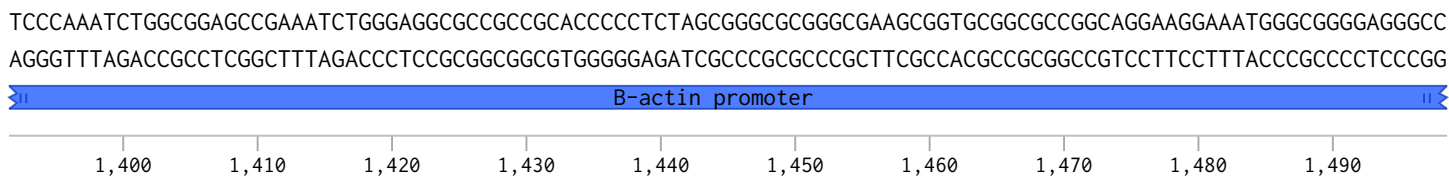
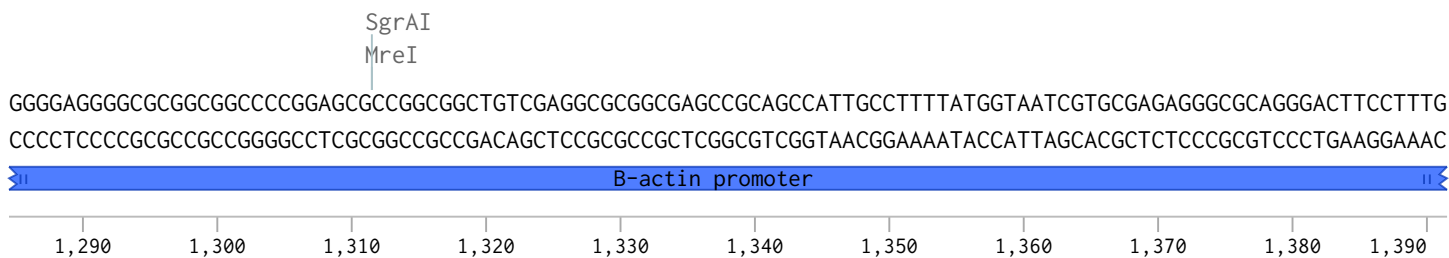
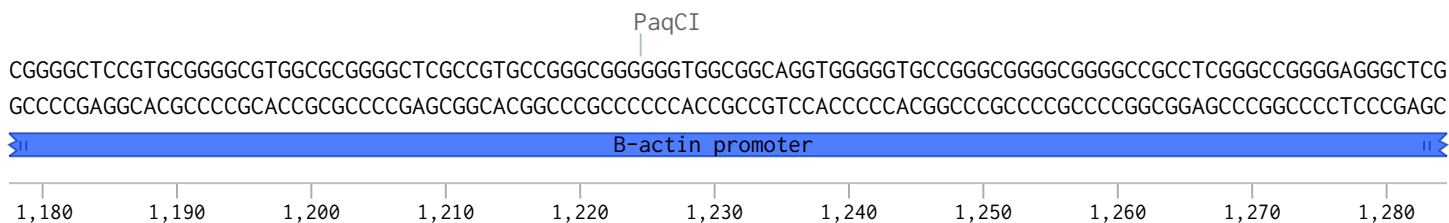
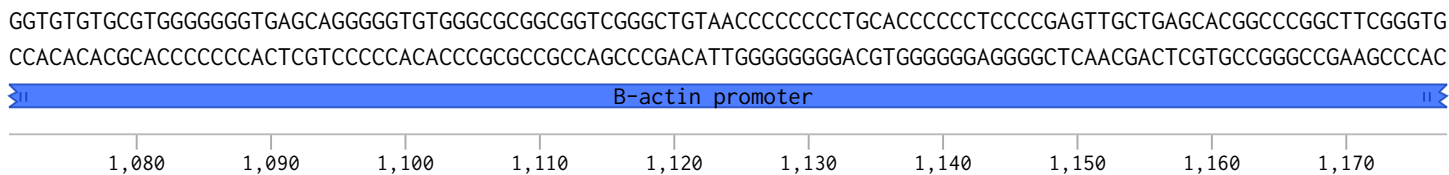
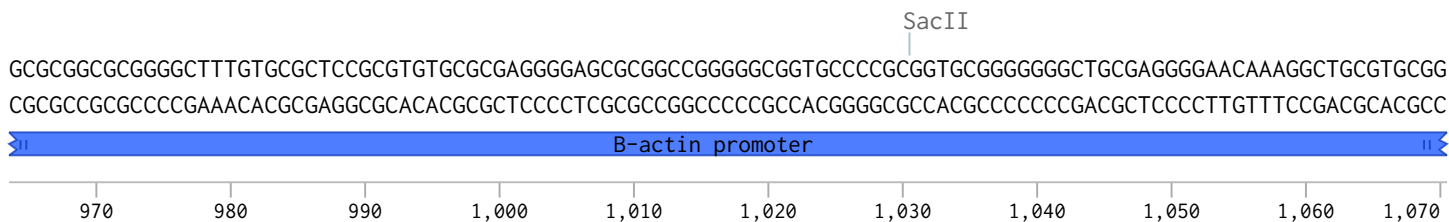
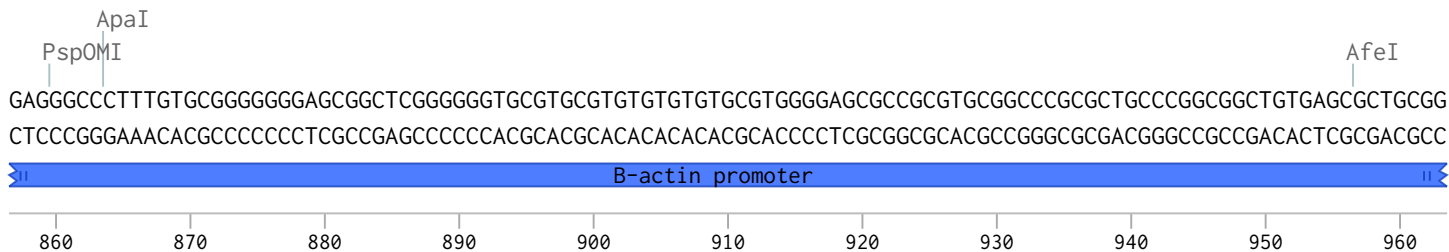
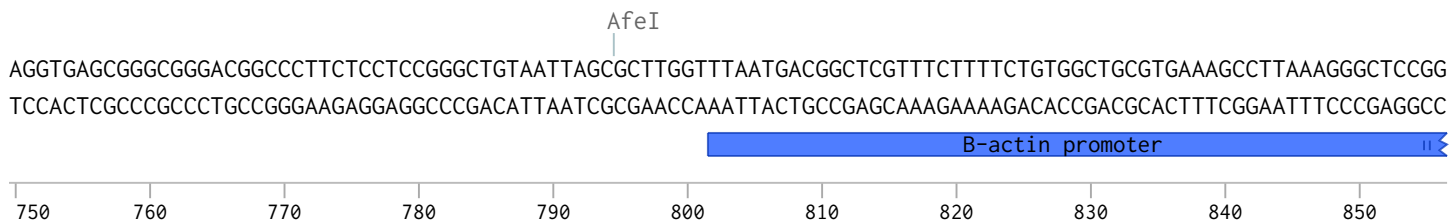


