



EcoRI (23)

NotI (2) XbaI (19) SdaI (38) SpeI (45)

1 CGGCCCGCGTCGACGATATCTAGAAATTCGGATCCTGCAGGGCCACTAGTTCCATGTCTTATATGGACTCATCTTTGCTATTGCGACACACTCAAT
101 GAACACCTACTACGCGTGC AAAAGAGCCCCGAGGCTGAGTGCCCCACCTCACCCTTCTCTATTTTTGTGTA AAAATCCAGTCTTCTGTCCACC
201 CTCCAAGGAGGGGAGGAGGAGGAAGGCAGGTTCTCTAGGCTGAGCCGAATGCCCTCTGTGGTCCCACGCCACTGATCGCTGCATGCCACCACCTGG
301 GTACACACAGTCTGTGATTC CCGGAGCAGAACGGACCCTGCCACCCGGTCTTGTGTGCTACTCAGTGGACAGACCCAAGGCAAGAAAGGTTGACAAGGA
401 CAGGGTCTTCCAGGCTGGCTTTGAGTTC TAGCACCCGCCGCCCAATCCTCTGTGGCAGATGGAGTCTTGGTCCCAGAGTCCCCAGCGGCTCC
501 AGATGGTCTGGGAGGCGAGTTCAGCTGTGGCTGCGCATAGCAGACATAACCGACGGTGGGCCAGACCCAGGCTGTGTAGACCCAGCCCCCGCCCC

AvrII (607)

601 CGAGTGCCTAGGTCA CCCCCTAACGCCCCAGGCTGGTCTTGGCTGGGCTGACTGTTACCCTCAA AAGCAGGCAGCTCCAGGGTAAAAGGTGCCCTGCC
701 CTGTAGAGCCACCTTCTTCCAGGCTGCGGCTGGTAGTGTGTAGCCTTATCACGGGCACCTCCAGCCACTGGACCGTGGCCCTGCCCTGTCT
801 CTGGGGAGTGTGGTCTGCGACTTCTAAGTGGCCGAAGCCACCTGACTCCCCAACACCACACTTACCTCTCAAGCCAGGTCTCTCCCTAGTGACCC

NheI (915)

901 ACCCAGCACATTTAGCTAGCTGAGCCCCACAGCCAGAGGTCCTCAGGCCCTGCTTTCAGGGCAGTGTCTGAAGTCGGCAAGGGGAGTGACTGCCTGG
1001 CCACTCCATGCCCTCAAAGACTCTTCTG CAGGAGCGTACAGAACCAGGGCCCTGGCACCCGTG CAGACCTGGCCACCCACCTGGGGCTCAGTG

AvrII (1118)

1101 CCCAAGAGATGCCACACCTAGGATGTCCCGGCTGGTGGGGGGCCGAGAGACGGGCAGGCCGGGGCAGGCCTGGCCATGCGGGGCCGAACCGGGCA
1201 CTGCCCAGCGTGGGGCGCGGGGCCACGGCGCGGCCCCAGCCCCGGGCCAGCACCCCAAGGGCCGCAACGCCAAA AACTCTCCCTCCTCTCTCT
1301 CAATCTCGCTCGCTCTTTTTTTTTTCGAAAAGGAGGGGAGAGGGGTAAAAAATGCTGC ACTGTGCGGCGAAGCCGGT GAGTGAGCGGCGGGGG

NotI (1446)

XhoI (1440)

1401 CCAATCAGCGTGC GCGGTTCCGAAAGTTGCTTTTATGGCTCGAGCGGCGGGCGGCCCTATAAA ACCAGCGGCGGACGCGCCACCACCGCCGAG

HindIII (1556)

1501 ACCGCGTCCGCCCCG GAGCAGAGCCTCGCTTTGCCGATCCGCCCGCTCAAGCTTCGAGGGGCTCGCATCTCTCTTCAAGCGCCCGCCCT
1601 ACCTGAGGCCGCATCCACGCCGGTTGAGTCCGCTTCTGCCCTCCCGCTGTGGTGCCTCCTGAACTGCGTCCGCCGTAGGTAAGTTTAAAGTCA
1701 GGTCCGAGACCGGCCCTTGTCCGGCTCCCTTGGAGCTACCTAGACTCAGCCGGCTCTCCACGCTTGTGCTGACCTGCTTGTCTCAACTCTACGCTT

