



PvuI (7)
SgfI (6)
MfeI (82)

1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCCGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA
 101 GAGAAGTGGCGCGGGTAAACTGGAAAGTGATGTCGTGTAAGTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

HindIII (245)
Bsu36I (291)

Psp1406I (203)
PvuII (239)
Bsu36I (291)

201 GTGAACGTTCTTTTTTCGCAACGGGTTTCCGCCAGAACACAGCTGAAGCTTCGAGGGGCTCGCATCTCTCTTACCGCCGCCGCCCTACCTGAGGCC
 301 GCCATCCACGCGGTTGAGTGCAGTCTGCCGCTCCCGCCTGTGGTGCCTCCTGAAGTGCCTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

NgoMI (441)
NaeI (441)

401 GGGCCTTTGTCCGGCGCTCCCTTGGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCAACTCTACGTCTTTGTTTCGTTT

NcoI (560)
BstEII (555)

KasI (535)
AgeI (552)

501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGCGCCCTACCTGAGATCACCGGTACCATGGGGACGAGGACGACGATGAGAGCTGCGCCGTGGA
 601 GCTGCGGATCACAGAAGCCAACCTGACCGGGCACGAGGAGAAGGTGAGCGTGGAGAATTTCGAGCTGCTCAAGGTGCTGGGCACGGGAGCCTACGGCAAG
 13▶ L R I T E A N L T G H E E K V S V E N F E L L K V L G T G A Y G K

FspI (761)

701 GTGTTCTGGTGCAGGAGCGGGGCGGACGACGCGGGGAAGCTGTACGCCATGAAGGTGCTGCGCAAGGCGGCGCTGGTGCAGCGGCCAAGACGCAGG
 47▶ V F L V R K A G G H D A G K L Y A M K V L R K A A L V Q R A K T Q

Eco47III (815)
KasI (843)

801 AGCACACGCGCACCGAGCGCTCGGTGCTGGAGCTGGTGCGCCAGGCGCCCTTCTGGTACGCTGCACTACGCTTTCCAGACGGATGCCAAGCTGCACCT
 80▶ E H T R T E R S V L E L V R Q A P F L V T L H Y A F Q T D A K L H L

ScaI (953)

901 CATCCTGGACTATGTGAGCGCGGGGAGATGTTACCCACCTTACCAGCGCCAGTACTTCAAGGAGGCTGAGGTGCGCGTGTATGGGGGTGAGATCGTG
 113▶ I L D Y V S G G E M F T H L Y Q R Q Y F K E A E V R V Y G G E I V

1001 CTGGCCCTGGAACACCTGCAAGCTCGGCATCATTTACCGAGACCTGAAACTGGAGAATGTGCTGCTGGACTCCGAGGGCCACATTGCTCCTACGGACT
 147▶ L A L E H L H K L G I I Y R D L K L E N V L L D S E G H I V L T D

XcmI (1160)

1101 TCGGGCTGAGCAAGGAGTCTCTGACGGAGGAGAAAGAGCGGACCTTCTCTTCTGTGGCACCATCGAGTACATGGCCCCGAAATCATCCGTAGCAAGAC
 180▶ F G L S K E F L T E E K E R T F S F C G T I E Y M A P E I I R S K T

1201 GGGCATGGCAAGGCTGTGGACTGGTGGAGCCTGGGCATCTTGTCTTTCGAGCTGCTGACGGGGGCTCGCCCTTACCTGGAGGGCAGAGGAACACG
 213▶ G H G K A V D W S L G I L L F E L L T G A S P F T L E G E R N T

BamHI (1319)
BamHI (1398)

1301 CAGGTGAGGTGTCTCGACGGATCTGAAGTGCTCCCTCCCTTCCCCCTCGGATCGGGCCCGTGGCGCAGGACCTGCTGCAGCGGCTGCTTTGTAAGG
 247▶ Q A E V S R R I L K C S P P F P P R I G P V A Q D L L Q R L L C K

BspEI (1445)

1401 ATCCTAAGAAGCGATTGGGCGCGGGGCCAGGGGCACAAGAAGTCCGGAACCATCCCTTCTTCCAGGGCCTCGATTGGGTGGCTCTGGCTGCCAGGAA
 280▶ D P K K R L G A G P Q G A Q E V R N H P F F Q G L D W V A L A A R K

EcoRI (1561)

1501 GATTCCAGCCCCATTCCGGCCCCAAATCCGCTCAGAGCTGGATGTGGGCAACTTTGCGGAGGAATTCACCTCGGCTGGAGCCTGTCTACTACCCCCCTGGC
 313▶ I P A P F R P Q I R S E L D V G N F A E E F T R L E P V Y S P P G

SmaI (1613)

1601 AGCCCCACCTGGGACCCCGAATCTTTCAGGGATACTCCTTGTGGCACCTCCATTCTCTTTGACCACAACAACCGGTGATGACCGATGGGCTGG
 347▶ S P P P G D P R I F Q G Y S F V A P S I L F D H N N A V M T D G L

Eco47III (1747)