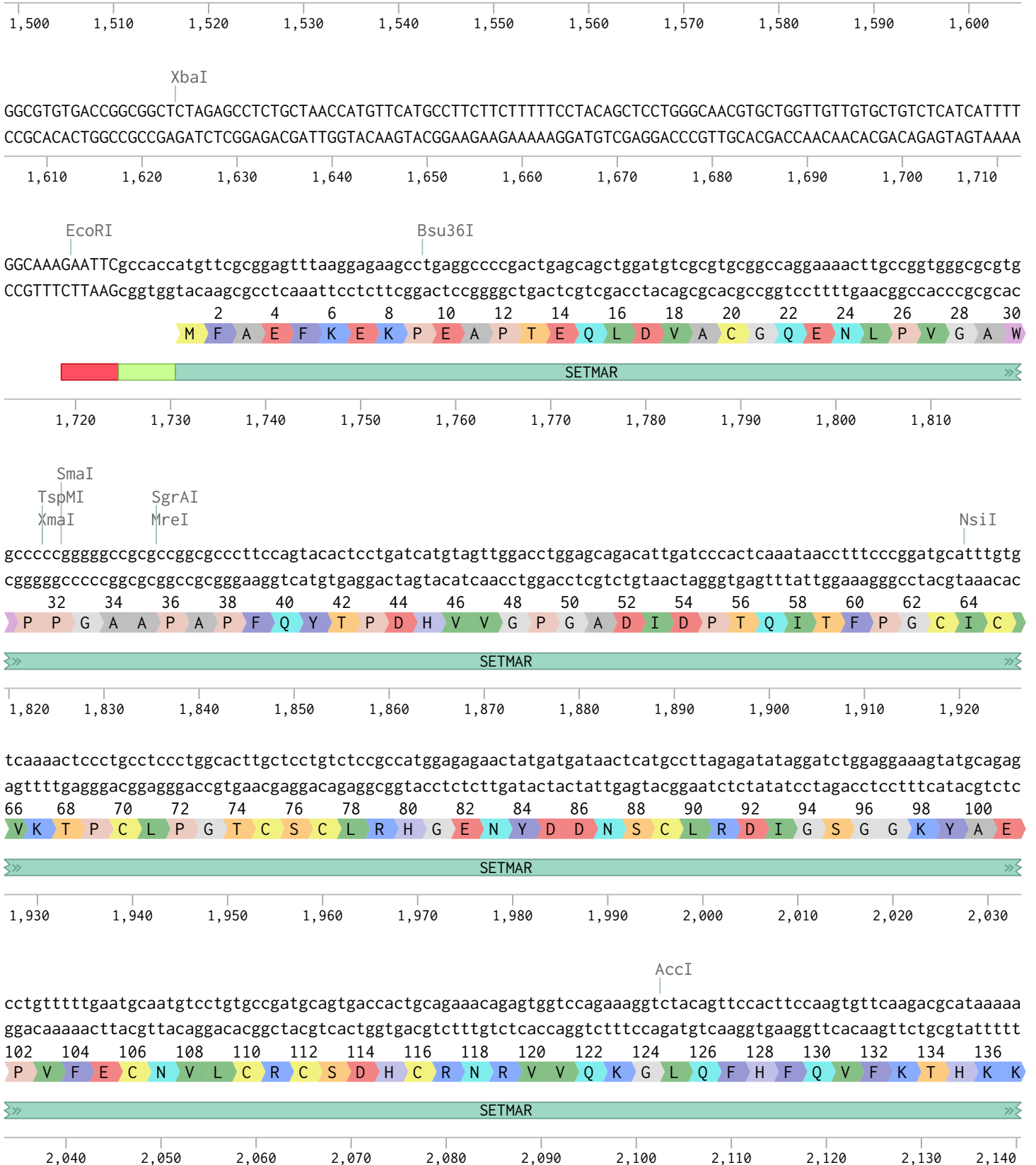
5. pCAGGS-SETMAR-Cas9-Flag-NLS-P2A-Puro (10446 bp)

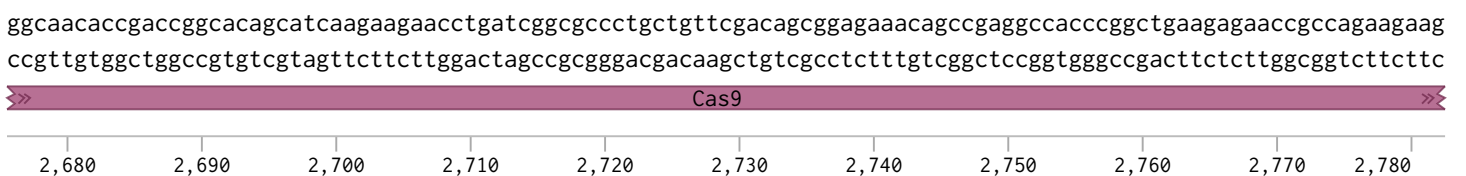
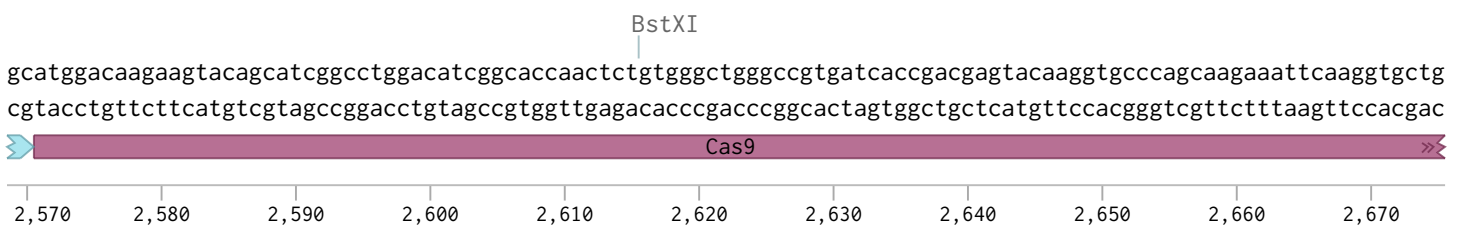
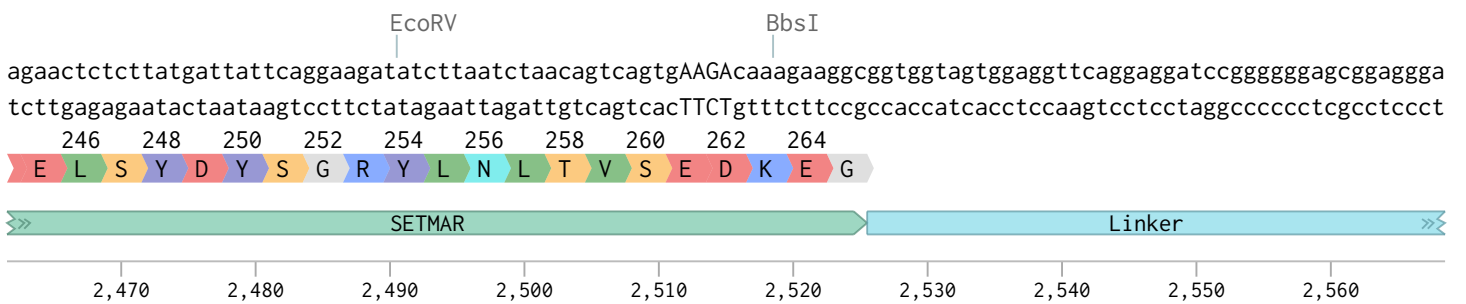
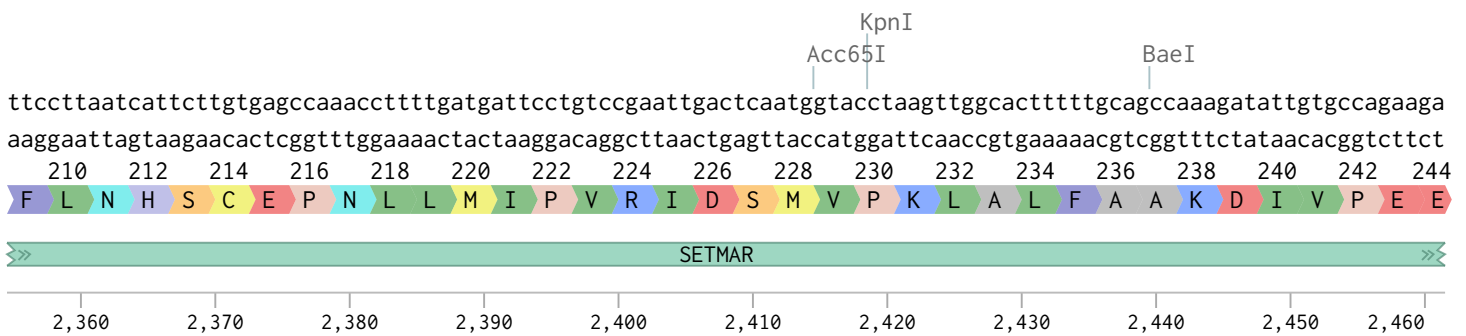
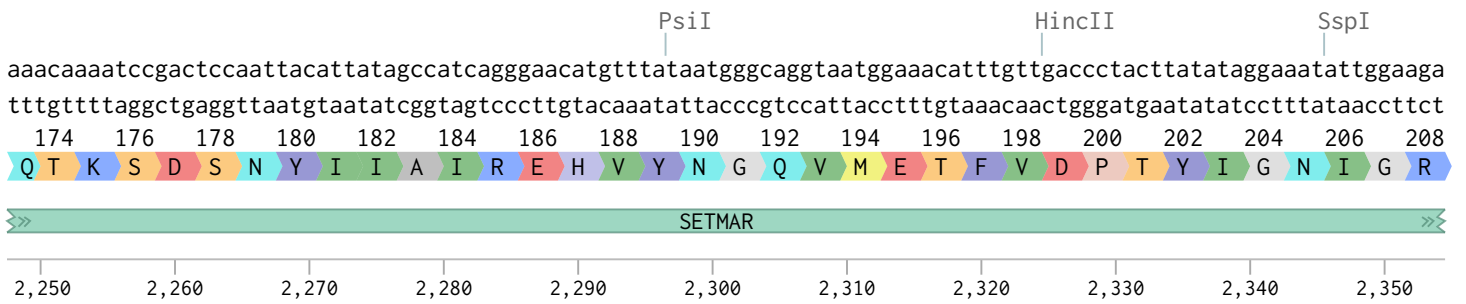
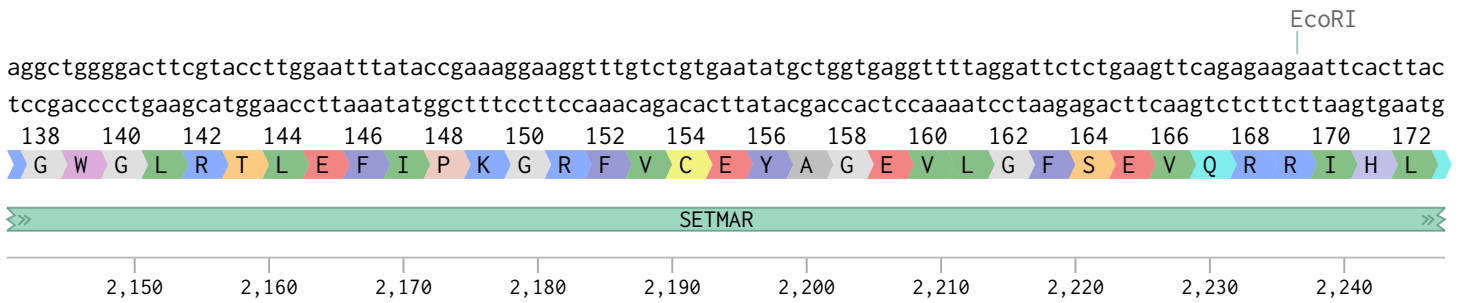