NcoI (1841)

1801 TGTTCGTTTTCTGTTCTGCGCGTTACAGATCAAGCCACCATGTTCTGGGCCCCTGCATGCTGCTGCTGCTGCTGCTGGCCCTGAGGCTACAGC
1901 TCTCCCTGGGCATCATCCAGTTGAGGAGGAGAACCCGACTTCTGGAACCGGAGGACCGAGGCCCTGGGTGCCCAAGAAAGTGCAGCCTGCACA
2001 GACAGCCGCAAGAACCTCATCATCTTCTGGCGATGGGATGGGGGTGTCTACGGTGACAGCTGCCAGGATCTAAAAGGGCAGAAAGAGGACAAACTG
53 T A A K N L I I F L G D G M G V S T V T A A R I L K G Q K K D K L

NdeI (2136)

2101 GGGCCTGAGATACCCTGGCTATGGACCGCTTCCATATGTGGCTCTGTCCAAGACATACAATGTAGACAAAATGTGCCAGACAGTGGAGCCACAGCCA
87 G P E I P L A M D R F P Y V A L S K T Y N V D K H V P D S G A T A
2201 CGGCCTACTGTGCGGGTCAAGGGCAACTTCAGACCATTTGGCTTGTAGTGCAGCCGCCCTTTAACCAGTGAACACGACACGCGGCAACGAGGTCAT
120 T A Y L C G V K G N F Q T I G L S A A A R F N Q C N T T R G N E V I
2301 CTCGCTGATGAATCGGGCAAGAAAGCAGGGAAGTCAAGTGGGAGTGTAAACACACACAGAGTGCAGCACGCTCGCCAGCGCCACCTACGCCACAG
153 S V M N R A K K A G K S V G V V T T T R V Q H A S P A G T Y A H T
2401 GTGAACCGCAACTGGTACTCGGACCGCGAGTGCCTGCCCTGGCCCGCAGGAGGGTGCAGGACATCGCTACGACGCTCATCTCAACATGGACATTG
187 V N R N W Y S D A D V P A S A R Q E G C Q D I A T Q L I S N M D I
2501 ATGTGATCCTGGTGGAGGCCAAAGTACATGTTTCGCATGGGAACCCAGACCTGAGTACCCAGATGACTACAGCCAAGTGGGACCAGGCTGGACGG
220 D V I L G G G R K Y M F R M G T P D P E Y P D D Y S Q G G T R L D G
2601 GAAGAATCTGGTGCAGGAATGGCTGGCGAAGCGCCAGGTTGCCGGTATGTGTGAACCGCACTGAGCTCATGCAGGCTTCCCTGGACCCGTCTGTGACC
253 K N L V Q E W L A K R Q G A R Y V W N R T E L M Q A S L D P S V T
2701 CATCTCATGGGTCTCTTTGAGCCTGGAGACATGAAATACGAGATCCACCGAGACTCCACACTGGACCCCTCCTGATGGAGATGACAGAGGCTGCCCTGC
287 H L M G L F E P G D M K Y E I H R D S T L D P S L M E M T E A A L
2801 GCCTGCTGAGCAGGAACCCCGGCTTCTTCTCTCTGTTGGAGGGTGGTGCATCGACCAGGTCATCACGAAAGCAGGGCTTACCGGGCACTGACTGA
320 R L L S R N P R G F F L F V E G G R I D H G H H E S R A Y R A L T E
2901 GACGATCATGTTGACGACGCCATTGAGAGGGCGGGCCAGCTCACCAGCGAGGAGGACAGGCTGAGCCCTGCTCACTGCCGACCACTCCACGCTTCTCC
353 T I M F D D A I E R A G Q L T S E E D T L S L V T A D H S H V F S
3001 TTCGGAGGCTACCCCTGCGAGGGAGCTCATCTTCCGGTGGCCCTGGCAAGGCCCGGACAGGAAGGCTACACGGTCTCTATACGGAAGCGGTC
387 F G G Y P L R G S S I F G L A P G K A R D R K A Y T V L L Y G N G
3101 CAGGCTATGTCTCAAGGACGGCCGCCGGGATGTTACCGAGAGCGAGAGGGGAGCCCGAGTATCGGCAGCAGTGCAGTGCCTTGGACGAAGA
420 P G Y V L K D G A R P D V T E S E S G S P E Y R Q Q S A V P L D E E
3201 GACCCACGAGGCGAGGACGTGGCGGTGTTCCGCGCGGCCCGCAGGCGCACCTGGTTCACGGCGTGCAGGAGCAGACCTTATAGCGCAGCTCATGGCC
453 T H G G E D V A V F A R G P Q C A H L V H G V Q E Q T F I A H V M A
3301 TTCGCGCTGCCTGGACCCCTACCCGCTGCGACCTGGCGCCCCCGCCGACCAACCGACGCGCCGACCCCGGGCGGTCCCGGTCCAAGCGCTCGG
487 F A A C L E P Y T A C D L A P P A G T T D A A H P G R S R S K R L