1701 AAGCGCCTGGTGTGAGACCGCCAGGTGCGGCGAGCGGTGGCCAGGCGCTATGATGACGAGACTCGCCCTTCTTCCAGCAGTACGAGCTGGACCTGCG
 380▶ E A P G A G D R P G R A A V A R S A M M Q D S P F F Q Q Y E L D L R

1801 GGAGCCTGCGCTGGGCCAGGCGAGCTTTCTGTGTGTCGCGCTGCCCGCAGCGCCAGAGCGGCGAGGATTCGAGTCAAGATCCTCAGTCCGAGGCTG
 413▶ E P A L G Q G S F S V C R R C R Q R Q S G Q E F A V K I L S R R L

DraIII (1969)
PvuII (1987)

1901 GAGGCGAACACGACGCGAAAGTGGCTGCCCTGCGCCTGTGCCAGTACACCCCAACGTGGTGAATCTGCACGAGGTGATCAGACACGAGTGCACACGT
 447▶ E A N T Q R E V A A L R L C Q S H P N V V N L H E V H H D Q L H T

FspI (2090)

2001 ACCTGGTCTGGAGCTGCTGCGGGGCGGGGAGCTGCTGGAGCACATCCGCAAGAAGCGGCACTTACGCGAGTCCGAAGCAAGCCAGATCCTGCGCAGCCT
 480▶ Y L V L E L L R G G E L L E H I R K K R H F S E S E A S Q I L R S L

ApaLI (2140)

2101 CGTGTCCGGCGTGTGAGCTTATGCACGAGGAGGCGGGCGTGGTGCACCGGACCTCAAGCCGGAGAATCCTGTACGCCGACGACGCGCCGGGGCCCGG
 513▶ V S A V S F M H E E A G V V H R D L K P E N I L Y A D D T P G A P

NotI (2232)

2201 GTGAAATCATCGACTTCGGGTTTCGCGCGGTTGCGGCCGAGAGTCCCGGGGTGCCATGCGAGACGCCCTGCTTACGCTGACGATACGCTGCCCCGAGC
 547▶ V K I I D F G F A R L R P Q S P G V P M Q T P C F T L Q Y A A P E

BsrGI (2357)
XcmI (2388)

2301 TGCTGGCGCAGCAGGCTACGACGAGTCTGCGACCTCTGGAGCCTGGGCGTCATTCTGTACATGATGCTGTCGGGGCAGGTCCTCCCTTCCAGGGGGCCTC
 580▶ L L A Q Q G Y D E S C D L W S L G V I L Y M M L S G Q V P F Q G A S

StuI (2474)

2401 TGGCCAGGGCGGGCAGAGCCAGGCGGCCGAGATCATGTGCAAAATCCGCGAGGGGCGCTTCTCCCTTACGGGGAGGCTGGCAGGGTGTATCCGAGGAA
 613▶ G Q G G Q S Q A A E I M C K I R E G R F S L D G E A W Q G V S E E

XhoI (2554)
2501 GCCAAGGAGCTGGTCCGAGGGCTCTGACCGTGGACCCCGCAAGCGGCTGAAGCTCGAGGGACTGCGGGGACGCTCGTGGCTGCAGGACGGCAGCGCGC
647▶ A K E L V R G L L T V D P A K R L K L E G L R G S S W L Q D G S A

BspEI (2615) XhoI (2632)
2601 GCTCCTCGCCCCCTCCGGACGCCGACGTGCTCGAGTCTCTGGGCCCGCAGTGGCTCGGGTCTCAACGCCACCTTCATGGCATTCAACCGGGGCAA
680▶ R S S P L R T P D V L E S S G P A V R S G L N A T F M A F N R G K

2701 GCGGGAGGGCTTCTCTGAAGAGCGTGGAGAAGCACCCTGGCCAAGCGGGGAGAGCTGCGGAGCGCCACCGCTCCCGCCGGGGCTCCCT
713▶ R E G F F L K S V E N A P L A K R R K Q K L R S A T A S R R G S P

2801 GCACCAGCAACCCGGGCGAGCCCCGTGCGCGCAAAGGGGCCCCCGCCGAGCCAACGGCCCTCGCCCCCTCTAATCCCCACCACTGTGACCCC
747▶ A P A N P G R A P V A A K G A P R R A N G P L P P S •

NheI (2906)
2901 CTTCCCGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTG

HpaI (3044) MfeI (3055)
3001 ATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAACAAGTTAAACAACAATTGCATTCTTTATGTTTCAGGTTCAAGGGGAGGTGTGGGA

EcoRI (3140)
3101 GGTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGAATTCTAAAATACAGCATAGCAAACTTTAACCTCCAATCAAGCCTCTACTTGAATCC
3201 TTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTTCTTTCATGGAGTTAAGATATAGT

SspI (3379) SmaI (3393)
3301 TATTTTCCAAGTTTGAAGTAGCTCTTCATTTCTTTATGTTTTAAATGCACTGACCTCCACATTCCCTTTTGTAGAAAATATTCAGAAATAATTTAAA
3401 TACATCATTGCAATGAAAATAAATGTTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAAC
3501 AAAGGAACCTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCCTGGTACTTTGAGGGGATGAGTTCTCAATGGTGGTTTTGAC
141▶ • N R T Y K L P I L E E I T T K V

