



150

PvuI (7)
SgfI (6) 1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA
MfeI (82)
101 GAGAAGTGGCGCGGGTAAACTGGAAAGTGATGCTGTACTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

Psp1406I (203) **HindIII (245)** **Bsu36I (291)**
201 GTGAACGTTCTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTACGCGCCCGCCCTACCTGAGGCC
301 GCCATCCACGCGGTTGAGTCGCGTTTCTGCCGCCTCCCGCTGTGGTGCCTCCTGAAGTGCCTCCGCCGTCTAGTAAGTTTAAAGCTCAGGTCGAGACC

NgoMIV (441) **NaeI (441)**
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCTAACTCTACGCTTTGTTTCGTTT

NcoI (560) **BstEII (555)**
501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGGGCGCTACCTGAGATCACCGGTACCATGGGCCCCCGCTGCACCCTGCACCCCTTTCTCTCCT
1 M G P R C T L H P L S L L

Eco47III (612)
601 GGTGCAGGTGACAGCGCTGGCTGCGGCTCTGGCCAGGGCAGGCTGCCTGCCTTCTGCCCTGTGAGTCCAGCCCCACGGCCTGGTGAAGTGAAGTGC
13 V Q V T A L A A A L A Q G R L P A F L P C E L Q P H G L V N C N W

XmaI (740)
701 CTCTTCTGAAGTCCGTGCCCACTTCTCGGGCAGCGCCCGGCCAACGTACCAGCCTCTCTTACTCTCAACCGCATCCACCACCTGCACGACT
47 L F L K S V P H F S A A A P R A N V T S L S L L S N R I H H L H D

Th11II (802) **NgoMIV (855)** **NaeI (855)**
801 CGGACTTCGTCCACCTGTCCAGCCTACGAAGTCTCAACCTCAAGTGAAGTGCCTGGCCGCGCTCAGCCCCATGCACCTCCCTGCCACATGACCAT
80 S D F V H L S S L R T L N L K W N C P P A G L S P M H F P C H M T I
901 CGAGCCCAACACCTTCTGGCCGTGCCACCCTGGAGGAGCTGAAGTGCCTGAGCTACAACAGCATCACGACCGTGCCTGCCCTGCCGACTCCCTCGTGCC
113 E P N T F L A V P T L E E L N L S Y N S I T T V P A L P D S L V S

BsrGI (1073)
1001 CTGTCGCTGAGCCGACCAACATCTGGTGTAGACCCACCCACCTCACTGGCTACATGCCCTGCGTACATGGTGAAGTGCCTACTACA
147 L S L S R T N I L V L D P T H L T G L H A L R Y L Y M D G N C Y Y
1101 AGAACCCCTGCCAGGGGGCGCTGGAGGTGGTGGCGGTGCCCTCCTGGCCTGGGCAACCTCACACATCTCTCACTCAAGTACAACAATCTCACGGAGGT
180 K N P C Q G A L E V V P G A L L G L G N L T H L S L K Y N N L T E V

Bsu36I (1267)
1201 GCCCCGAGCCTGCCCCAGCCTGGAGACCCTGCTGTTGTCCTACAACCACATTGTACCCTGACCGCTGAGGACCTGGCCAATCTGACTGCCCTGCCG
213 P R S L P P S L E T L L L S Y N H I V T L T P E D L A N L T A L R

SdaI (1349)
1301 GTGCTTGTGTTGGGGGAACTGCCGCCGCTGTGACCATGCCGCAACCCTGCGAGGGAGTGCCCAAAGGACCACCCCAAGCTGCACTCTGACACCTTCA
247 V L D V G G N C R R C D H A R N P C R E C P K D H P K L H S D T F

DraIII (1458)
1401 GCCACCTGAGCCGCTCGAAGGCTGGTGTGAAAGACAGTTCTCTTACAACCTGGACAACAGGTGGTCCGAGGCTGGACAGGCTCCAAGTGTGGA
280 S H L S R L E G L V L K D S S L Y N L D T R W F R G L D R L Q V L D

