

pNLexAattR

pBr ori

1 AGCTGCATGT GTCAGAGGTT TTCACCGTCA TCACCGAAAC GCGCGAGGCA
TCGACGTACA CAGTCTCCAA AAGTGGCAGT AGTGGCTTTG CCGCTCCGT

ADH1 promoter

51 GGATGATCCG GGATCGAAGA AATGATGGTA AATGAAATAG GAAATCAAGG
CCTACTAGGC CCTAGCTTCT TTACTIONCAT TTACTIONTAT CTTTAGTTCC

ADH1 promoter

101 AGCATGAAGG CAAAAGACAA ATATAAGGGT CGAACGAAAA ATAAAGTGAA
TCGTACTIONTCC GTTTTCTGTT TATACTIONTCCA GCTIONTGT TACTIONTCACTIONT

ADH1 promoter

151 AAGTGTTGAT ATGATGTATT TGGCTIONTGGC GCGCCGAAAA AACGAGTTTA
TTCACACTIONT TACTIONTATAA ACCGAAACGC CCGCTIONT TGGCTIONTAACTIONT

ADH1 promoter

201 CGCAACTIONTCA CAACTIONTCT GACTIONTGTGG CCGACTIONTGG CTCTIONTGGCG
GCGTTAACTIONT GTACTIONTCA CTGAGACTIONT GCCTIONTGGCG GAGAACTIONT

ADH1 promoter

251 CCCGGCGATA ACGCTIONTGGCG TGAGGCTIONTGG CCCGGCGGAG TTTTTTGGCG
GGGCGCTIONT TCGGACTIONT ACTCCGACTIONT GGGCGCTIONT AAAAACTIONT

ADH1 promoter

301 CTGCATIONTTC CAAGGITIONTAC CCTIONTGCCTIONTAA GGGGCGGAGAT TGGAGAACTIONT
GACGTAATIONT GTTCCAACTIONT GGAGCGGATIONT CCGGCTIONT ACCTIONTTCG

ADH1 promoter

351 ATAAGAACTIONT CGGTTGGGGT TCGGATIONTGT ACGACTIONTCA CAACTIONTGGTGT
TACTIONTTCG GCCAACTIONT ACGCTIONTACTAC TGCTIONTGGTGT GTTGACTIONT

ADH1 promoter

401 CATIONTATTAA GTTGGCGAAA GAACCTIONTGT GCATIONTTCGA CATIONTGTATA
GTAATIONT CAACGCTIONT CTTGGACTIONT CGTAAACTIONT GACTIONTCACTIONT

ADH1 promoter

451 CTAGAAGAACTIONT GAGCCAAGAC TTGCGGAGACG CGGATIONTTCG GGTGGTGGCA
GATIONTTCCTA CTCGITIONTCTG AACGCTIONTCTG GCTIONTAAACGG CCACCACTIONT

ADH1 promoter

501 ACAACTIONTAGAC GACCACTIONTACC TTGAAGGTTGA GACGCGCATA ACCGCTIONTAGAG
TGTACTIONTCTG CTGGTACTIONTGA ACTIONTCCACTIONT CTGCGGCTIONT TGGCGACTIONT

ADH1 promoter

551 TACTIONTTCGAG AGGAAACTIONT AACTIONTGGGTTG CTACTIONTGTAA AACTIONTGTAG
ACTIONTTCCTC TCTIONTTCGTT TTACTIONTCCAAC GATIONTGTGATA TTTACTIONTGTG

ADH1 promoter

601 GTACATACTIONT CACTIONTGAACTIONT GGTGTGCTIONT TTGAGTACGC TTTCAACTIONT
CACTIONTGTGT GTGACCTIONT CCAACTIONTGA AACTIONTCACTIONT AAAGTTAACTIONT