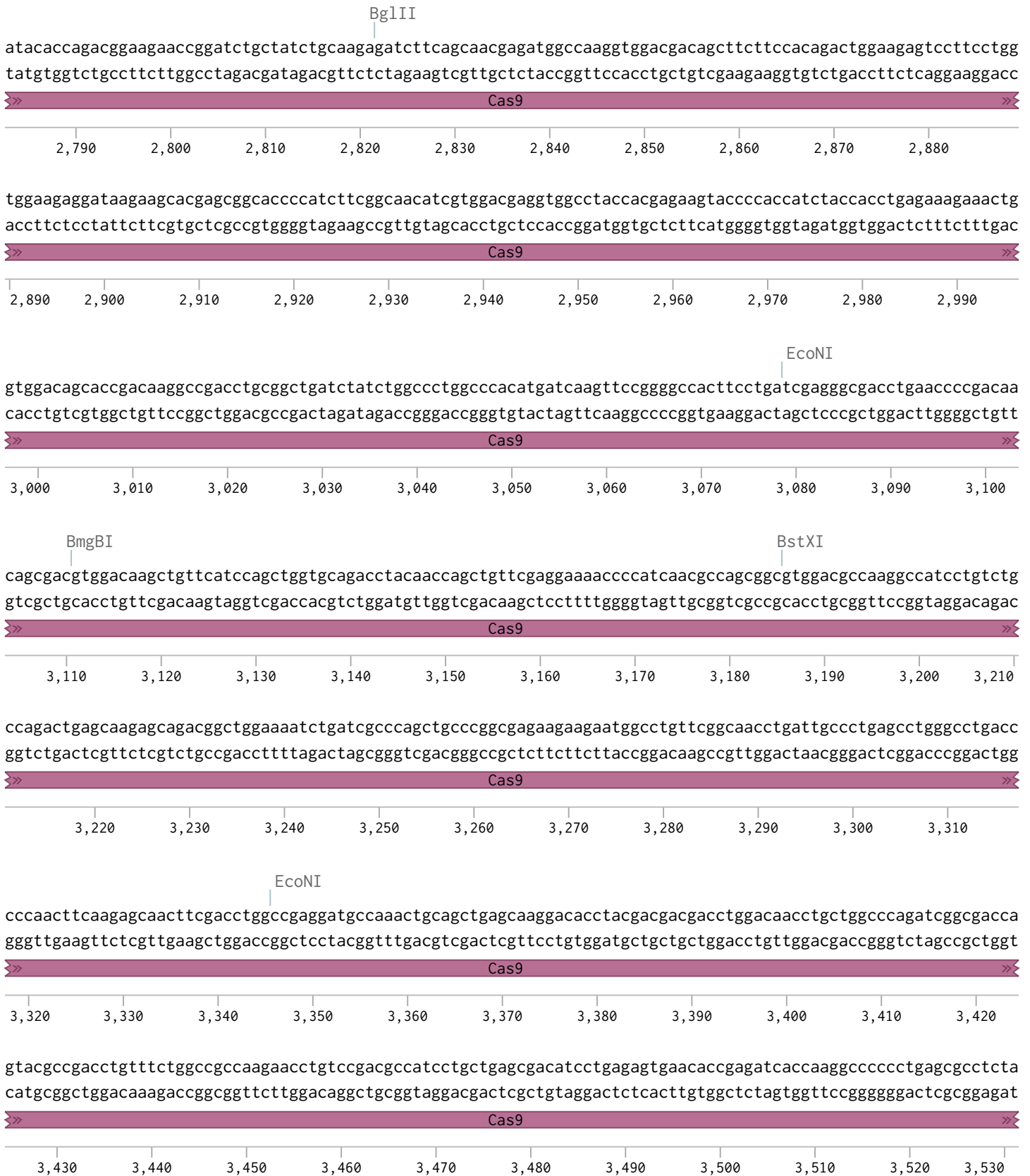


TTCGTGCGTCGCCGCGCCGCCCTTCTCCATCTCCAGCCTCGGGGCTGCCGAGGGGGACGGCTGCCTTCGGGGGGACGGGCAGGGCGGGTTTCGGTTCT
 AAGCACGCAGCGCGCGCGGCAGGGGAAGAGGTAGAGGTCGGAGCCCGACGGCTCCCCTGCCGACGGAAGCCCCCTGCCCGTCCCGCCCAAGCCGAAGA

