACTAG ACTACCTTTC ATCCTACATA AATAGACGCA
TTATAGTGTC CTCCATGATC TGATGGAAAG TAGGATGTAT TTATCTGCGT

2 μ m Ori

2101 TATAAGTACG CATTTAAGCA TAAACACGCA CTATGCCGTT CTTCTCATGT
ATATTCATGC GTAAATTCGT ATTTGTGCGT GATACGGCAA GAAGAGTACA

2 μ m Ori

2151 ATATATATAT ACAGGCAACA CGCAGATATA GGTGCGACGT GAACAGTGAG
TATATATATA TGTCCGTTGT GCGTCTATAT CCACGCTGCA CTTGTCACTC

2 μ m Ori

2201 CTGTATGTGC GCAGCTCGCG TTGCATTTTC GGAAGCGCTC GTTTTCGGAA
GACATACACG CGTCGAGCGC AACGTAAAAG CCTTCGCGAG CAAAAGCCTT

2 μ m Ori

2251 ACGCTTTGAA GTTCCTATTC CGAAGTTCCT ATTCTCTAGA AAGTATAGGA
TGCGAAACTT CAAGGATAAG GCTTCAAGGA TAAGAGATCT TTCATATCCT

2 μ m Ori

2301 ACTTCAGAGC GCTTTTGAAA ACCAAAAGCG CTCTGAAGAC GCACTTTCAA
TGAAGTCTCG CGAAAACCTT TGGTTTTTCGC GAGACTTCTG CGTGAAAGTT

pJZ4

2 μ m Ori

2351 AAAACCAAAA ACGCACCGGA CTGTAACGAG CTACTAAAAT ATTGCGAATA
TTTTGGTTTT TGCCTGGCCT GACATTGCTC GATGATTTTA TAACGCTTAT

2 μ m Ori

2401 CCGCTTCCAC AAACATTGCT CAAAAGTATC TCTTTGCTAT ATATCTCTGT
GGCGAAGGTG TTTGTAACGA GTTTTCATAG AGAAACGATA TATAGAGACA

2 μ m Ori

2451 GCTATATCCC TATATAACCT ACCCATCCAC CTTTCGCTCC TTGAACTTGC
CGATATAGGG ATATATTGGA TGGGTAGGTG GAAAGCGAGG AACTTGAACG

2 μ m Ori

2501 ATCTAAACTC GACCTCTACA TTTTTTATGT TTATCTCTAG TATTACTCTT
TAGATTTGAG CTGGAGATGT AAAAAATACA AATAGAGATC ATAATGAGAA

2 μ m Ori

2551 TAGACAAAAA AATTGTAGTA AGAACTATTC ATAGAGTGAA TCGAAAACAA
ATCTGTTTTT TTAACATCAT TCTTGATAAG TATCTCACTT AGCTTTTGTT

2 μ m Ori

2601 TACGAAAATG TAAACATTTTCT ATATACGTAG TATATAGAGA CAAAATAGAA
ATGCTTTTAC ATTTGTAAAG GATATGCATC ATATATCTCT GTTTTATCTT

2 μ m Ori

2651 GAAACCGTTC ATAATTTTTCT GACCAATGAA GAATCATCAA CGCTATCACT
CTTTGGCAAG TATTAAAAGA CTGGTACTT CTTAGTAGTT GCGATAGTGA

2 μ m Ori

2701 TTCTGTTTAC AAAGTATGCG CAATCCACAT CGGTATAGAA TATAATCGGG
AAGACAAGTG TTTCATACGC GTTAGGTGTA GCCATATCTT ATATTAGCCC

2 μ m Ori

2751 GATGCCTTTA TCTTGAAAAA ATGCACCCGC AGCTTCGCTA GTAATCAGTA