pNLexAattR

ADH1 promoter

651 TTTGGGTGTG CACTTTATTA TGTTACAATA TGGAAGGGAA CTTTACACTT
AAACCCACAC GTGAAATAAT ACAATGTTAT ACCTTCCCTT GAAATGTGAA

ADH1 promoter

PacI

701 CTCCTATGCA CATATATTAA TTAAAGTCCA ATGCTAGTAG AGAAGGGGGG
GAGGATACGT GTATATAATT AATTTTCAGGT TACGATCATC TCTTCCCCC

ADH1 promoter

751 TAACACCCCT CCGCGCTCTT TTCCGATTTT TTTCTAAACC GTGGAATATT
ATTGTGGGGA GGC GCGAGAA AAGGCTAAAA AAAGATTTGG CACCTTATAA

ADH1 promoter

801 TCGGATATCC TTTTGTTGTT TCCGGGTGTA CAATATGGAC TTCCTCTTTT
AGCCTATAGG AAAACAACAA AGGCCACAT GTTATACCTG AAGGAGAAAA

ADH1 promoter

851 CTGGCAACCA AACCCATACA TCGGGATTCC TATAATACCT TCGTTGGTCT
GACCGTTGGT TTGGGTATGT AGCCCTAAGG ATATTATGGA AGCAACCAGA

ADH1 promoter

901 CCCTAACATG TAGGTGGCGG AGGGGAGATA TACAATAGAA CAGATACCAG
GGGATTGTAC ATCCACCGCC TCCCCTCTAT ATGTTATCTT GTCTATGGTC

ADH1 promoter

951 ACAAGACATA ATGGGCTAAA CAAGACTACA CCAATTACAC TGCCTCATTG
TGTTCTGTAT TACCCGATTT GTTCTGATGT GGTTAATGTG ACGGAGTAAC

ADH1 promoter

1001 ATGGTGGTAC ATAACGAACT AATACTGTAG CCCTAGACTT GATAGCCATC
TACCACCATG TATTGCTTGA TTATGACATC GGGATCTGAA CTATCGGTAG

ADH1 promoter

1051 ATCATATCGA AGTTTCACTA CCCTTTTTTCC ATTTGCCATC TATTGAAGTA
TAGTATAGCT TCAAAGTGAT GGGAAAAAGG TAAACGGTAG ATAACCTCAT

ADH1 promoter

1101 ATAATAGGCG CATGCAACTT CTTTTCTTTT TTTTTCTTTT CTCTCTCCC
TATTATCCGC GTACGTTGAA GAAAAGAAAA AAAAAGAAAA GAGAGAGGGG

ADH1 promoter

1151 CGTTGTTGTC TCACCATATC CGCAATGACA AAAAAATGA TGAAGACAC
GCAACAACAG AGTGGTATAG GCGTTACTGT TTTTTTACT ACCTTCTGTG

ADH1 promoter

1201 TAAAGGAAAA AATTAACGAC AAAGACAGCA CCAACAGATG TCGTTGTTCC
ATTTCTTTT TTAATTGCTG TTTCTGTCGT GGTTGTCTAC AGCAACAAGG

ADH1 promoter

1251 AGAGCTGATG AGGGGTATCT TCGAACACAC GAAACTTTTT CCTTCCTTCA
TCTCGACTAC TCCCATAGA AGCTTGTGTG CTTTGAAAA GGAAGGAAGT

pNLexAattR

ADH1 promoter

1301 TTCACGCACA CTACTCTCTA ATGAGCAACG GTATACGGCC TTCCTTCCAG
AAGTGC GTGT GATGAGAGAT TACTCGTTGC CATATGCCGG AAGGAAGGTC

ADH1 promoter

1351 TTA CTTGAAT TTGAAATAAA AAAAGTTTGC CGCTTTGCTA TCAAGTATAA
AATGAACTTA AACTTTATTT TTTTCAAACG GCGAAACGAT AGTTCATATT

ADH1 promoter

1401 ATAGACCTGC AATTATTAAT CTTTTGTTTC CTCGTCATTG TTCTCGTTCC
TATCTGGACG TTAATAATTA GAAAACAAAG GAGCAGTAAC AAGAGCAAGG

ADH1 promoter

1451 CTTTCTTCCT TGTTTCTTTT TCTGCACAAT ATTTCAAGCT ATACCAAGCA
GAAAGAAGGA ACAAAGAAAA AGACGTGTTA TAAAGTTCGA TATGGTTCGT

ADH1 promoter

HindIII

LexA

+2

M K A L T

1501 TACAATCAAC TCCAAGCTTG AATTAATTCC GGGCGGAATG AAAGCGTTAA
ATGTTAGTTG AGGTTCGAAC TTAATTAAGG CCCGCCTTAC TTTCGCAATT

LexA

+2

T A R Q Q E V F D L I R D H I S Q

1551 CGGCCAGGCA ACAAGAGGTG TTTGATCTCA TCCGTGATCA CATCAGCCAG
GCCGGTCCGT TGTTCTCCAC AAAGTAGAGT AGGCACTAGT GTAGTCGGTC

LexA

+2

T G M P P T R A E I A Q R L G F R

1601 ACAGGTATGC CGCCGACGCG TGC GGAAATC GCGCAGCGTT TGGGGTTCCG
TGTTCCATACG GCGGCTGCGC ACGCCTTTAG CGCGTCGCAA ACCCCAAGGC

LexA

+2

R S P N A A E E H L K A L A R K G V

1651 TTCCCAAAC GCGGCTGAAG AACATCTGAA GGCGCTGGCA CGCAAAGGCG
AAGGGGTTTG CGCCGACTTC TTGTAGACTT CCGCGACCGT GCGTTTCCGC

LexA

+2

V I E I V S G A S R G I R L L Q E

1701 TTATTGAAAT TGTTTCCGGC GCATCACGCG GGATTCGTCT GTTGCAGGAA
AATAACTTTA ACAAAGGCCG CGTAGTGCGC CCTAAGCAGA CAACGTCCTT

LexA

+2

E E E G L P L V G R V A A G E P L

1751 GAGGAAGAAG GGTTGCCGCT GGTAGGTCGT GTGGCTGCCG GTGAACCACT
CTCCTTCTTC CCAACGGCGA CCATCCAGCA CACCGACGGC CACTTGGTGA

LexA

+2

L L A Q Q H I E G H Y Q V D P S L F

1801 TCTGGCGCAA CAGCATATTG AAGGTCATTA TCAGGTCGAT CCTTCCTTAT
AGACCGCGTT GTCGTATAAC TTCCAGTAAT AGTCCAGCTA GGAAGGAATA

pNLexAattR

LexA

+2 • F K P N A D F L L R V S G M S M K
 1851 TCAAGCCGAA TGCTGATTC CTGCTGCGCG TCAGCGGGAT GTCGATGAAA
 AGTTCGGCTT ACGACTAAAG GACGACGCGC AGTCGCCCTA CAGCTACTTT

LexA

+2 D I G I M D G D L L A V H K T Q D •
 1901 GATATCGGCA TTATGGATGG TGACTTGCTG GCAGTGCATA AAACTCAGGA
 CTATAGCCGT AATACCTACC ACTGAACGAC CGTCACGTAT TTTGAGTCCT

LexA

+2 • D V R N G Q V V V A R I D D E V T V •
 1951 TGTACGTAAC GGTCAGGTCG TTGTCGCACG TATTGATGAC GAAGTTACCG
 ACATGCATTG CCAGTCCAGC AACAGCGTGC ATAACTACTG CTTCAATGGC

LexA

+2 • V K R L K K Q G N K V E L L P E N
 2001 TTAAGCGCCT GAAAAAACAG GGCAATAAAG TCGAACTGTT GCCAGAAAAT
 AATTCGCGGA CTTTTTTGTC CCGTTATTTT AGCTTGACAA CGGTCTTTTA

LexA

PmeI

+2 S E F K P I V V D L R Q Q S F T I •
 2051 AGCGAGTTTA AACCAATTGT CGTAGATCTT CGTCAGCAGA GCTTCACCAT
 TCGCTCAAAT TTGGTTAACA GCATCTAGAA GCAGTCGTCT CGAAGTGGTA

LexA

NLS

+2 • I E G L A V G V I R N G D W L E L A •
 2101 TGAAGGGCTG GCGGTTGGGG TTATTCGCAA CGGCGACTGG CTGGAATTGG
 ACTTCCCGAC CGCCAACCCC AATAAGCGTT GCCGCTGACC GACCTTAACC

NLS

+2 • A P K K K R K V
 2151 CCCCCAAGAA AAAGAGAAAG GTGACAAGTT TGTACAAAAA AGCTGAACGA
 GGGGGTTCTT TTTCTCTTTC CACTGTTCAA ACATGTTTTT TCGACTTGCT