B-actin promoter







tgatcaagagatacagcagcaccaccaggacctgaccctgctgaaagctctcgtgcggcagcagctgcctgagaagtacaaagagatttcttcgaccagagcaag
actagttctctatgctgctcgtggtggtcctggactgggacgactttcagagcacgccctcgtcgcaggactcttcatgtttctctaaaagaagctggtctcgttc

» Cas9 »

3,540 3,550 3,560 3,570 3,580 3,590 3,600 3,610 3,620 3,630

BspDI
ClaI

aacggctacccggctacatcgatggcggagccagccaggaagagtctacaagttcatcaagccatcctgaaaagatggacggcaccgaggaactgctcgtgaa
ttgccgatgcccgatgtagctaccgctcggctcgtccttctcaagatgtcaagtagttcggtaggaccttttctacctgcccgtggctccttgacgagcactt

» Cas9 »

3,640 3,650 3,660 3,670 3,680 3,690 3,700 3,710 3,720 3,730 3,740

gctgaacagagaggacctgctcgggaagcagcggaccttcgacaacggcagcatccccaccagatccacctgggagagctgcacgccattctcggcggcaggaag
cgactgtctctcctggacgacgccttcgctcctggaagctgttgcctcgtaggggtggtctaggtggaccctctcgactgcccgttaagacgccccgtccttc

» Cas9 »

3,750 3,760 3,770 3,780 3,790 3,800 3,810 3,820 3,830 3,840 3,850

attttaccattcctgaaggacaaccgggaaaagatcgagaagatcctgacctccgcacccctactacgtgggccctctggccaggggaaacagcagattcgcc
taaaaatgggtaaggacttctgttggcccttttctagctcttctaggactggaaggcgtaggggatgatgcacccgggagaccggtccctttgtcgtctaagcgg

» Cas9 »

ApaI
PspOMI

3,860 3,870 3,880 3,890 3,900 3,910 3,920 3,930 3,940 3,950

tggatgaccagaaagagcaggaacacatcacccctggaacttcgaggaagtggtaggacaagggcgcagcagccagagcttcatcgagcggatgaccaacttca
acactactggtctttctcgtcctttggtagtgggggaccttgaagctccttaccacctgttcccgcggtcgcgggtctcgaagtagctcgcctactggttgaagct

» Cas9 »

3,960 3,970 3,980 3,990 4,000 4,010 4,020 4,030 4,040 4,050 4,060

taagaacctgccaacgagaaggtgctgccaagcacagcctgctgtacgagtacttcaccgtgtacaacgagctgaccaaagtgaatacgtgaccgagggaaatga
attcttggacgggttgcctttccacgacgggttcgtgtcggacgacatgctcatgaagtggcacatgttgcctcgcactggtttactttatgcaactggtccttact

» Cas9 »

BsrGI BarI

4,070 4,080 4,090 4,100 4,110 4,120 4,130 4,140 4,150 4,160 4,170

gaaagcccgcttctgagcggcagcagaaaaaagccatcgtggacctgctgttcaagaccaaccggaaagtaccgtgaagcagctgaaagaggactacttcaag
ctttcggcgggaaggactcggcctcgtctttttcggtagcacctggacgacaagtctggttggcctttcactggcacttctcgcacttctcctgatgaagttc

» Cas9 »

4,180 4,190 4,200 4,210 4,220 4,230 4,240 4,250 4,260 4,270 4,280

PasI

aaaatcgagtgttcgactccgtggaatctccggcgtggaagatcggttcaacgcctccctgggcacataccacgatctgctgaaaattatcaaggacaaggactt
 ttttagctcacgaagctgaggcacctttagaggccgcaccttctagccaagttgcgaggggacccgtgtatggtgctagacgacttttaatagttcctgttctgaa

» Cas9 »

4,290 4,300 4,310 4,320 4,330 4,340 4,350 4,360 4,370 4,380

EcoRV

cctggacaatgaggaaaacgaggacattctggaagatctgtgctgacctgacactgtttgaggacagagatgatcgaggaacggctgaaaacctatgccacc
 ggacctgttactccttttgctcctgtaagaccttctatagcagcactgggactgtgacaaactcctgtctcttactagctccttgccgacttttgatagcgggtgg

» Cas9 »

4,390 4,400 4,410 4,420 4,430 4,440 4,450 4,460 4,470 4,480 4,490

AhdI

gttctgcagcaaaagtgatgaagcagctgaagcggcgagatacaccggctggggcaggctgagccggaagctgatcaacggcatccgggacaagcagctccggcaag
 acaagctgctgtttcactactctgctgacttcgccgctctatgtggccgaccccgctccgactcggccttcgactagttgccgtaggcctgttcgtcaggccgttc

» Cas9 »

4,500 4,510 4,520 4,530 4,540 4,550 4,560 4,570 4,580 4,590 4,600

acaatcctggatttctgaagtcgacggcttcgccaacagaaacttcatgcagctgatccacgacgacagcctgaccttaagaggacatccagaagcccaggt
 ttttagacctaaggacttcaggctgccgaagcggttgtctttgaagtacgtcgactaggtgctgctgctgactggaatttctcctgtaggtctttcgggtcca

» Cas9 »

4,610 4,620 4,630 4,640 4,650 4,660 4,670 4,680 4,690 4,700

SacI
Eco53kI

gtccggccagggcgatagcctgcagagcacattgccaatctggccggcagccccgccattaagaagggcatcctgcagacagtgagggtggacgagctcgtga
 caggccggtcccgctatcggacgtgctcgtgtaacggttagaccggcgtcggggcggttaattcttcccgtaggacgtctgtcacttcaccacctgctcagcact

» Cas9 »

4,710 4,720 4,730 4,740 4,750 4,760 4,770 4,780 4,790 4,800 4,810

aagtgatgggcccgcacaagcccgagaacatcgtgatcgaatggccagagagaaccagaccaccagaaggacagaagaacagccgagagagaatgaagcggatc
 ttactaccggccgtgttcgggctctttagcactagctttaccggtctctcttggtctggtgggtcttcctgtcttcttgcgagcgtcttacttcgcttag

» Cas9 »

4,820 4,830 4,840 4,850 4,860 4,870 4,880 4,890 4,900 4,910 4,920

DraIII

gaagaggcatcaaagagctgggcagccagatcctgaaagaacaccccgtggaacacccagctgcagaacgagaagctgtacctgtactacctgcagaatgggcg
 ctctcccgtagtttctcgaccgtcggcttaggacttcttggggcacctttgtgggtcgacgtcttgcctcttcgacatggacatgatggacgtcttaccgct

» Cas9 »

4,930 4,940 4,950 4,960 4,970 4,980 4,990 5,000 5,010 5,020

gcgagatcgtgtgggataagggccgggactttgccaccgtgcggaagtgtgtctatgccccagtgaatatcgtgaaaagaccgaggtgcagacaggcggcttc
cgctctagcacaccctattcccggcctgaaacgggtggcacgcctttcacgacagatacgggttcacttatagcactttttctggctccacgtctgtccgccgaag

» Cas9 »

5,780 5,790 5,800 5,810 5,820 5,830 5,840 5,850 5,860 5,870 5,880

agcaaagagtctatcctgcccagaggaacgcgacaagctgatcgcagaaagaaggactgggacctaagaagtacggcggcttcgacagccccaccgtggccta
tcgtttctcagatagacgggttctcctgtcgtcttcgactagcgggtctttcttctgaccctgggattcttcatgcccgcaagctgtcgggtggcaccggat