CTACGGAAAT AGAACTTTTT TACGTGGGCG TCGAAGCGAT CATTAGTCAT

2 μ m Ori

2801 AACGCGGGAA GTGGAGTCAG GCTTTTTTTTA TGGAAGAGAA AATAGACACC
TTGCGCCCTT CACCTCAGTC CGAAAAAAT ACCTTCTCTT TTATCTGTGG

2 μ m Ori

2851 AAAGTAGCCT TCTTCTAACC TTAACGGACC TACAGTGCAA AAAGTTATCA
TTTCATCGGA AGAAGATTGG AATTGCCTGG ATGTCACGTT TTTCAATAGT

2 μ m Ori

2901 AGAGACTGCA TTATAGAGCG CACAAAGGAG AAAAAAAGTA ATCTAAGATG
TCTCTGACGT AATATCTCGC GTGTTTCCTC TTTTTTTCAT TAGATTCTAC

2 μ m Ori

2951 CTTTGTTAGA AAAATAGCGC TCTCGGGATG CATTTTTGTA GAACAAAAAA
GAAACAATCT TTTTATCGCG AGAGCCCTAC GTAAAAACAT CTTGTTTTTT

pJZ4

2 μ m Ori

3001 GAAGTATAGA TTCTTTGTTG GTAAAATAGC GCTCTCGCGT TGCATTTCTG
CTTCATATCT AAGAAACAAC CATTTTATCG CGAGAGCGCA ACGTAAAGAC

2 μ m Ori

3051 TTCTGTAAAA ATGCAGCTCA GATTCTTTGT TTGAAAAATT AGCGCTCTCG
AAGACATTTT TACGTCGAGT CTAAGAAACA AACTTTTTTAA TCGCGAGAGC

2 μ m Ori

3101 CGTTGCATTT TTGTTTTACA AAAATGAAGC ACAGATTCTT CGTTGGTAAA
GCAACGTAAA AACAAAATGT TTTTACTTCG TGTCTAAGAA GCAACCATTT

2 μ m Ori

3151 ATAGCGCTTT CGCGTTGCAT TTCTGTTCTG TAAAAATGCA GCTCAGATTC
TATCGCGAAA GCGCAACGTA AAGACAAGAC ATTTTTACGT CGAGTCTAAG

2 μ m Ori

3201 TTTGTTTGAA AAATTAGCGC TCTCGCGTTG CTTTTTTGTT CTACAAAATG
AAACAAACTT TTTAATCGCG AGAGCGCAAC GTAAAAACAA GATGTTTTAC

2 μ m Ori

3251 AAGCACAGAT GCTTCGTAA CAAAGATATG CTATTGAAGT GCAAGATGGA
TTCGTGTCTA CGAAGCAATT GTTTCTATAC GATAACTTCA CGTTCTACCT

2 μ m Ori

3301 AACGCAGAAA ATGAACCGGG GATGCGACGT GCAAGATTAC CTATGCAATA
TTGCGTCTTT TACTTGGCCC CTACGCTGCA CGTTCTAATG GATACGTTAT

2 μ m Ori

3351 GATGCAATAG TTTCTCCAGG AACCGAAATA CATAATTGT CTTCCGTAAA
CTACGTTATC AAAGAGGTCC TTGGCTTTAT GTATGTAACA GAAGGCATTT

2 μ m Ori

3401 GCGCTAGACT ATATATTATT ATACAGGTTT AAATATACTA TCTGTTTCAG
CGCGATCTGA TATATAATAA TATGTCCAAG TTTATATGAT AGACAAAGTC

2 μ m Ori

3451 GGAAACTCC CAGGTTCCGA TGTTCAAAT TCAATGATGG GTAACAAGTA
CCTTTTGAGG GTCCAAGCCT ACAAGTTTTA AGTTACTACC CATTGTTTAT