attR1

2201 GAAACGTAAA ATGATATAAA TATCAATATA TTAAATTAGA TTTTGCATAA
 CTTTGCATTT TACTATATTT ATAGTTATAT AATTTAATCT AAAACGTATT

attR1

2251 AAAACAGACT ACATAATACT GTAAAACACA ACATATCCAG TCACTATGGC
 TTTTGTCTGA TGTATTATGA CATTTTGTGT TGTATAGGTC AGTGATACCG

attR1

2301 GGCCGCATTA GGCACCCAG GCTTTACTT TTATGCTTCC GGCTCGTATA
 CCGGCGTAAT CCGTGGGGTC CGAAATGTGA AATACGAAGG CCGAGCATAT

pNLexAattR

BamHI

2351 ATGTGTGGAT TTTGAGTTAG GATCCGTCGA GATTTTCAGG AGCTAAGGAA
TACACACCTA AAACCTCAATC CTAGGCAGCT CTAAAAGTCC TCGATTTCCTT

CmR

2401 GCTAAAATGG AGAAAAAAT CACTGGATAT ACCACCGTTG ATATATCCCA
CGATTTTACC TCTTTTTTTA GTGACCTATA TGGTGGCAAC TATATAGGGT

CmR

2451 ATGGCATCGT AAAGAACATT TTGAGGCATT TCAGTCAGTT GCTCAATGTA
TACCGTAGCA TTTCTTGTA AACTCCGTAA AGTCAGTCAA CGAGTTACAT

CmR

2501 CCTATAACCA GACCGTTCAG CTGGATATTA CGGCCTTTTT AAAGACCGTA
GGATATTGGT CTGGCAAGTC GACCTATAAT GCCGGAAAAA TTTCTGGCAT

CmR

2551 AAGAAAAATA AGCACAAGTT TTATCCGGCC TTTATTCACA TTCTTGCCCG
TTCTTTTTAT TCGTGTTCAA AATAGCCGG AAATAAGTGT AAGAACGGGC

CmR

EcoRI

2601 CCTGATGAAT GTCATCCGG AATTCCGTAT GGCAATGAAA GACGGTGAGC
GGACTACTTA CGAGTAGGCC TTAAGGCATA CCGTTACTTT CTGCCACTCG

CmR

2651 TGGTGATATG GGATAGTGTT CACCCTTGTT ACACCGTTTT CCATGAGCAA
ACCACTATAC CCTATCACAA GTGGGAACAA TGTGGCAAAA GGTACTCGTT

CmR

2701 ACTGAAACGT TTTCATCGCT CTGGAGTGAA TACCACGACG ATTTCCGGCA
TGACTTTGCA AAAGTAGCGA GACCTCACTT ATGGTGCTGC TAAAGCCGT

CmR

2751 GTTTCTACAC ATATATTCGC AAGATGTGGC GTGTTACGGT GAAAACCTGG
CAAAGATGTG TATATAAGCG TTCTACACCG CACAATGCCA CTTTTGGACC

CmR

2801 CCTATTTCCC TAAAGGGTTT ATTGAGAATA TGTTTTTCGT CTCAGCCAAT
GGATAAAGGG ATTTCCCAA TAACTCTTAT ACAAAAAGCA GAGTCGGTTA

CmR

2851 CCCTGGGTGA GTTTCACCAG TTTTGATTTA AACGTGGCCA ATATGGACAA
GGGACCCACT CAAAGTGGTC AAAACTAAAT TTGCACCGGT TATACCTGTT

CmR

NcoI

2901 CTTCTTCGCC CCCGTTTTCA CCATGGGCAA ATATTATACG CAAGGCGACA
GAAGAAGCGG GGGCAAAAGT GGTACCCGTT TATAATATGC GTTCCGCTGT

pNLexAattR

CmR

2951 AGGTGCTGAT GCCGCTGGCG ATTCAGGTTT ATCATGCCGT CTGTGATGGC
TCCACGACTA CGGCGACCGC TAAGTCCAAG TAGTACGGCA GACACTACCG

CmR

3001 TTCCATGTCG GCAGAATGCT TAATGAATTA CAACAGTACT GCGATGAGTG
AAGGTACAGC CGTCTTACGA ATTACTTAAT GTTGTCATGA CGCTACTCAC

CmR

BamHI

3051 GCAGGGCGGG GCGTAAAGAT CTGGATCCGG CTTACTAAAA GCCAGATAAC
CGTCCC GCCCGC GCATTTCTA GACCTAGGCC GAATGATTTT CGGTCTATTG

3101 AGTATGCGTA TTTGCGCGCT GATTTTTGCG GTATAAGAAT ATATACTGAT
TCATACGCAT AAACGCGCGA CTAAAAACGC CATATTCTTA TATATGACTA

(ccdA)

3151 ATGTATACCC GAAGTATGTC AAAAAGAGGT GTGCTATGAA GCAGCGTATT
TACATATGGG CTTCATAACG TTTTTCTCCA CACGATACTT CGTCGCATAA

(ccdA)

3201 ACAGTGACAG TTGACAGCGA CAGCTATCAG TTGCTCAAGG CATATATGAT
TGTCAGTGT AACTGTCGCT GTCGATAGTC AACGAGTTCC GTATATACTA

(ccdA)