SacI (3654)
3601 CAGCTTGCCATTCTCAATGAGCACAAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTGCACATGCCACAGGGGCTGACCACCCTGATGGATCTG
124▶ L K G N M E I L V F C D P A Y D S I L E R C M G C P S V V R I S R
3701 TCCACCTCATCAGAGTAGGGTGCCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCGTTGCTCACAGCAGACCAATGGCAATGGCTTCAGCACAGA
90▶ D V E D S Y P H R V A V I T D F D K Q G N S V A S G I A I A E A C V

StuI (3818)
3801 CAGTGACCCTGCCAATGTAGGCCTCAATGTGGACAGCAGAGATGATCTCCCCAGTCTTGGTCTGATGGCCGCCCCGACATGGTGCTTGTGCTCATA
57▶ T V R G I Y A E I H V A S I I E G T K T R I A A G V H H K N D E Y

BspHI (3968)
XmnI (3960)
3901 GAGCATGGTATCTTCTCAGTGGCGACCTCCACAGCTCCAGATCCTGCTGAGAGATGTTGAAGTCTTCATGATGGCCCTCCTATAGTGAGTCGTATTA
24▶ L M T I K E T A V E V L E L D Q Q S I N F T K M

VspI (4026) AseI (4026) SacI (4083)
4001 TACTATGCCGATATACTATGCCGATGATTAATTGTCAAACACGCTGGATGGCGTCTCCAGCTTATCTGACGGTTCACTAAACGAGCTCTGCTTATATAG

SpeI (4181)
4101 ACCTCCCACCGTACACGCCTACCGCCATTTGCGTCAATGGGGCGGAGTTGTTACGACATTTTGAAAGTCCCGTTGATTTACTAGTCAAAAACAACTC
4200 CCATTGACGTCATGGGGTGGAGACTTGAAATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTAAGTCCAAAACCGCATCATCATGGTAATAG

SnaBI (4309) Eco105I (4309)
4300 CGATGACTAATACGTAGATGACTGCCAAGTAGGAAAGTCCATAAGGTCATGTAAGTGGCATAATGCCAGGCGGGCATTACCCTGATTGACGTCAAT

NdeI (4414)
4400 AGGGGGCTACTTGGCATATGATACACTTGTACTGCAAGTGGGAGTTTACCGTAAATACTCCACCCATTGACGTCAATGGAAAGTCCCTATTGGC

SdaI (4592)
4500 GTTACTATGGGAACATACGTCATTATTGACGTCAATGGCGGGGGTCTTGGCGGTCAGCCAGGCGGGCATTACCCTGAAAGTTATGTAACGCTTCA

PacI (4600) BspLU11I (4610)
4599 G G T T A A T T A A G A A C A T G T G A G C A A A G G C C A G A A A G G C C A G G A A C C G T A A A A G G C C G C T T G C T G G C G T T T T C C A T A G G C T C G C C C C C T G A C G
4698 A G C A T C A C A A A A A T C G A C G C T C A A G T C A G A G G T G G C G A A A C C C G A C A G G A C T A T A A G A T A C C A G G C G T T T C C C C T G G A A G C T C C C T G T G C G T C T C C
4798 T G T T C C G A C C C T G C C G T T A C C G G A T A C T G T C C G C T T T T C C C T T C G G A A G C G T G G C G T T T T C T A T A G C T A C G C T G T A G G T A T C T C A G T T C G G T G

ApaLI (4924)
4898 T A G G T C G T T C G T C C A A G C T G G G C T G T G C A C G A A C C C C G T T C A G C C G A C C G T G C G C T T A T C C G G T A A C T A T C G T C T T G A G T C C A A C C G G T A A
4998 G A C A C G A C T T A T C G C C A C T G G C A G C A C C A C T G G T A A C A G G A T T A G C A G A G C G A G G T A T G T A G C G G T G C T A C A G A G T T C T T G A A G T G G T G G C C T A A C T A
5098 C G G C T A C T A T A G A A C A G T A T T T G G T A T C T G C G C T G T G T G A A G C A G T T A C C T T C G G A A A A G A G T T G G T A G C T C T T G A T C C G G C A A A C A A A C C A C C
5198 G C T G G T A G C G G T G G T T T T T G T T T G C A A G C A G A G A T T A C G C G A G A A A A A A G G A T C T C A G A A G A T C C T T T G A T C T T T T C A C G G G T C T G A C G C T C

PacI (5340) SmaI (5349) NotI (5359)
5298 A G T G G A A C G A A A A C T C A C G T T A A G G G A T T T T G T C A T G G C T A G T T A A T T A A C A T T T A A A T C A G C G C C G C A A T A A A A T A T C T T T A T T T T C A T T A C A T C T G
5398 T G T G T T G T T T T T T G T G T A A C T A A C A T A C G C T C C A T C A A A C A A A C G A A A C A A A C A A A C T A G C A A A A T A G G C T G T C C C C A G T G C A A G T G
5498 C A G G T G C C A G A A C A T T T C T A T C G A A