» Cas9 »

5,890 5,900 5,910 5,920 5,930 5,940 5,950 5,960 5,970 5,980 5,990

ttctgtgctggtggtggccaaagtggaaaagggcaagtccaagaaactgaagagtgtgaaagagctgctggggatcacatcatggaagaagcagcttcgagaaga
aagacacgaccaccacgggttccactttcccgttcaggttctttgacttctcacacttctcgcgacccctagtggttagtacctttctcgtcgaagcttcttct

» Cas9 »

6,000 6,010 6,020 6,030 6,040 6,050 6,060 6,070 6,080 6,090

atcccatcgactttctggaagccaagggtacaagaagtgaaaaggacctgatcatcaagctgcctaagtactcctgttcgagctggaacggcgggaagaga
taggtagctgaaagaccttcggttcccgatgtttcttctcactttttctgactagtagttcgacggattcatgagggacaagctgcacctttgccgccttctct

» Cas9 »

6,100 6,110 6,120 6,130 6,140 6,150 6,160 6,170 6,180 6,190 6,200

atgctggcctctgccggcgaactgcagaagggaaacgaactggccctgccctccaatatgtgaacttctgtacctggccagccactatgagaagctgaagggtc
tacgaccggagacggcgccttgacgtcttcccttcttgaccgggacgggaggtttatacactgaaggacatggaccggtcgggtgatactcttcgacttcccag

» Cas9 »

6,210 6,220 6,230 6,240 6,250 6,260 6,270 6,280 6,290 6,300 6,310

ccccgaggataatgagcagaacagctgtttgtggaacagcacaacactacctggacgagatcatcgagcagatcagcgagttctccaagagagtatcctggccg
ggggctcctattactcgtctttgtcgcacaacacctgtcgtgtttgtgatggacctgctctagtagctcgtctagtcgctcaagaggttctctcactaggaccggc

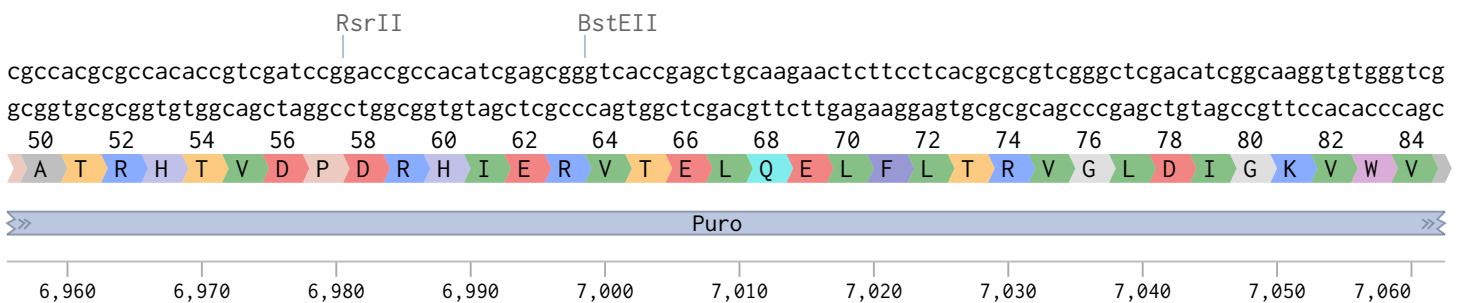
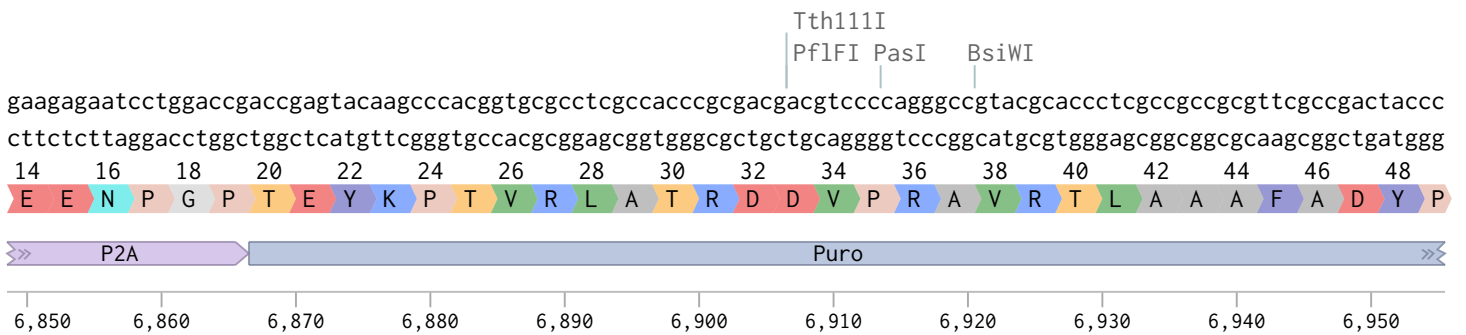
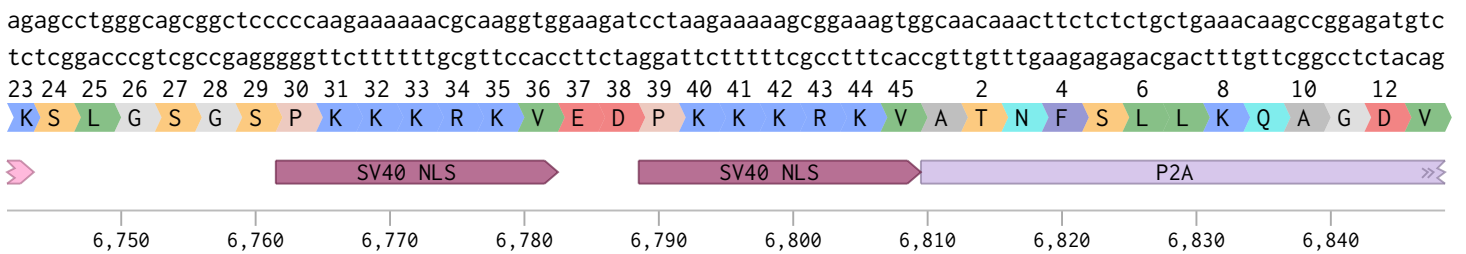
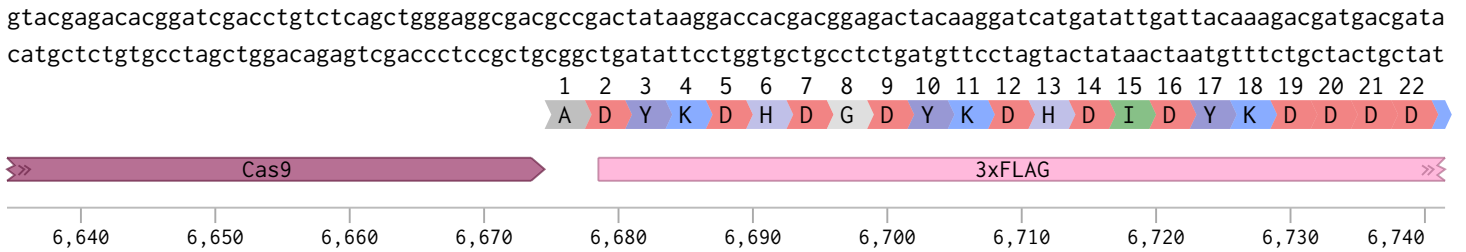
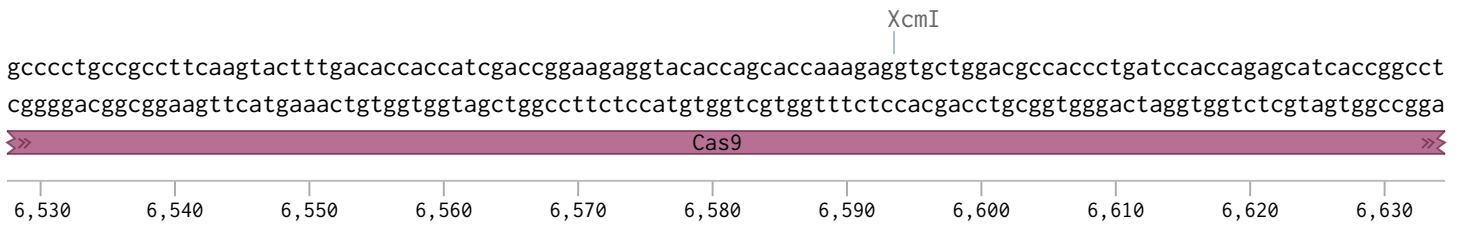
» Cas9 »