3251 GTCAATATCT CCGGTCTGGT AAGCACAACC ATGCAGAATG AAGCCCGTCG
CAGTTATAGA GGCCAGACCA TTCGTGTTGG TACGTCTTAC TTCGGGCAGC

3301 TCTGCGTGCC GAACGCTGGA AAGCGGAAAA TCAGGAAGGG ATGGCTGAGG
AGACGCACGG CTTGCGACCT TTCGCCTTTT AGTCCTTCCC TACCGACTCC

3351 TCGCCCGGTT TATTGAAATG AACGGCTCTT TTGCTGACGA GAACAGGGAC
AGCGGGCCAA ATAACTTTAC TTGCCGAGAA AACGACTGCT CTTGTCCCTG

ccdB

3401 TGGTCAAATG CAGTTTAAGG TTTACACCTA TAAAAGAGAG AGCCGTTATC
ACCACTTTAC GTCAAATTCC AAATGTGGAT ATTTTCTCTC TCGGCAATAG

ccdB

3451 GTCTGTTTGT GGATGTACAG AGTGATATTA TTGACACGCC CGGGCGACGG
CAGACAAACA CCTACATGTC TCACTATAAT AACTGTGCGG GCCCGCTGCC

ccdB

3501 ATGGTGATCC CCCTGGCCAG TGCACGTCTG CTGTCAGATA AAGTCTCCCG
TACCACTAGG GGGACCGGTC ACGTGCAGAC GACAGTCTAT TTCAGAGGGC

ccdB

3551 TGAAC TTTAC CCGGTGGTGC ATATCGGGGA TGAAAGCTGG CGCATGATGA
ACTTGAAATG GGCCACCACG TATAGCCCCT ACTTTGACCG GCGTACTACT

ccdB

3601 CCACCGATAT GGCCAGTGTG CCGGTCTCCG TTATCGGGGA AGAAGTGGCT
GGTGGCTATA CCGGTCACAC GGCCAGAGGC AATAGCCCCT TCTTCACCGA

pNLexAattR

ccdB

3651 GATCTCAGCC ACCGCGAAAA TGACATCAAA AACGCCATTA ACCTGATGTT
CTAGAGTCGG TGGCGCTTTT ACTGTAGTTT TTGCGGTAAT TGGACTACAA

ccdB

3701 CTGGGGAATA TAAATGTCAG GCTCCCTTAT ACACAGCCAG TCTGCAGGTC
GACCCCTTAT ATTTACAGTC CGAGGGAATA TGTGTCGGTC AGACGTCCAG

attR2

3751 GACCATAGTG ACTGGATATG TTGTGTTTTA CAGTATTATG TAGTCTGTTT
CTGGTATCAC TGACCTATAC AACACAAAAT GTCATAATAC ATCAGACAAA

attR2

3801 TTTATGCAAA ATCTAATTTA ATATATTGAT ATTTATATCA TTTTACGTTT
AAATACGTTT TAGATTAAAT TATATAACTA TAAATATAGT AAAATGCAAA

attR2

3851 CTCGTTTCAGC TTTCTTGTCAC AAAGTGGTGT CGACCTGCAG CCAAGCTAAT
GAGCAAGTCG AAAGAACATG TTTACCACA GCTGGACGTC GGTTCGATTA

ADH T

3901 TCCGGGCGAA TTTCTTATGA TTTATGATTT TTATTATTAA ATAAGTTATA
AGGCCGCTT AAAGAATACT AAATACTAAA AATAATAATT TATTCAATAT

ADH T

3951 AAAAAAATAA GTGTATACAA ATTTTAAAGT GACTCTTAGG TTTTAAAACG
TTTTTTTATT CACATATGTT TAAAATTTCA CTGAGAATCC AAAATTTTGC

ADH T

4001 AAAATTCTTG TTCTTGAGTA ACTCTTTCCT GTAGGTCAGG TTGCTTTCTC
TTTTAAGAAC AAGAACTCAT TGAGAAAGGA CATCCAGTCC AACGAAAGAG

ADH T

4051 AGGTATAGCA TGAGGTCGCT CTTATTGACC ACACCTCTAC CGGCATGCCG
TCCATATCGT ACTCCAGCGA GAATAACTGG TGTGGAGATG GCCGTACGGC

ADH T

4101 AGCAAATGCC TGCAAATCGC TCCCCATTTT ACCCAATTGT AGATATGCTA
TCGTTTACGG ACGTTTAGCG AGGGGTAAAG TGGGTTAACA TCTATACGAT

ADH T

4151 ACTCCAGCAA TGAGTTGATG AATCTCGGTG TGTATTTTAT GTCCTCAGAG
TGAGGTCGTT ACTCAACTAC TTAGAGCCAC ACATAAAATA CAGGAGTCTC

ADH T

4201 GACAACACCT GTTGTAATCG TTCTTCCACA CGGATCGATC CACAGGACGG
CTGTTGTGGA CAACATTAGC AAGAAGGTGT GCCTAGCTAG GTGTCCTGCC

4251 GTGTGGTCGC CATGATCGCG TAGTCGATAG TGGCTCCAAG TAGCGAAGCG
CACACCAGCG GTAGTAGCGC ATCAGCTATC ACCGAGGTTC ATCGCTTCGC

4301 AGCAGGACTG GCGGCGGCC AAAGCGGTCTG GACAGTGCTC CGAGAACGGG
TCGTCCTGAC CCGCCGCCGG TTTCCGCCAGC CTGTCACGAG GCTCTTGCCC

pNLexAattR

```

4351  TGCGCATAGA  AATTGCATCA  ACGCATATAG  CGCTAGCAGC  ACGCCATAGT
      ACGCGTATCT  TTAACGTAGT  TGCATATATC  GCGATCGTCG  TGCCGGTATCA
-----
4401  GACTGGCGAT  GCTGTCCGAA  TGGACGATAT  CCCGCAAGAG  GCCCGGCAGT
      CTGACCGCTA  CGACAGCCTT  ACCTGCTATA  GGGCGTTCTC  CGGGCCGTCA
-----
4451  ACCGGCATAA  CCAAGCCTAT  GCCTACAGCA  TCCAGGGTGA  CGGTGCCGAG
      TGGCCGTATT  GGTTCCGATA  CGGATGTCGT  AGGTCCCACT  GCCACGGCTC
-----
4501  GATGACGATG  AGCGCATTGT  TAGATTTTCAT  ACACGGTGCC  TGAAGTGCCT
      CTAATGCTAC  TCGCGTAAAC  ATCTAAAGTA  TGTGCCACGG  ACTGACGCAA
-----
                                     2 µm origin
4551  AGCAATTTAA  CTGTGATAAA  CTACCGCATT  AAAGCTAGCT  TTGAAGAAAA
      TCGTTAAATT  GACACTATTT  GATGGCGTAA  TTTCGATCGA  AACTTCTTTT
-----
                                     2 µm origin
4601  ATGCGCCTTA  TTCAATCTTT  GCTATAAAAA  ATGGCCCAA  ATCTCACATT
      TACGCGGAAT  AAGTTAGAAA  CGATATTTTT  TACCGGGTTT  TAGAGTGTA
-----
                                     2 µm origin
4651  GGAAGACATT  TGATGACCTC  ATTTCTTTCA  ATGAAGGGCC  TAACGGAGTT
      CCTTCTGTAA  ACTACTGGAG  TAAAGAAAGT  TACTTCCCGG  ATTGCCTCAA
-----
                                     2 µm origin
4701  GACTAATGTT  GTGGGAAATT  GGAGCGATAA  GCGTGCTTCT  GCCGTGGCCA
      CTGATTACAA  CACCCTTTAA  CCTCGCTATT  CGCACGAAGA  CGGCACCGGT
-----
                                     2 µm origin
4751  GGACAACGTA  TACTCATCAG  ATAACAGCAA  TACCTGATCA  CTAATTCGCA
      CCTGTTGCAT  ATGAGTAGTC  TATTGTCGTT  ATGGACTAGT  GATGAAGCGT
-----
                                     2 µm origin
4801  CTAGTTTCTC  GGTAATATGC  ATATGATCCA  ATATCAAAGG  AAATGATAGC
      GATCAAAGAG  CCATGATACG  TATACTAGGT  TATAGTTTCC  TTTACTATCG
-----
                                     2 µm origin
4851  ATTGAAGGAT  GAGACTAATC  CAATTGAGGA  GTGGCAGCAT  ATAGAACAGC
      TAACTTCCTA  CTCTGATTAG  GTTAACTCCT  CACCGTCGTA  TATCTTGTCG
-----
                                     2 µm origin
4901  TAAAGGGTAG  TGCTGAAGGA  AGCATACGAT  ACCCCGCATG  GAATGGGATA
      ATTTCCCATC  ACGACTTCCT  TCGTATGCTA  TGGGGCGTAC  CTTACCCTAT
-----
                                     2 µm origin
4951  ATATCACAGG  AGGTAATAGA  CTACCTTTCA  TCCTACATAA  ATAGACGCAT
      TATAGTGTCC  TCCATGATCT  GATGGAAAGT  AGGATGTATT  TATCTGCGTA
-----
                                     2 µm origin
5001  ATAAGTACGC  ATTTAAGCAT  AAACACGCAC  TATGCCGTTT  TTCTCATGTA
      TATTCATGCG  TAAATTCGTA  TTTGTGCGTG  ATACGGCAAG  AAGAGTACAT
-----
                                     2 µm origin
5051  TATATATATA  CAGGCAACAC  GCAGATATAG  GTGCGACGTG  AACAGTGAGC
      ATATATATAT  GTCCGTTGTG  CGTCTATATC  CACGCTGCAC  TTGTCACTCG
-----