2 μ m Ori

3501 CGATCGTAAA TCTGTAAAAC AGTTTGTCGG ATATTAGGCT GTATCTCCTC
GCTAGCATTT AGACATTTTG TCAAACAGCC TATAATCCGA CATAGAGGAG

2 μ m Ori

3551 AAAGCGTATT CGAATATCAT TGAGAAGCTG CAGGCAAGTG CACAAACAAT
TTTCGCATAA GCTTATAGTA ACTCTTCGAC GTCCGTTTAC GTGTTTGTTA

TRP1 Gene

3601 ACTTAAATAA ATACTACTCA GTAATAACCT ATTTCTTAGC ATTTTTGACG
TGAATTTATT TATGATGAGT CATTATTGGA TAAAGAATCG TAAAAACTGC

TRP1 Gene

3651 AAATTTGCTA TTTTGTTAGA GTCTTTTACA CCATTTGTCT CCACACCTCC
 TTAAACGAT AAAACAATCT CAGAAAATGT GGTAACAGA GGTGTGGAGG

TRP1 Gene

3701 GCTTACATCA ACACCAATAA CGCCATTTAA TCTAAGCGCA TCACCAACAT
 CGAATGTAGT TGTGGTTATT GCGGTAAATT AGATTGCGGT AGTGGTTGTA

TRP1 Gene

3751 TTTCTGGCGT CAGTCCACCA GCTAACATAA AATGTAAGCT TTCGGGGCTC
 AAAGACCGCA GTCAGGTGGT CGATTGTATT TTACATTCGA AAGCCCCGAG

TRP1 Gene

HindIII

3801 TCTTGCCTTC CAACCCAGTC AGAAATCGAG TTCCAATCCA AAAGTTCACC
 AGAACGGAAG GTTGGGTCAG TCTTTAGCTC AAGGTTAGGT TTTCAAGTGG

TRP1 Gene

3851 TGTCCACCT GCTTCTGAAT CAAACAAGGG AATAAACGAA TGAGGTTTCT
 ACAGGGTGGA CGAAGACTTA GTTTGTTCCC TTATTTGCTT ACTCCAAAGA

TRP1 Gene

3901 GTGAAGCTGC ACTGAGTAGT ATGTTGCAGT CTTTTGGAAA TACGAGTCTT
 CACTTCGACG TGACTCATCA TACAACGTCA GAAACCTTT ATGCTCAGAA

TRP1 Gene

3951 TTAATAACTG GCAAACCGAG GAACTCTTGG TATTCTTGCC ACGACTCATC
 AATTATTGAC CGTTTGGCTC CTTGAGAACC ATAAGAACGG TGCTGAGTAG

TRP1 Gene

4001 TCCATGCAGT TGGACGATAT CAATGCCGTA ATCATTGACC AGAGCCAAAA
 AGGTACGTCA ACCTGCTATA GTTACGGCAT TAGTAACTGG TCTCGGTTTT

TRP1 Gene

4051 CATCCTCCTT AGGTTGATTA CGAAACACGC CAACCAAGTA TTTCGGAGTG
 GTAGGAGGAA TCCAATAAT GCTTTGTGCG GTTGGTTCAT AAAGCCTCAC

TRP1 Gene

4101 CCTGAACTAT TTTTATATGC TTTTACAAGA CTTGAAATTT TCCTTGCAAT
 GGAATTGATA AAAATATACG AAAATGTTCT GAACTTTAAA AGGAACGTTA

TRP1 Gene

4151 AACCGGGTCA ATTGTTCTCT TTCTATTGGG CACACATATA ATACCCAGCA
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TRP1 Gene