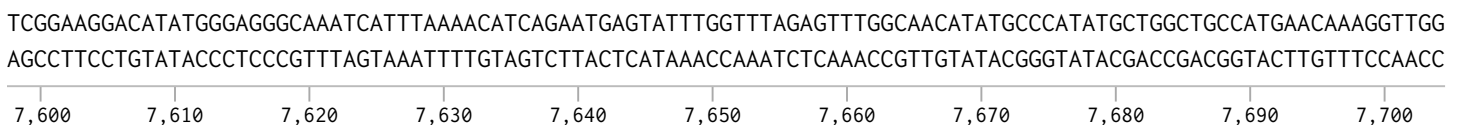
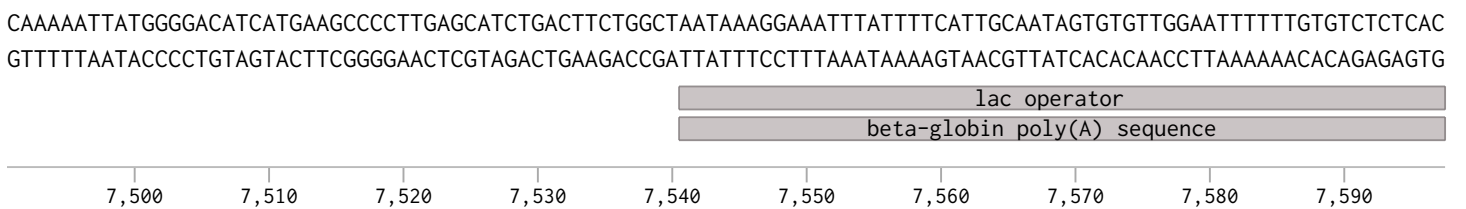
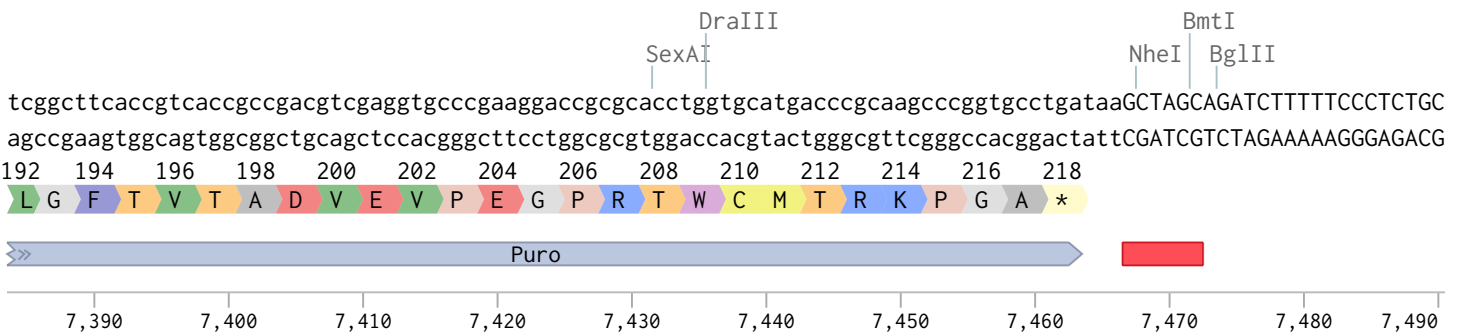
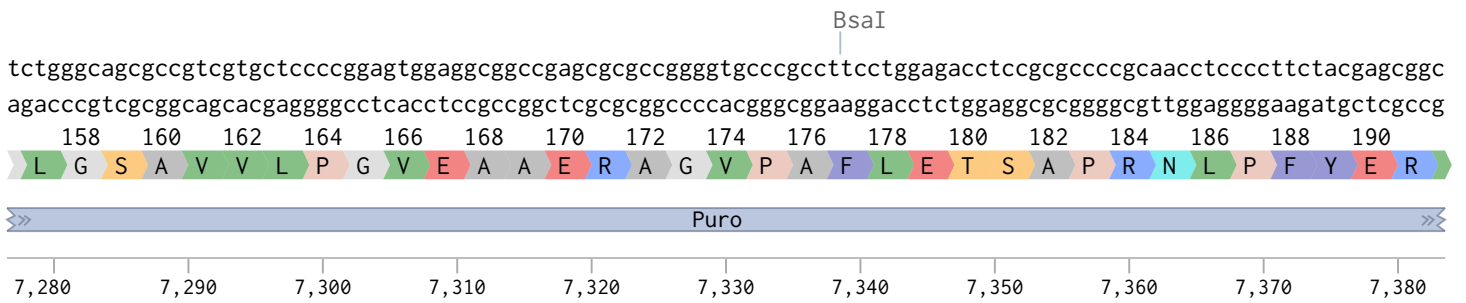
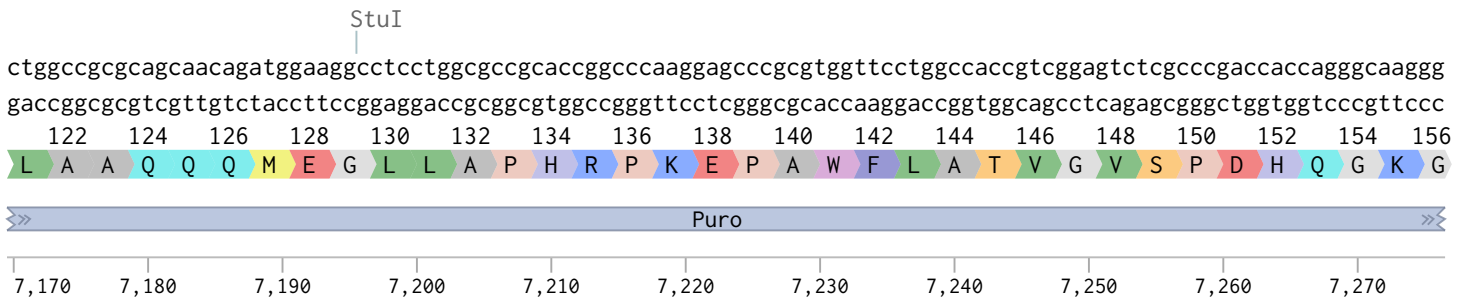
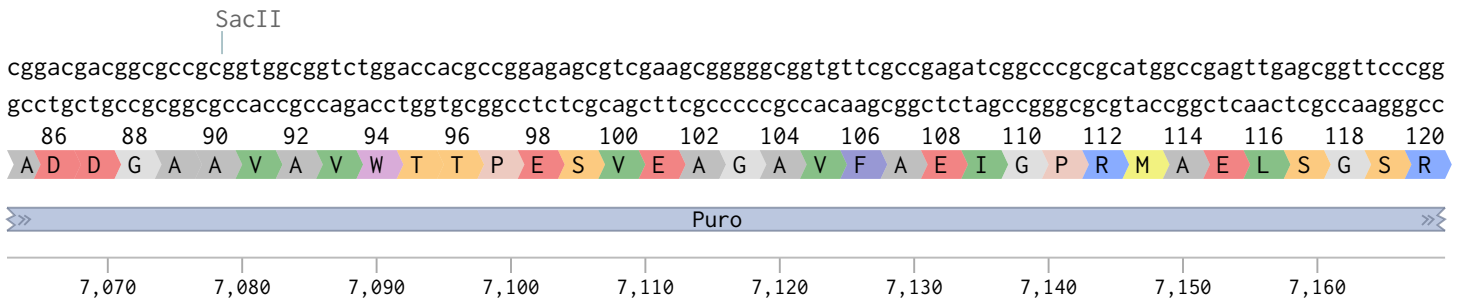
6,320 6,330 6,340 6,350 6,360 6,370 6,380 6,390 6,400 6,410 6,420