```


pNLexAattR

2 μ m origin

5101 TGTATGTGCG CAGCTCGCGT TGCATTTTCG GAAGCGCTCG TTTTCGGAAA
ACATACACGC GTCGAGCGCA ACGTAAAAGC CTTCGCGAGC AAAAGCCTTT

2 μ m origin

5151 CGCTTTGAAG TTCCTATTCC GAAGTTCCTA TTCTCTAGAA AGTATAGGAA
GCGAAACTTC AAGGATAAGG CTTCAAGGAT AAGAGATCTT TCATATCCTT

2 μ m origin

5201 C TTCAGAGCG CTTTTGAAAA CCAAAGCGC TCTGAAGACG CACTTTCAAA
GAAGTCTCGC GAAAACCTTT GGTTCGCG AGACTTCTGC GTGAAAGTTT

2 μ m origin

5251 AAACCAAAAA CGCACCGGAC TGTAAACGAGC TACTAAAATA TTGCGAATAC
TTTGGTTTTT GCGTGGCCTG ACATTGCTCG ATGATTTTAT AACGCTTATG

2 μ m origin

5301 CGCTTCCACA AACATTGCTC AAAAGTATCT CTTTGCTATA TATCTCTGTG
GCGAAGGTGT TTGTAACGAG TTTTCATAGA GAAACGATAT ATAGAGACAC

2 μ m origin

5351 CTATATCCCT ATATAACCTA CCCATCCACC TTTCGCTCCT TGAACCTGCA
GATATAGGGA TATATTGGAT GGGTAGGTGG AAAGCGAGGA ACTTGAACGT

2 μ m origin

5401 TCTAAACTCG ACCTCTACAT TTTTTATGTT TATCTCTAGT ATTACTCTTT
AGATTTGAGC TGGAGATGTA AAAAATACAA ATAGAGATCA TAATGAGAAA

2 μ m origin

5451 AGACAAAAAA ATTGTAGTAA GAACTATTCA TAGAGTGAAT CGAAAACAAT
TCTGTTTTTT TAACATCATT CTTGATAAGT ATCTCACTTA GCTTTTGTTA

2 μ m origin

5501 ACGAAAATGT AAACATTTCC TATACGTAGT ATATAGAGAC AAAATAGAAG
TGCTTTTACA TTTGTAAAGG ATATGCATCA TATATCTCTG TTTTATCTTC

2 μ m origin

5551 AAACCGTTCA TAATTTTCTG ACCAATGAAG AATCATCAAC GCTATCACTT
TTTGGCAAGT ATTAAAAGAC TGGTTACTTC TTAGTAGTTG CGATAGTGAA

2 μ m origin

5601 TCTGTTCACA AAGTATGCGC AATCCACATC GGTATAGAAT ATAATCGGGG
AGACAAGTGT TTCATACGCG TTAGGTGTAG CCATATCTTA TATTAGCCCC

2 μ m origin

5651 ATGCCTTTAT CTTGAAAAAA TGCACCCGCA GCTTCGCTAG TAATCAGTAA
TACGGAAATA GAACTTTTTT ACGTGGGCGT CGAAGCGATC ATTAGTCATT

2 μ m origin

5701 ACGCGGGAAG TGGAGTCAGG CTTTTTTTAT GGAAGAGAAA ATAGACACCA
TGCGCCCTTC ACCTCAGTCC GAAAAAATA CCTTCTCTTT TATCTGTGGT

pNLexAattR

2 μ m origin

5751 AAGTAGCCTT CTTCTAACCT TAACGGACCT ACAGTGCAAA AAGTTATCAA
 TTCATCGGAA GAAGATTGGA ATTGCCTGGA TGTCACGTTT TTCAATAGTT

2 μ m origin

5801 GAGACTGCAT TATAGAGCGC ACAAAGGAGA AAAAAAGTAA TCTAAGATGC
 CTCTGACGTA ATATCTCGCG TGTTCCTCT TTTTTTCATT AGATTCTACG

2 μ m origin

5851 TTTGTTAGAA AAATAGCGCT CTCGGGATGC ATTTTTGTAG AACAAAAAAG
 AAACAATCTT TTTATCGCGA GAGCCCTACG TAAAAACATC TTGTTTTTTC

2 μ m origin

5901 AAGTATAGAT TCTTTGTTGG TAAAATAGCG CTCTCGCGTT GCATTTCTGT
 TTCATATCTA AGAAACAACC ATTTTATCGC GAGAGCGCAA CGTAAAGACA

2 μ m origin

5951 TCTGTAAAAA TGCAGCTCAG ATTCTTTGTT TGAAAAATTA GCGCTCTCGC
 AGACATTTTT ACGTCGAGTC TAAGAAACAA ACTTTTTAAT CGCGAGAGCG

2 μ m origin

6001 GTTGCATTTT TGTTTTACAA AAATGAAGCA CAGATTCTTC GTTGGTAAAA
 CAACGTAAAA ACAAATGTT TTTACTTCGT GTCTAAGAAG CAACCATTTT

2 μ m origin

6051 TAGCGCTTTC GCGTTGCATT TCTGTTCTGT AAAAATGCAG CTCAGATTCT
 ATCGCGAAAG CGCAACGTAA AGACAAGACA TTTTACGTC GAGTCTAAGA

2 μ m origin

6101 TTGTTTGAAA AATTAGCGCT CTCGCGTTGC ATTTTTGTTC TACAAAATGA
 AACAACTTT TTAATCGCGA GAGCGCAACG TAAAAACAAG ATGTTTTACT

2 μ m origin

6151 AGCACAGATG CTTGTTAAC AAAGATATGC TATTGAAGTG CAAGATGGAA
 TCGTGTCTAC GAAGCAATTG TTTCTATACG ATAAC TTCAC GTTCTACCTT

2 μ m origin

6201 ACGCAGAAAA TGAACCGGG ATGCGACGTG CAAGATTACC TATGCAATAG
 TCGTCTTTT ACTTGCCCC TACGCTGCAC GTTCTAATGG ATACGTTATC

2 μ m origin

6251 ATGCAATAGT TTCTCCAGGA ACCGAAATAC ATACATTGTC TTCCGTAAAG
 TACGTTATCA AAGAGGTCCT TGGCTTTATG TATGTAACAG AAGGCATTTT

2 μ m origin

6301 CGCTAGACTA TATATTATTA TACAGGTTCA AATATACTAT CTGTTTCAGG
 GCGATCTGAT ATATAATAAT ATGTCCAAGT TTATATGATA GACAAAGTCC

2 μ m origin

6351 GAAAACTCCC AGGTTTCGGAT GTTCAAATTA CAATGATGGG TAACAAGTAC
 CTTTTGAGGG TCCAAGCCTA CAAGTTTTAA GTTACTACCC ATTGTTTCATG

pNLexAattR

2 μ m origin

6401	GATCGTAAAT	CTGTAAAACA	GTTTGTTCGGA	TATTAGGCTG	TATCTCCTCA
	CTAGCATTTA	GACATTTTGT	CAAACAGCCT	ATAATCCGAC	ATAGAGGAGT
2 μ m origin					
6451	AAGCGTATTC	GAATATCATT	GAGAAGCTGC	AGCAGGCGTG	AAGTTAGACG
	TTCGCATAAG	CTTATAGTAA	CTCTTCGACG	TCGTCCGCAC	TTCAATCTGC
6501	ACAAC TTCTC	TCTGGAAACG	CATACCGATA	TTCAGGCTGC	TGCAAAGGCA
	TGTTGAAGAG	AGACCTTTGC	GTATGGCTAT	AAGTCCGACG	ACGTTTCCGT
6551	CAGGCTAGTG	CCCGTGCGAG	TGCATCCGGT	ACCACCCAG	ATGCTGTAGT
	GTCCGATCAC	GGGCACGCTC	ACGTAGGCCA	TGGTGGGGTC	TACGACATCA
6601	AGTTTCTGGT	AGCACTGCAA	TGAGCCATGC	TTATCAAGAA	AACACAGGTT
	TCGAAGACCA	TCGTGACGTT	ACTCGGTACG	AATAGTTCTT	TTGTGTCCAA
6651	TTGGTACTCG	TCCCATATAT	CTTGACATGC	AAGCCACTAC	ACCAACAGAC
	AACCATGAGC	AGGGTATATA	GAAGTGTACG	TTCGGTGATG	TGGTTGTCTG
6701	CCTAGGGTTT	TGGATACGAT	GTTGAAGTTT	TATACGGGAC	TTTATGGTAA
	GGATCCCAA	ACCTATGCTA	CAACTTCAA	ATATGCCCTG	AAATACCATT
6751	TCCTCATTCC	AACACTCACT	CTTACGGTTG	GGAAACAAAT	ACTGCTGTGG
	AGGAGTAAGG	TTGTGAGTGA	GAATGCCAAC	CCTTTGTTTA	TGACGACACC
6801	AAAATGCTAG	AGCTCACGTA	GCAAAGATGA	TCAATGCCGA	CCCCAAGGAA
	TTTTACGATC	TCGAGTGCAT	CGTTTCTACT	AGTTACGGCT	GGGGTTCCCT
6851	ATAATATTCA	CTTCGGGAGC	GACCGAATCT	AATAATATGG	TTCTTAAGGG
	TATTATAAGT	GAAGCCCTCG	CTGGCTTAGA	TTATTATACC	AAGAATTCCC
6901	TGTCCAAGA	TTTTATAAGA	AGACTAAGAA	ACACATCATC	ACCACTAGAA
	ACAGGGTTCT	AAAATATTCT	TCTGATTCTT	TGTGTAGTAG	TGGTGATCTT
6951	CGAACACAA	GTGTGTCTTG	GAAGCCGCAC	GGCCATGAT	GAAGGAGGGA
	GCCTTGTGTT	CACACAGAAC	CTTCGGCGTG	CCCGGTACTA	CTTCCTCCCT
7001	TTTGAAGTCA	CTTTCCTAAA	TGTGGACGAT	CAAGGTCTTA	TCGATTTGAA
	AAACTTCAGT	GAAAGGATTT	ACACCTGCTA	GTTCCAGAAT	AGCTAAACTT
7051	GGAATTGGAA	GATGCCATTA	GACCAGATAC	CTGTCTCGTC	TCTGTGATGG
	CCTTAACCTT	CTACGGTAAT	CTGGTCTATG	GACAGAGCAG	AGACACTACC
7101	CTGTCAATAA	TGAAATCGGT	GTCATTCAAC	CTATTAAAGA	AATTGGAGCA
	GACAGTTATT	ACTTTAGCCA	CAGTAAGTTG	GATAATTTCT	TTAACCTCGT
7151	ATTTGTAGAA	AGAATAAGAT	CCTCGGGGAC	ACCAAATATG	GCGATCTCGG
	TAAACATCTT	TCTTATTCTA	GGAGCCCTG	TGGTTTATAC	CGTAGAGCC
7201	CCTTTTCGTT	TCTTGGAGCT	GGGACATGTT	TGCCATCGAT	CCATCTACCA
	GGAAAAGCAA	AGAACCTCGA	CCCTGTACAA	ACGGTAGCTA	GGTAGATGGT
7251	CCAGAACGGC	CGTTAGATCT	GCTGCCACCG	TTGTTTCCAC	CGAAGAAACC
	GGTCTTGCCG	GCAATCTAGA	CGACGGTGGC	AACAAAGGTG	GCTTCTTTGG
7301	ACCGTTGCCG	TAACCACCAC	GACGGTTGTT	GCTAAAGAAG	CTGCCACCGC
	TGGCAACGGC	ATTGGTGGTG	CTGCCAACAA	CGATTTCTTC	GACGGTGGCG
7351	CACGGCCACC	GTTGTAGCCG	CCGTTGTTGT	TATTGTAGTT	GCTACTGTTA
	GTGCCGGTGG	CAACATCGGC	GGCAACAACA	ATAACATCAA	CGATGACAAT