4201 AGTCAGCATC GGAATCTAGA GCACATTCTG CGGCCTCTGT GCTCTGCAAG
 TCAGTCGTAG CCTTAGATCT CGTGTAAGAC GCCGGAGACA CGAGACGTTT

TRP1 Gene

4251 CCGCAAACCT TCACCAATGG ACCAGAATA CCTGTGAAAT TAATAACAGA
 GCGTTTGAA AGTGGTTACC TGGTCTTGAT GGACACTTTA ATTATTGTCT

TRP1 Gene

pJZ4

4301 CATACTCCAA GCTGCCTTTG TGTGCTTAAT CACGTATACT CACGTGCTCA
GTATGAGGTT CGACGGAAAC ACACGAATTA GTGCATATGA GTGCACGAGT

TRP1 Gene

4351 ATAGTCACCA ATGCCCTCCC TCTTGCCCTT CTCCTTTTCT TTTTTCGACC
TATCAGTGGT TACGGGAGGG AGAACCGGGA GAGGAAAAGA AAAAAGCTGG

TRP1 Gene

4401 GAATTTCTTG AAGACGAAAG GGCCTCGTGA TACGCCTATT TTTATAGGTT
CTTAAAGAAC TTCTGCTTTC CCGGAGCACT ATGCGGATAA AAATATCCAA

TRP1 Gene

4451 AATGTCATGA TAATAATGGT TTCTTAGACG TCAGGTGGCA CTTTTCGGGG
TTACAGTACT ATTATTACCA AAGAATCTGC AGTCCACCGT GAAAAGCCCC

4501 AAATGTGCGC GGAACCCCTA TTTGTTTATT TTTCTAAATA CATTCAAATA
TTTACACGCG CCTTGGGGAT AAACAAATAA AAAGATTTAT GTAAGTTTAT

4551 TGTATCCGCT CATGAGACAA TAACCCTGAT AAATGCTTCA ATAATATTGA
ACATAGGCGA GTACTCTGTT ATTGGGACTA TTTACGAAGT TATTATAACT

ampR

4601 AAAAGGAAGA GTATGAGTAT TCAACATTTT CGTGTGCGCC TTATTCCTT
TTTTCCTTCT CATACTCATA AGTTGTAAAG GCACAGCGGG AATAAGGGAA

ampR

4651 TTTTGCGGCA TTTTGCCTTC CTGTTTTTGC TCACCCAGAA ACGCTGGTGA
AAAACGCCGT AAAACGGAAG GACAAAAACG AGTGGGTCTT TGCGACCACT

ampR

4701 AAGTAAAAGA TGCTGAAGAT CAGTTGGGTG CACGAGTGGG TTACATCGAA
TTCATTTTCT ACGACTTCTA GTCAACCCAC GTGCTCACCC AATGTAGCTT

ampR

4751 CTGGATCTCA ACAGCGGTAA GATCCTTGAG AGTTTTTCGCC CCGAAGAACG
GACCTAGAGT TGTCGCCATT CTAGGAACTC TCAAAAGCGG GGCTTCTTGC

ampR

4801 TTTTCCAATG ATGAGCACTT TTAAAGTTCT GCTATGTGGC GCGGTATTAT
AAAAGGTTAC TACTCGTGAA AATTTCAAGA CGATACACCG CGCCATAATA

ampR

4851 CCCGTGTTGA CGCCGGGCAA GAGCAACTCG GTCGCCGCAT ACACTATTCT
GGGCACAAC T GCGGCCGTT CTCGTTGAGC CAGCGGCGTA TGTGATAAGA

ampR

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GTCTTACTGA ACCAACTCAT GAGTGGTCAG TGTCTTTTCG TAGAATGCCT

ampR

4951 TGGCATGACA GTAAGAGAAT TATGCAGTGC TGCCATAACC ATGAGTGATA
ACCGTACTGT CATTCTCTTA ATACGTCACG ACGGTATTGG TACTCACTAT

pJZ4

ampR

5001 ACACTGCGGC CAACTTACTT CTGACAACGA TCGGAGGACC GAAGGAGCTA
TGTGACGCCG GTTGAATGAA GACTGTTGCT AGCCTCCTGG CTTCCTCGAT

ampR

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TGGCGAAAAA ACGTGTTGTA CCCCTAGTA CATTGAGCGG AACTAGCAAC

ampR

5101 GGAACCGGAG CTGAATGAAG CCATACCAA CGACGAGCGT GACACCACGA
CCTTGCCCTC GACTTACTTC GGTATGGTTT GCTGCTCGCA CTGTGGTGCT

ampR

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ampR

5201 CTTACTCTAG CTTCCCGGCA ACAATTAATA GACTGGATGG AGGCGGATAA
GAATGAGATC GAAGGGCCGT TGTTAATTAT CTGACCTACC TCCGCCTATT

ampR

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ampR

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GACTATTTAG ACCTCGGCCA CTCGCACCCA GAGCGCCATA GTAACGTCGT

ampR

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GACCCCGGTC TACCATTTCGG GAGGGCATAG CATCAATAGA TGTGCTGCC

ampR

5401 GAGTCAGGCA ACTATGGATG AACGAAATAG ACAGATCGCT GAGATAGGTG
CTCAGTCCGT TGATACCTAC TTGCTTTTATC TGTCTAGCGA CTCTATCCAC

ampR

5451 CCTCACTGAT TAAGCATTGG TAACTGTCAG ACCAAGTTTA CTCATATATA
GGAGTACTA ATTCGTAACC ATTGACAGTC TGGTTCAAAT GAGTATATAT

5501 CTTTAGATTG ATTTAAAAC TCAATTTTAA TTTAAAAGGA TCTAGGTGAA
GAAATCTAAC TAAATTTTGA AGTAAAATT AAATTTTCTT AGATCCACTT

5551 GATCCTTTTT GATAATCTCA TGACCAAAT CCCTAACGT GAGTTTTTCGT
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5601 TCCACTGAGC GTCAGACCCG GTAGAAAAGA TCAAAGGATC TTCTTGAGAT
AGGTGACTCG CAGTCTGGGG CATCTTTTCT AGTTTCCTAG AAGAACTCTA