NheI (3407)
3401 ATTGAAGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTG
520▶ D •

MfeI (3556)
3501 ATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACCAAGTTAACCAACAACAATTGCATTCATTTTATGTTTCAGGTTTCAGGGGAGGTGTGGGA
3601 GGTTTTTTAAAGCAAGTAAAACTCTACAATGTGGTATGGAAATTAATTCTAAAATACAGCATAGCAAACTTTAACCTCCAAATCAAGCCTCTACTTGA
3701 ATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGACGCCTCACCTTCTTTCATGGAGTTAAGATAT
3801 AGTGTATTTTCCCAAGTTTGAAGTCTCTTCATTTCTTTATGTTTTAAATGCACTGACCTCCACATTCCTTTTTAGTAAAAATTCAGAAATAATT
3901 TAAATACATCATTGCAATGAAAAATAATGTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGG
4001 GAACAAAGGAACCTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTATCCTCAGTCTGCTCTGCCACAAAGTGCACGCAGTTGCCGGC
125◀ • D Q E E A V F H V C N G A
4101 CGGGTCGCGAGGGCGAACTCCCGCCCCACGGCTGCTCGCCGATCTCGGTTCATGGCCGGCCCGAGGCGTCCCGGAAGTTCGTGGACACGACCTCCGAC
111◀ P D R L A F E R G W P Q E G I E T M A P G S A D R F N T S V V E S
4201 CACTCGGCTACAGCTCGTCCAGGCCGCGACCCACCCAGGCCAGGGTGTGTCCGGCACCACCTGGTCTGGACCGCGCTGATGAACAGGGTCACGT
77◀ W E A Y L E D L G R V W V W A L T N D P V V Q D Q V A S I F L T V D

SgrAI (4314)
4301 CGTCCCGGACCACCCGGCGAAGTCTGCTCCACGAAGTCCCGGAGAACCAGGCCGCTCGGTCCAGAACTCGACCGCTCCGGCGACGTCGCGCGCGT
44◀ D R V V G A F D D E V F D R S F G L R D T W F E V A G A V D R A T

MfeI (4477)
4401 GAGCACCGGAACGGCACTGGTCAACTTGGCCATGATGGCTCCTCCTGTGAGGAGGAAAGAGAAGAAGGTTAGTACAATTGCTATAGTGAGTTGTATTA
11◀ L V P V A S T L K A M
4501 TACTATGCAGATATACTATGCCAATGATTAATTGTCAAAGTAGGGTGCAGGTTAATTAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGT
4601 AAAAAAGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGAC
4701 TATAAGATACCAGGCGTTTTCCCTGGAAGCTCCCTGTGCGCTCTCCTGTTCCGACCCTGCCGTTACCGGATACCTGTCCGCTTTCTCCCTTCGGG
4801 AAGCGTGGCGTTTTCTATAGCTCAGGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCCGCTCAAGCTGGGCTGTGTGCACGAACCCCGTTTCAGCCC
4901 GACCGCTGCGCTTATCCGGTAACTATCGTCTTGAAGTCCAAACCGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAG
5001 CGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAAGAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGT
5101 TACCTTCGAAAAAGATTGGTAGCTCTTATCCGGCAACAAACCACCGCTGGTAGCGGTGGTTTTTTGTTTGAAGCAGCAGATTACGCGCAGAAAA
5201 AAAGGATCTCAAGAAGATCCTTTGATCTTTCTACGGGGTCTGACGCTCAGTGAACGAAAACTCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAA
5301 CATTAAATCA