pNLexAattR

```

7401 TTTCTGGCAC TTCTTGGTTT TCCTCTTAAG TGAGGAGGAA CATAACCATT
AAAGACCGTG AAGAACCAAA AGGAGAATTC ACTCCTCCTT GTATTGGTAA
.....
7451 CTCGTTGTTG TCGTTGATGC TTAAATTTTG CACTTGTTTCG CTCAGTTCAG
GAGCAACAAC AGCAACTACG AATTTAAAAC GTGAACAAGC GAGTCAAGTC
.....
7501 CCATAATATG AAATGCTTTT CTTGTTGTTT TTACGGAATA CCACTTGCCA
GGTATTATAC TTTACGAAAA GAACAACAAG AATGCCTTAT GGTGAACGGT
.....
7551 CCTATCACCA CAACTAACTT TTTCCCGTTC CTCCATCTCT TTTATATTTT
GGATAGTGGT GTTGATTGAA AAAGGGCAAG GAGGTAGAGA AAATATAAAA
.....
7601 TTTTCTCGAT CGAGTTCAAG AGAAAAAAAA AGAAAAAGCA AAAAGAAAAA
AAAAGAGCTA GCTCAAGTTC TCTTTTTTTT TCTTTTTTCGT TTTTCTTTTT
.....
7651 AGGAAAGCGC GCCTCGTTCA GAATGACACG TATAGAATGA TGCATTACCT
TCCTTTCGCG CGGAGCAAGT CTTACTGTGC ATATCTTACT ACGTAATGGA
.....
7701 TGTCATCTTC AGTATCATAc TGTTTCGTATA CATACTTACT GACATTCATA
ACAGTAGAAG TCATAGTATG ACAAGCATAT GTATGAATGA CTGTAAGTAT
.....
7751 GGTATACATA TATACACATG TATATATATC GTATGCTGCA GCTTTAAATA
CCATATGTAT ATATGTGTAC ATATATATAG CACACGACGT CGAAATTTAT
.....
7801 ATCGGTGTCA CTACATAAGA ACACCTTTGG TGGAGGGAAC ATCGTTGGTA
TAGCCACAGT GATGTATTCT TGTGGAACC ACCTCCCTTG TAGCAACCAT
.....
HIS3
7851 CCATTGGGCG AGGTGGCTTC TCTTATGGCA ACCGCAAGAG CTTGAACGC
GGTAACCCGC TCCACCGAAG AGAATACCGT TGGCGTTCTC GGAACCTGCG
.....
HIS3
7901 ACTCTCACTA CGGTGATGAT CATTCTTGCC TCGCAGACAA TCAACGTGGA
TGAGAGTGAT GCCACTACTA GTAAGAACGG AGCGTCTGTT AGTTGCACCT
.....
HIS3
HindIII
7951 GGGTAATTCT GCTAGCCTCT GCAAAGCTTT CAAGAAAATG CGGGATCATC
CCCATTAAGA CGATCGGAGA CGTTTCGAAA GTTCTTTTAC GCCCTAGTAG
.....
HIS3
8001 TCGCAAGAGA GATCTCCTAC TTTCTCCCTT TGCAAACCAA GTTCGACAAC
AGCGTTCTCT CTAGAGGATG AAAGAGGGAA ACGTTTGGTT CAAGCTGTTG
.....
HIS3
8051 TGCGTACGGC CTGTTTCGAAA GATCTACCAC CGCTCTGGAA AGTGCCTCAT
ACGCATGCCG GACAAGCTTT CTAGATGGTG GCGAGACCTT TCACGGAGTA
.....
HIS3
8101 CCAAAGGCGC AAATCCTGAT CCAAACCTTT TTA CTCCACG CGCCAGTAGG
GGTTTCCGCG TTTAGGACTA GGTTTGGAAA AATGAGGTGC GCGGTCATCC
.....
HIS3

```

pNLexAattR

HindIII

~~~~~

8151 GCCTCTTTAA AAGCTTGACC GAGAGCAATC CCGCAGTCTT CAGTGGTGTG  
 CGGAGAAATT TTCGAACTGG CTCTCGTTAG GCGTCAGAA GTCACCACAC

HIS3

8201 ATGGTCGTCT ATGTGTAAGT CACCAATGCA CTCAACGATT AGCGACCAGC  
 TACCAGCAGA TACACATTCA GTGGTTACGT GAGTTGCTAA TCGCTGGTCG

HIS3

8251 CGGAATGCTT GGCCAGAGCA TGTATCATAT GTTCCAGAAA CCCTATACCT  
 GCCTTACGAA CCGGTCTCGT ACATAGTATA CCAGGTCTTT GGGATATGGA

HIS3

8301 GTGTGGACGT TAATCACTTG CGATTGTGTG GCCTGTTCTG CTA CTACTGCTTC  
 CACACCTGCA ATTAGTGAAC GCTAACACAC CGGACAAGAC GATGACGAAG

HIS3

8351 TGCCTCTTTT TCTGGGAAGA TCGAGTGCTC TATCGCTAGG GGACCACCCT  
 ACGGAGAAAA AGACCCTTCT AGCTCACGAG ATAGCGATCC CCTGGTGGGA

HIS3

8401 TTAAAGAGAT CGCAATCTGA ATCTTGGTTT CATTGTGTAAT ACGCTTTACT  
 AATTTCTCTA GCGTTAGACT TAGAACCAA GTAAACATTA TGCGAAATGA

HIS3

8451 AGGGCTTTCT GCTCTGTCAT CTTTGCCTTC GTTTATCTTG CCTGCTCATT  
 TCCCGAAAGA CGAGACAGTA GAAACGGAAG CAAATAGAAC GGACGAGTAA

HIS3

8501 TTTTAGTATA TTCTTCGAAG AAATCACATT ACTTTATATA ATGTATAATT  
 AAAATCATAT AAGAAGCTTC TTTAGTGTA TGAAATATAT TACATATTAA

8551 CATTATGTGA TAATGCCAAT CGCTAAGAAA AAAAAAGAGT CATCCGCTAG  
 GTAATACT ATTACGGTTA GCGATTCTTT TTTTTTCTCA GTAGGCGATC

8601 GTGGAAAAA AAAAATGAAA ATCATTACCG AGGCATAAAA AAATATAGAG  
 CACCTTTTTT TTTTACTTT TAGTAATGGC TCCGTATTTT TTTATATCTC

8651 TGTACTAGAG GAGGCCAAGA GTAATAGAAA AAGAAAATTG CGGGAAAGGA  
 ACATGATCTC CTCCGGTTCT CATTATCTTT TTCTTTTAAAC GCCCTTTCCT

8701 CTGTGTTATG ACTTCCCTGA CTAATGCCGT GTTCAAACGA TACCTGGCAG  
 GACACAATAC TGAAGGGACT GATTACGGCA CAAGTTTGCT ATGGACCGTC

8751 TGACTCCTAG CGCTCACCAA GCTCTTAAAA CGAGAATTAA GAAAAAGTCG  
 ACTGAGGATC GCGAGTGGTT CGAGAATTTT GCTCTTAATT CTTTTTCAGC

8801 TCATCTTTTCG ATAAGTTTTT CCCACAGCAA AGCAATAGTA GAAAAACAAT  
 AGTAGAAAGC TATTCAAAAA GGGTGTTCGTT TCGTTATCAT CTTTTTGTTA

8851 GGAAACGTT GAATGAAGAC AAAGCGTCGT GGTTTAAAAG GAAATACGCT  
 CCCTTTGCAA CTTACTTCTG TTTCGCAGCA CCAAATTTTC CTTTATGCGA

8901 CACGTACATG CTAGGGAACA GGACCGTGCA GCGGATCTAA TGAATCCATT  
 GTGCATGTAC GATCCCTTGT CCTGGCACGT CGCCTAGATT ACTTAGGTAA

pNLexAattR