5651 CCTTTTTTTC TGCGCGTAAT CTGCTGCTTG CAAACAAAAA AACCACCGCT
GGAAAAAAG ACGCGCATTG GACGACGAAC GTTTGTTTTT TTGGTGGCGA

pUC ori

5701 ACCAGCGGTG GTTTGTTTGC CGGATCAAGA GCTACCAACT CTTTTTCCGA
TGGTGCGCCAC CAAACAAACG GCCTAGTTCT CGATGGTTGA GAAAAAGGCT

pJZ4

pUC ori

5751 AGGTAAGTGG CTTGAGCAGA GCGCAGATAC CAAATACTGT CCTTCTAGTG
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pUC ori

5801 TAGCCGTAGT TAGGCCACCA CTTCAAGAAC TCTGTAGCAC CGCCTACATA
ATCGGCATCA ATCCGGTGGT GAAGTTCTTG AGACATCGTG GCGGATGTAT

pUC ori

5851 CCTCGCTCTG CTAATCCTGT TACCAGTGGC TGCTGCCAGT GGCATAAAGT
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pUC ori

5901 CGTGTCTTAC CGGGTTGGAC TCAAGACGAT AGTTACCGGA TAAGGCGCAG
GCACAGAATG GCCCAACCTG AGTTCTGCTA TCAATGGCCT ATTCCGCGTC

pUC ori

5951 CGGTCGGGCT GAACGGGGGG TTCGTGCACA CAGCCAGCT TGGAGCGAAC
GCCAGCCCGA CTTGCCCCCC AAGCACGTGT GTCGGGTCGA ACCTCGCTTG

pUC ori

6001 GACCTACACC GAACTGAGAT ACCTACAGCG TGAGCTATGA GAAAGCGCCA
CTGGATGTGG CTTGACTCTA TGGATGTGCG ACTCGATACT CTTTCGCGGT

pUC ori

6051 CGTTCCCGA AGGGAGAAAG GCGGACAGGT ATCCGGTAAG CGGCAGGGTC
GCGAAGGGCT TCCCTCTTTC CGCCTGTCCA TAGGCCATTC GCCGTCCAG

pUC ori

6101 GGAACAGGAG AGCGCACGAG GGAGCTTCCA GGGGAAACG CCTGGTATCT
CCTTGTCCTC TCGCGTGCTC CCTCGAAGGT CCCCTTTGC GGACCATAGA

pUC ori

6151 TTATAGTCCT GTCGGGTTTC GCCACCTCTG ACTTGAGCGT CGATTTTTGT
AATATCAGGA CAGCCCAAAG CGGTGGAGAC TGAATCGCA GCTAAAAACA

pUC ori

6201 GATGCTCGTC AGGGGGGCGG AGCCTATGGA AAAACGCCAG CAACGCGGCC
CTACGAGCAG TCCCCCGCC TCGGATACCT TTTTGCGGTC GTTGCGCCGG

6251 TTTTACGGT TCCTGGCCTT TTGCTGGCCT TTTGCTCACA TGTTCTTTCC
AAAAATGCCA AGGACCGGAA AACGACCGGA AAACGAGTGT ACAAGAAAGG

6301 TCGGTTATCC CCTGATTCTG TGGATAACCG TATTACCGCC TTTGAGTGAG
ACGCAATAGG GGACTAAGAC ACCTATTGGC ATAATGGCGG AAACACTACTC

6351 CTGATACCGC TCGCCGCAGC CGAACGACCG AGCGCAGCGA GTCAGTGAGC
GACTATGGCG AGCGGCGTCG GCTTGCTGGC TCGCGTCGCT CAGTCACTCG

6401 GAGGAAGCGG AAGAGCGCCC AATACGCAA CCGCCTCTCC CCGCGCGTTG
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6451 GCCGATTCAT TAATGCAGCT GGCACGACAG GTTTCCCGAC TGGAAAGCGG
CGGCTAAGTA ATTACGTCGA CCGTGCTGTC CAAAGGGCTG ACCTTTCGCC

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6501 GCAGTGAGCG CAACGCAATT AATGTGAGTT AGCTCACTCA TTAGGCACCC
      CGTCACTCGC GTTGC GTTAA TTACTCAA TCGAGTGAGT AATCCGTGGG
.....
6551 CAGGCTTTAC ACTTTATGCT TCCGGCTCGT ATGTTGTGTG GAATTGTGAG
      GTCCGAAATG TGAAATACGA AGGCCGAGCA TACAACACAC CTTAACACTC
.....
6601 CGGATAACAA TTCACACAG GAAACAGCTA TGACATGATT ACGAATTAAT
      GCCTATTGTT AAAGTGTGTC CTTTGTGCGAT ACTGTACTAA TGCTTAATTA
.....
6651 TCGAGCTCGG TACC
      AGCTCGAGCC ATGG
.....
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