FspI (1565)
1501 CCTGAGTGAAGTCTCTACGACTGCATCACCAAGACCAGGCCTTCCAGGGCTGGCCCGACTGCGCAGCTCAACCTGTCTTCAATTACCACAAG
313 L S E N F L Y D C I T K T T A F Q G L A R L R S L N L S F N Y H K

Ppu10I (1669) **NsiI (1669)**
1601 AAGGTGCTCTTTGCCACCTGCACCTGGCACCTCCTTTGGGCACCTCCGGTCCCTGAAGGAGCTGGACATGCATGGCATCTTCTCCGCTCGCTCAGTG
347 K V S F A H L H L A P S F G H L R S L K E L D M H G I F F R S L S
1701 AGACCAGCTCCAACCTCTGGTCCAAGTGCCTATGCTCCAGACCCTGCGCTGCAGATGAAGTTCATTAACCAGGCCAGCTCAGCATCTTTGGGCTT
380 E T T L Q P L V Q L P M L Q T L R L Q M N F I N Q A Q L S I F G A F
1801 CCCTGGCTGCTGTACGTGGACCTATCGGACAACCGCATCAGCGGAGCTGCAAGGCCAGTGGCCATTACTAGGAGGTGGATGGTAGGAGAGGGTCTGG
413 P G L L Y V D L S D N R I S G A A R P V A I T R E V D G R E R V W
1901 CTGCCTCCAGGAACCTCGCTCCAGTCCACTGGACACTCTCCGCTCAGAGACTTCATGCCAACTGCAAGGCTTCCAGCTTGCACCTGGACCTGTCTC
447 L P S R N L A P R P L D T L R S E D F M P N C K A F S F T L D L S

XhoI (2050)
2001 GGAACAACCTGGTGACAATCCAGTCCGAGATGTTTGTCTCGCTCTCACGCTCGAGTGCCTGCGCTGAGCCACAACAGCATCTCCAGGCGGTCAATGG
480 R N N L V T I Q S E M F A R L S R L E C L R L S H N S I S Q A V N G
2101 CTCTCAGTTTGTCCGCTGACCAAGCCTGCGGGTGTGGACCTGTCCCAACAAGCTGGACCTGTATCACGGGCGCTCGTTACGGAGCTGCCGCGCTG
513 S Q F V P L T S L R V L D L S H N K L D L Y H G R S F T E L P R L
2201 GAAGCACTGGACCTCAGTACAATAGCCAGCCCTTACCATGCAGGGTGTGGCCACAACCTCAGCTTCTGTGGCCAGCTGCCCGCCCTGCGCTACCTCA
547 E A L D L S Y N S Q P F T M Q G V G H N L S F V A Q L P A L R Y L
2301 GCCTGGCCACAATGACATCCATAGCCGAGTGTCCAGCAGCTCTGTAGCGCTCAGTGTGCGCCCTGGACTTTAGCGCAACAGATGAGCCGGATGTG
580 S L G A C H A N D I H S R V T S Q Q L C S A S L C A L D F S G N D L S R M W

BbrPI (2492)
2401 GGCTGAGGGAGACCTCTATCTCCGCTTCTTCAAGCCTAAGAAGCCTAGTCTGGCTGGACCTGTCCCAGAACCACCTGCACCCCTTCCGACGTGCC
613 A E G D L Y L R F F Q G L R S L V W L D L S Q N H L H T L L P R A
2501 CTGGACAACCTCCCAAAAGCCTGAAGCATCTGCATCTCCGTGACAATAACCTGGCCTTCTTCAACTGGAGCAGCCTGACCTCTGCCCAAGCTGAAA
647 L D N L P K S L K H L H L R D N N L A F F N W S S L T L L P K L E
2601 CCCTGGACTTGGTGGAAACAGCTGAAGCCCTAAGCAATGGCAGCCTGCCATCTGGCACCCAGCTGCGGAGGCTGGACCTCAGTGGCAACAGCATCGG
680 T L D L A G N Q L K A L S N G S L P S G T Q L R R L D L S G N S I G