```

8951  TGTTAGTTAA  TAGTTTAAAT  GTTTTTATCG  GAAGAGGTTT  TGTCATCACA
      ACAATCAATT  ATCAAATTTA  CAAAAATAGC  CTTCTCCAAA  ACAGTAGTGT
.....
9001  TCAGCAATGT  TCTTCTTGGT  CTCGATGTAG  TATACGTATA  AATTATTACC
      AGTCGTTACA  AGAAGAACCA  GAGCTACATC  ATATGCATAT  TTAATAATGG
=====
9051  TGATACTTCA  TCTCTAAGTC  TCATTGCCTT  TGTGCCAAAA  AATCTGTTTC
      ACTATGAAGT  AGAGATTCAG  AGTAACGGAA  ACACGGTTTT  TTAGACAAAG
.....
9101  TAAATTTCTC  TTCATTTGTA  GACTTAATTA  TACTGATCGT  TGATCTACTA
      ATTTAAAGAG  AAGTAAACAT  CTGAATTAAT  ATGACTAGCA  ACTAGATGAT
.....
9151  TCAGTAAGTA  AGCCTTTAAA  AAAAAAAAAA  AAAAAAAAAA  AAAAAAAAAACC
      AGTCATTCAT  TCGGAAATTT  TTTTTTTTTT  TTTTTTTTTT  TTTTTTTTGG
.....
9201  TGTAACAATA  GCAATACCCC  AAATACCTAA  TGTAGTTCCA  GCAAGCAAGC
      ACATTGTTAT  CGTTATGGGG  TTTATGGATT  ACATCAAGGT  CGTTCGTTCC
=====
9251  TAAAAAGTAA  AGCAACAACA  TAACTCACCC  CTGCATCTGC  AGCTTTTGCC
      ATTTTTTCATT  TCGTTGTTGT  ATTGAGTGGG  GACGTAGACG  TCGAAAACGG
=====
9301  CGGGCAGCCT  GCTCTGCCTG  TGTTTTCTTT  AATTGAGCAG  TAGACCATTT
      GCCCGTCGGA  CGAGACGGAC  ACAAAGAAA  TTAACTCGTC  ATCTGGTAAA
=====
9351  AGCAGTTGCA  TGAATAGCTG  CAGCGTCACA  TCGGATAATA  ATGATGGCAG
      TCGTCAACGT  ACTTATCGAC  GTCGCAGTGT  AGCCTATTAT  TACTACCGTC
.....
9401  CCATTGTAGA  AGTGCCTTTT  GCATTTCTAG  TCTCTTTCTC  GGTCTAGCTA
      GGTAACATCT  TCACGGAAAA  CGTAAAGATC  AGAGAAAGAG  CCAGATCGAT
.....
9451  GTTTTACTAC  ATCGCGAAGA  TAGAATCTTA  GATCACACTG  CCTTTGCTGA
      CAAAATGATG  TAGCGCTTCT  ATCTTAGAAT  CTAGTGTGAC  GGAAACGACT
.....
9501  GCTGGATCAA  TAGAGTAACA  AAAGAGTGGT  AAGGCCTCGT  TAAAGGACAA
      CGACCTAGTT  ATCTCATTGT  TTTCTCACCA  TTCCGGAGCA  ATTTCTGT
=====
9551  GGACCTGAGC  GGAAGTGTAT  CGTACAGTAG  ACGGAGTATA  CTAGTATAGT
      CCTGGACTCG  CCTTCACATA  GCATGTCATC  TGCCTCATAT  GATCATATCA
.....
9601  CTATAGTCCG  TGGAATTAAT  TCTTGAAGAC  GAAAGGGCCT  CGTGATACGC
      GATATCAGGC  ACCTTAATTA  AGAACTTCTG  CTTTCCCGGA  GCACTATGCG
=====
9651  CTATTTTTAT  AGGTTAATGT  CATGATAATA  ATGGTTTCTT  AGACGTCAGG
      GATAAAAATA  TCCAATTACA  GTACTATTAT  TACCAAAGAA  TCTGCAGTCC
.....
9701  TGGCACTTTT  CGGGGAAATG  TGCGCGGAAC  CCCTATTTGT  TTATTTTTCT
      ACCGTGAAAA  GCCCCTTTAC  ACGCGCCTTG  GGGATAAACA  AATAAAAAGA
.....
9751  AAATACATTC  AAATATGTAT  CCGCTCATGA  GACAATAACC  CTGATAAATG
      TTTATGTAAG  TTTATACATA  GCGGAGTACT  CTGTTATTGG  GACTATTTAC
=====
                                     ampR
9801  CTTCAATAAT  ATTGAAAAAG  GAAGAGTATG  AGTATTCAAC  ATTTCCGTGT
      GAAGTTATTA  TAACTTTTTC  CTTCTCATA  TCATAAGTTG  TAAAGGCACA
=====
                                     ampR
9851  CGCCCTTATT  CCCTTTTTTG  CGGCATTTTG  CCTTCCTGTT  TTTGCTCACC
      GCGGGAATA  GGGAAAAAAC  GCCGTAAAC  GGAAGGACAA  AAACGAGTGG
=====

```

pNLexAattR

ampR

9901 CAGAAACGCT GGTGAAAGTA AAAGATGCTG AAGATCAGTT GGGTGCACGA  
GTCTTTGCGA CCACTTTCAT TTTCTACGAC TTCTAGTCAA CCCACGTGCT

ampR

9951 GTGGGTTACA TCGAACTGGA TCTCAACAGC GGTAAGATCC TTGAGAGTTT  
CACCCAATGT AGCTTGACCT AGAGTTGTCG CCATTCTAGG AACTCTCAA

ampR

10001 TCGCCCCGAA GAACGTTTTTC CAATGATGAG CACTTTTAAA GTTCTGCTAT  
AGCGGGGCTT CTTGCAAAAG GTTACTACTC GTGAAAATTT CAAGACGATA

ampR

10051 GTGGCGCGGT ATTATCCCGT GTTGACGCCG GGCAAGAGCA ACTCGGTCGC  
CACCGCGCCA TAATAGGGCA CAACTGCGGC CCGTTCTCGT TGAGCCAGCG

ampR

10101 CGCATACTACT ATTCTCAGAA TGACTIONGTT GAGTACTCAC CAGTCACAGA  
GCGTATGTGA TAAGAGTCTT ACTGAACCAA CTCATGAGTG GTCAGTGTCT

ampR

10151 AAAGCATCTT ACGGATGGCA TGACAGTAAG AGAATTATGC AGTGCTGCCA  
TTTCGTAGAA TGCCTACCGT ACTGTCATTC TCTTAATACG TCACGACGGT

ampR

10201 TAACCATGAG TGATAACTACT GCGGCCAACT TACTTCTGAC AACGATCGGA  
ATTGGTACTC ACTATTGTGA CGCCGGTTGA ATGAAGACTG TTGCTAGCCT

ampR

10251 GGACCGAAGG AGCTAACCGC TTTTTTGCAC AACATGGGGG ATCATGTAAC  
CCTGGCTTCC TCGATTGGCG AAAAAACGTG TTGTACCCCC TAGTACATTG

ampR

10301 TCGCCTTGAT CGTTGGGAAC CGGAGCTGAA TGAAGCCATA CCAAACGACG  
AGCGGAACTA GCAACCCTTG GCCTCGACTT ACTTCGGTAT GGTTTGCTGC

ampR

10351 AGCGTGACAC CACGATGCCT GCAGCAATGG CAACAACGTT GCGCAAATA  