acgctaacttgacaaggtgctgagcgcctacaacaagcacagagacaagcctatcagagagcaggccgagaatatcatccacctgtttacctgaccaatctggga
tgcgattagacctgttccacgactcgcggatgtttcgtgtctcgttcggatagtctcctcgtccggctcttatagtaggtggacaaatgggactggttagaccct

» Cas9 »

6,430 6,440 6,450 6,460 6,470 6,480 6,490 6,500 6,510 6,520





CTATAAAGAGGTCATCAGTATATGAAACAGCCCCCTGCTGTCCATTCTTATTCCATAGAAAAGCCTTGACTTGAGGTTAGATTTTTTTTTATATTTTGTGGTT
GATATTTCTCCAGTAGTCATATACTTTGTGCGGGGACGACAGGTAAGGAATAAGGTATCTTTTCGGAAGTGAAGTCCAACTCTAAAAAATATAAAACAAAACACAA

7,710 7,720 7,730 7,740 7,750 7,760 7,770 7,780 7,790 7,800 7,810

ATTTTTTCTTTAACATCCCTAAAATTTTCTTACATGTTTTACTAGCCAGATTTTTCTCTCTCTGACTACTCCCAGTCATAGCTGTCCTCTTCTTATGAA
TAAAAAAGAAATTGTAGGATTTTAAAAGGAATGTACAAAATGATCGGTCTAAAAAGGAGGAGGACTGATGAGGTCAGTATCGACAGGGAGAAGAGAATACTT

7,820 7,830 7,840 7,850 7,860 7,870 7,880 7,890 7,900 7,910

HindIII

GATCCCTCGACCTGCAGCCCAAGCTTGGCGTAATCATGGTCATAGCTGTTTCTGTGTGAAATTGTTATCCGCTCACAATCCACACAACATACGAGCCGGAAGCAT
CTAGGAGCTGGACGTCGGGTCGAACCCATTAGTACCAGTATCGACAAAGGACACACTTTAACAATAGGCGAGTGTAAAGGTGTTGTATGCTCGCCTTCGTA

M13 rev

lac promoter

7,920 7,930 7,940 7,950 7,960 7,970 7,980 7,990 8,000 8,010 8,020

BsaBI

AAAGTGTAAGCCTGGGGTGCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCCGCTTCCAGTCGGGAAACCTGTCGTGCCAGCGGATCCGCA
TTTACATTTTCGACCCACGATTACTCACTCGATTGAGTGAATTAACGCAACGCGAGTGACGGGCGAAAGGTGAGCCCTTTGACAGCACGGTCGCCTAGGCGT

la...r

CAP binding site

8,030 8,040 8,050 8,060 8,070 8,080 8,090 8,100 8,110 8,120 8,130

TCTCAATTAGTCAGCAACCATAGTCCCGCCCTAACTCCGCCATCCCGCCCTAACTCCGCCAGTTCGCCATTCTCCGCCCATGGCTGACTAATTTTTTTA
AGAGTTAATCAGTCGTTGGTATCAGGGCGGGATTGAGGCGGGTAGGGCGGGATTGAGGCGGGTCAAGGCGGGTAAGAGGCGGGTACCGACTGATTAATAAAT

SV40 ori

SV40 promoter

8,140 8,150 8,160 8,170 8,180 8,190 8,200 8,210 8,220 8,230

AvrII

BpI

SfiI

BpI

StuI

TTTATGCAGAGGCCGAGCCGCTCGGCCTCTGAGCTATCCAGAAGTAGTGAGGAGGCTTTTTGGAGGCCTAGGCTTTGCAAAAAGCTAACTGTTTATTGCAG
AAATACGTCTCCGGCTCCGGCGGAGCCGAGACTCGATAAGGTCTTATCACTCTCCGAAAAACCTCCGGATCCGAAAACGTTTTTCGATTGAACAAATAACGTC

SV40 ori

SV40 promoter

SV40 ...y(A)

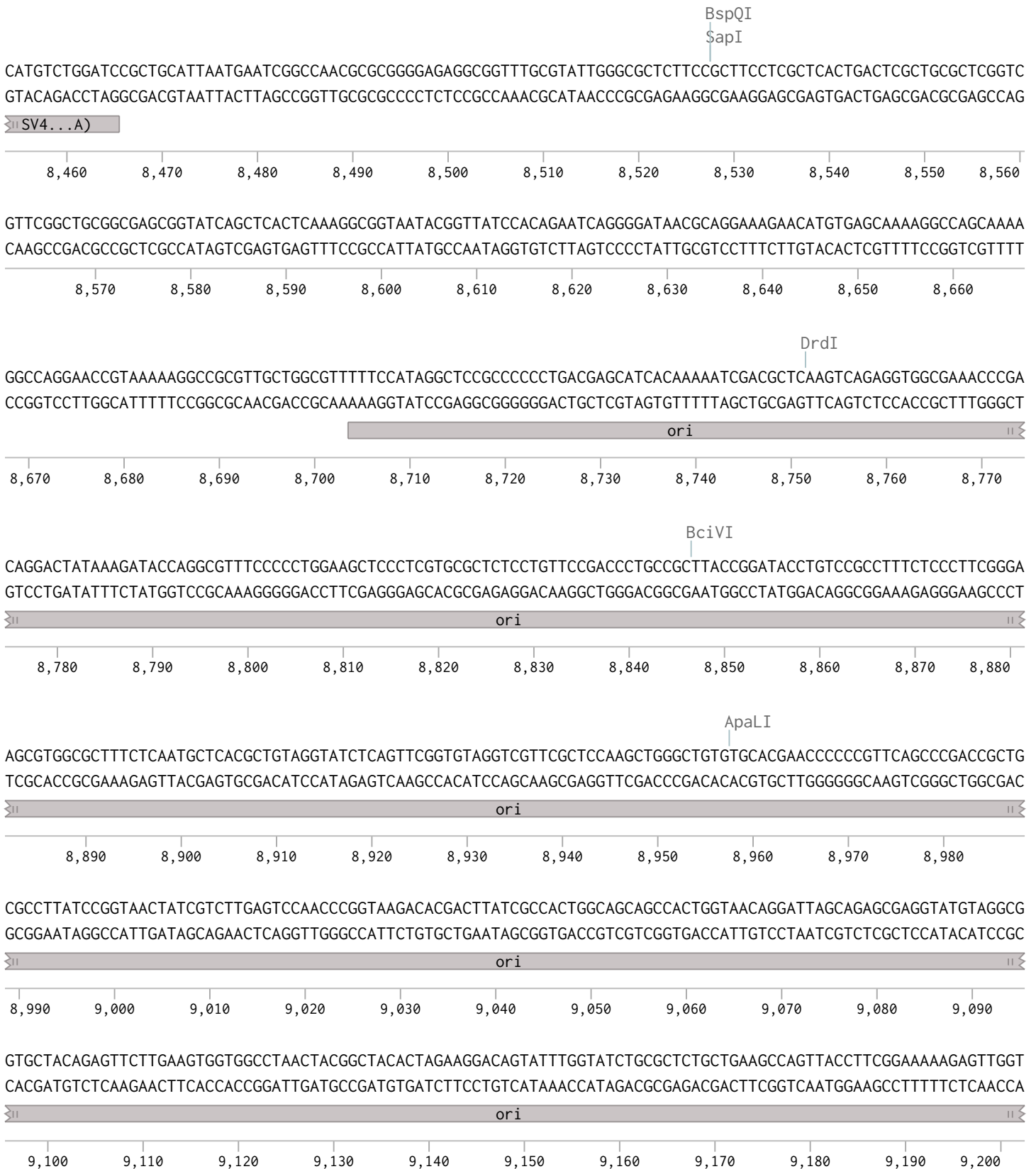
8,240 8,250 8,260 8,270 8,280 8,290 8,300 8,310 8,320 8,330 8,340