TCGCACTGTG GTGCTACGGA CGTCGTTACC GTTGTGCAA CGCGTTTGAT

ampR

10401 TTAAGTGGCG AACTACTTAC TCTAGCTTCC CGGCAACAAT TAATAGACTG  
AATTGACCGC TTGATGAATG AGATCGAAGG GCCGTTGTTA ATTATCTGAC

ampR

10451 GATGGAGGCG GATAAAGTTG CAGGACCACT TCTGCGCTCG GCCCTTCCGG  
CTACCTCCGC CTATTTCAAC GTCCTGGTGA AGACGCGAGC CGGGAAGGCC

ampR

10501 CTGGCTGGTT TATTGCTGAT AAATCTGGAG CCGGTGAGCG TGGGTCTCGC  
GACCGACCAA ATAACGACTA TTTAGACCTC GGCCACTCGC ACCCAGAGCG

pNLexAattR

ampR

10551 GGTATCATTG CAGCACTGGG GCCAGATGGT AAGCCCTCCC GTATCGTAGT  
 CCATAGTAAC GTCGTGACCC CGGTCTACCA TTCGGGAGGG CATAGCATCA

ampR

10601 TATCTACACG ACGGGGAGTC AGGCAACTAT GGATGAACGA AATAGACAGA  
 ATAGATGTGC TGCCCCTCAG TCCGTTGATA CCTACTTGCT TTATCTGTCT

ampR

pBr ori

10651 TCGCTGAGAT AGGTGCCTCA CTGATTAAGC ATTGGTAACT GTCAGACCAA  
 AGCGACTCTA TCCACGGAGT GACTAATTCG TAACCATTGA CAGTCTGGTT

pBr ori

10701 GTTTACTCAT ATATACTTTA GATTGATTTA AAAC TTCATT TTTAATTTAA  
 CAAATGAGTA TATATGAAAT CTAACTAAAT TTTGAAGTAA AAATTAATTT

pBr ori

10751 AAGGATCTAG GTGAAGATCC TTTTTGATAA TCTCATGACC AAAATCCCTT  
 TTCCTAGATC CACTTCTAGG AAAA ACTATT AGAGTACTGG TTTTAGGGAA

pBr ori

10801 AACGTGAGTT TTCGTTCCAC TGAGCGTCAG ACCCCGTAGA AAAGATCAAA  
 TTGCACTCAA AAGCAAGGTG ACTCGCAGTC TGGGGCATCT TTTCTAGTTT

pBr ori

10851 GGATCTTCTT GAGATCCTTT TTTTCTGCGC GTAATCTGCT GCTTGCAAAC  
 CCTAGAAGAA CTCTAGGAAA AAAAGACGCG CATTAGACGA CGAACGTTTG

pBr ori

10901 AAAAAACCA CCGCTACCAG CGGTGGTTTG TTTGCCGGAT CAAGAGCTAC  
 TTTTTTTGGT GGCGATGGTC GCCACCAAAC AAACGGCCTA GTTCTCGATG

pBr ori

10951 CAACTCTTTT TCCGAAGGTA ACTGGCTTCA GCAGAGCGCA GATACCAAAT  
 GTTGAGAAAA AGGCTTCCAT TGACCGAAGT CGTCTCGCGT CTATGGTTTA

pBr ori

11001 ACTGTCCTTC TAGTGTAGCC GTAGTTAGGC CACCACTTCA AGAACTCTGT  
 TGACAGGAAG ATCACATCGG CATCAATCCG GTGGTGAAGT TCTTGAGACA

pBr ori

11051 AGCACC GCCT ACATACCTCG CTCTGCTAAT CCTGTTACCA GTGGCTGCTG  
 TCGTGGCGGA TGTATGGAGC GAGACGATTA GGACAATGGT CACCGACGAC

pBr ori

11101 CCAGTGGCGA TAAGTCGTGT CTTACCGGGT TGGACTCAAG ACGATAGTTA  
 GGTCAACCGCT ATTCAGCACA GAATGGCCCA ACCTGAGTTC TGCTATCAAT

pBr ori

11151 CCGGATAAGG CGCAGCGGTC GGGCTGAACG GGGGGTTCGT GCACACAGCC  
 GGCCTATTCC GCGTCGCCAG CCCGACTTGC CCCCCAAGCA CGTGTGTCCG



pNLexAattR

pBr ori

11201 CAGCTTGGAG CGAACGACCT ACACCGAACT GAGATACCTA CAGCGTGAGC  
GTCGAACCTC GCTTGCTGGA TGTGGCTTGA CTCTATGGAT GTCGCACTCG

pBr ori

11251 TATGAGAAAG CGCCACGCTT CCCGAAGGGA GAAAGGCGGA CAGGTATCCG  
ATACTCTTTC GCGGTGCGAA GGGCTTCCCT CTTTCCGCCT GTCCATAGGC

pBr ori

11301 GTAAGCGGCA GGGTCGGAAC AGGAGAGCGC ACGAGGGAGC TTCCAGGGGG  
CATTCGCCGT CCCAGCCTTG TCCTCTCGCG TGCTCCCTCG AAGGTCCCC

pBr ori

11351 AAACGCCTGG TATCTTTATA GTCCTGTCGG GTTTCGCCAC CTCTGACTTG  
TTTGCGGACC ATAGAAATAT CAGGACAGCC CAAAGCGGTG GAGACTGAAC

pBr ori

11401 AGCGTCGATT TTTGTGATGC TCGTCAGGGG GCGGAGCCT ATGGAAAAAC  
TCGCAGCTAA AAACACTACG AGCAGTCCCC CCGCCTCGGA TACCTTTTTG

pBr ori

11451 GCCAGCAACG CGGCCTTTTT ACGGTTCCCTG GCCTTTTGCT GGCCTTTTGC  
CGGTCGTTGC GCCGAAAAA TGCCAAGGAC CGGAAAACGA CCGGAAAACG

pBr ori

11501 TCACATGTTT TTTCTGCGT TATCCCCTGA TTCTGTGGAT AACCGTATTA  
AGTGTACAAG AAAGGACGCA ATAGGGGACT AAGACACCTA TTGGCATAAT

pBr ori

11551 CCGCCTTTGA GTGAGCTGAT ACCGCTCGCC GCAGCCGAAC GACCGAGCGC  
GGCGGAAACT CACTCGACTA TGCGGAGCGG CGTCGGCTTG CTGGCTCGCG

pBr ori

11601 AGCGAGTCAG TGAGCGAGGA AGCGGAAGAG CGCCTGATGC GGTATTTTCT  
TCGCTCAGTC ACTCGCTCCT TCGCCTTCTC GCGGACTACG CCATAAAGA

pBr ori

11651 CCTTACGCAT CTGTGCGGTA TTTACACCG CATATGGTGC ACTCTCAGTA  
GGAATGCGTA GACACGCCAT AAAGTGTGGC GTATAACCAG TGAGAGTCAT

pBr ori

11701 CAATCTGCTC TGATGCCGCA TAGTTAAGCC AGTATACTACT CCGCTATCGC  
GTTAGACGAG ACTACGGCGT ATCAATTCGG TCATATGTGA GCGGATAGCG

pBr ori

11751 TACGTGACTG GGTCATGGCT GCGCCCCGAC ACCCGCCAAC ACCCGCTGAC  
ATGCACTGAC CCAGTACCGA CGCGGGGCTG TGGGCGGTTG TGGGCGACTG

pBr ori

11801 GCGCCCTGAC GGGCTTGTCT GCTCCCGGCA TCCGCTTACA GACAAGCTGT  
CGCGGGACTG CCCGAACAGA CGAGGGCCGT AGGCGAATGT CTGTTTCGACA

pBr ori

11851 GACCGTCTCC GGG  
CTGGCAGAGG CCC

---