PsiI

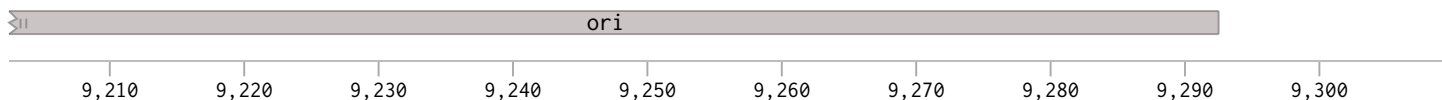
CTTATAATGGTTACAAATAAAGCAATAGCATCACAAATTTACAAATAAAGCATTTTTTCACTGCATTCTAGTTGTGGTTTGTCCAACTCATCAATGTATCTTAT
GAATATTACCAATGTTTATTTCTGTTATCGTAGTGTAAAGTGTATTTTCGTAATAAAGTACGTAAGATCAACACCAAAACAGGTTTGTAGTGTACATAGAATA

SV40 poly(A)

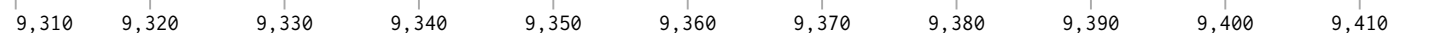
8,350 8,360 8,370 8,380 8,390 8,400 8,410 8,420 8,430 8,440 8,450



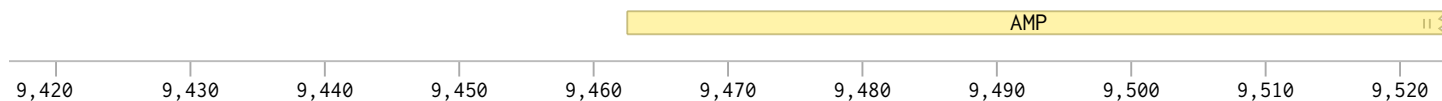
AGCTCTTGATCCGGCAAACAACCACCGCTGGTAGCGGTGGTTTTTTTTGTTTGAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTT
TCGAGAACTAGGCCGTTTGGTGGCGACCATCGCCACCAAAAAACAACGTTTCGTCTAATGCGCGCTTTTTTTCTAGAGTCTTCTAGGAACTAGAA



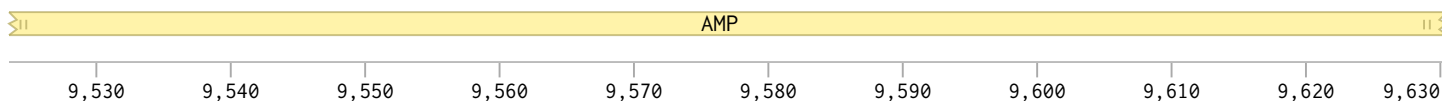
TTCTACGGGGTCTGACGCTCAGTGAACGAAAACCTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTAAATTAAAAATGAA
AAGATGCCCCAGACTGCGAGTCACCTTGCTTTTGGTGAATTCCCTAAAACAGTACTCTAATAGTTTTTCTAGAAGTGGATCTAGGAAAATTTAATTTTTACTT



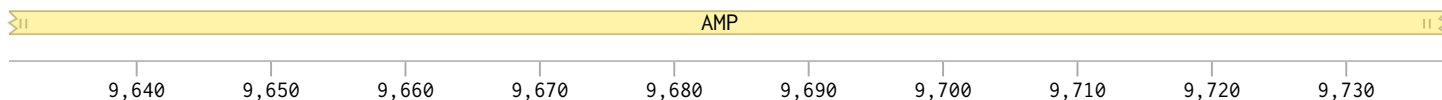
GTTTTAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTTCGTTCCATCCATA
CAAAATTTAGTTAGATTTTCATATATACTATTTGAACCAGACTGTCAATGTTACGAATTAGTCACTCCGTGGATAGAGTCGCTAGACAGATAAAGCAAGTAGGTAT



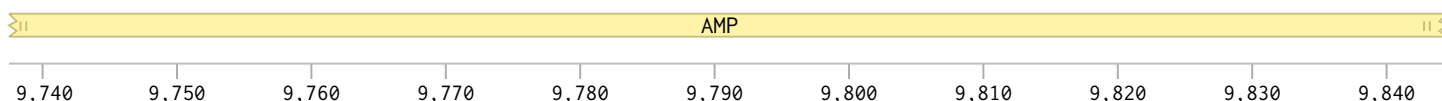
GTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGCCCCAGTGTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATTT
CAACGGACTGAGGGGCAGCACATCTATTGATGCTATGCCCTCCCGAATGGTAGACCGGGTCACGACGTTACTATGGCGCTCTGGGTGCGAGTGGCCGAGGTCTAAA



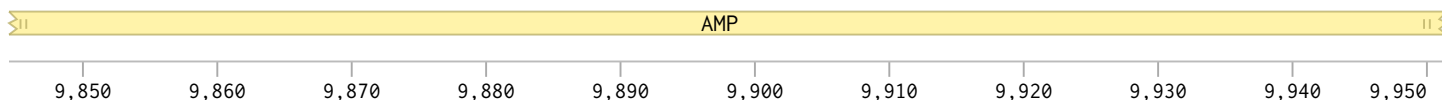
ATCAGCAATAAACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCTGCAACTTTATCCGCCTCCATCCAGTCTATTAATTGTTGCCGGAAGCTAGAGTAAGTA
TAGTCGTTATTTGGTCGGTCCGCTTCCCGCTCGCGTCTTACCAGGACGTTGAAATAGGCGGAGGTAGGTAGATAAATTAACAACGGCCCTTCGATCTCATTAT



GTTCCAGTAAATAGTTTGGCGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTACGCTCGTCTGTTGGTATGGCTTCATTACAGCTCCGTTCCCAACGATCA
CAACGGTCAATTATCAAACGCGTTGCAACAACGGTAACGATGTCCGTAGCACACAGTGCAGCAGCAAACCATACCGAAGTAAGTCGAGCCAAGGTTGCTAGT



AGGCGAGTTACATGATCCCCATGTTGTGCAAAAAAGCGGTTAGCTCCTTCGGTCCCGATCGTTGTCAGAAGTAAGTTGGCCGAGTGTATCACTCATGGTTAT
TCCGCTCAATGTAAGGGGTACAACACGTTTTTTCGCCAATCGAGGAAGCCAGGAGGCTAGCAACAGTCTTCATTCAACCGCGTCACAATAGTGAGTACCAATA



GGCAGCACTGCATAATTCTCTTACTGTACATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGGTACTCAACCAAGTCACTTCTGAGAATAGTGATGCGGCGACCGA
CCGTCGTGACGTATTAAGAGAATGACAGTACGGTAGGCATTCTACGAAAAGACTGACCACTCATGAGTTGGTTAGTAAGACTCTTATCACATACGCCGCTGGCT