2701 CTTTGTGAACCTGGCTTCTTTGCCTGGCCAAGCAGTTAGAAGAGCTCAACCTCAGCGCCAATGCCCTCAAGACAGTGGAGCCCTCCTGGTTTGGCTCG
713▶ F V N P G F F A L A K Q L E E L N L S A N A L K T V E P S W F G S
2801 ATGGTGGGCAACCTGAAAGTCTAGACGTGAGCGCCAACCTCTGCACTGTGCCTGTGGGGGACCTTCGTGGGCTTCTGCTGGAGGTACAGGCTGCCG
747▶ M V G N L K V L D V S A N P L H C A C G A T F V G F L L E V Q A A
FspI (2964)
2901 TGCCTGGGCTGCCAGCCGCGTCAAGTGTGGCAGTCCGGGGCAGCTCCAGGGCCATAGCATCTTTGCGCAAGACCTGCGCCTCTGCTGGATGAGACCT
780▶ V P G L P S R V K C G S P G Q L Q G H S I F A Q D L R L C L D E T L
Neol (3032)
3001 CTCGTGGAAGTGTGGTTCGCTGCTGGCCATGGCCCTGGGCTGGTTGTGCCATGCTGCACCACCTCTGCGGCTGGGACCTCTGGTACTGCTTC
813▶ S W N C F G I S L L A M A L G L V V P M L H H L C G W D L W Y C F
3101 CACCTGTGCTGGCTGGCTGCCACCGAGGGCAGCGCGGGGCGCAGACGCCCTGTTCTATGATGCCTTCGTGGTCTTTGACAAAGCTCAGAGTGCTG
847▶ H L C L A W L P H R G Q R R G A D A L F Y D A F V V F D K A Q S A
BsrGI (3212) KasI (3251) BstEII (3290)
3201 TGGCCGACTGGGTGACAAACGAGCTGCGGGTGCAGCTGGAGGAGCGCCGTGGGCGCCGCGCACTGCGCCTGTGCTGGAGGAGCGAGACTGGTTACCTGG
880▶ V A D W V Y N E L R V Q L E E R R G R R A L R L C L E E R D W L P G
Tth11II (3373) RsrII (3371)
3301 CAAGACGCTCTTCGAGAACCTGTGGCCCTCAGTCTACAGCAGCCGAAGACCTGTTTGTGCTGGCCACACGGACCGTGTACAGCGCCCTCTTGCCTGCC
913▶ K T L F E N L W A S V Y S S R K T L F V L A H T D R V S G L L R A
3401 AGTTTCCTGCTGGCCAGCAGCGCTGCTGGAGACCGCAAGGACGTTGTAGTGTGTTGATCCTGCGCCCCGATGCCTACCGCTCCCCTACGTGCGGC
947▶ S F L L A Q Q R L L E D R K D V V V L V I L R P D A Y R S R Y V R
3501 TGGCCAGCGCTCTGCCGCCAGAGTGTCTCTCTGGCCCCACAGCCCCGTGGGCGAGGCGAGCTTCTGGGCCAGTGGGCACAGCCCTGACCAGGGA
980▶ L R Q R L C R Q S V L L W P H Q P R G Q G S F W A Q L G T A L T R D
DraIII (3655) NheI (3675)
3601 CAACCAACCACTTCTATAACCGAACTTCTGCCGGGCCCCACGACAGCCGAATAGCACTGAGTGACAGCCAGTTGCTAGCTGGCCAGACATGATAAGAT
1013▶ N H H F Y N R N F C R G P T T A E •
3701 ACATTGATGAGTTTGGACAAACCACAAC TAGAATGCAGTGA AAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAG
HpaI (3813) MfeI (3824)
3801 CTGCAATAAAACAAGTTAAACAACAACAATTGCATTCATTTTATGTTTCAGGTTTCAGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAAACTCTACAAA
EcoRI (3909)
3901 TGTGGTATGGAATTCTAAAATACAGCATAGCAAACTTTAACCTCAAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATC
4001 AGGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTTCTTTCATGGAGTTTAAAGATATAGTGTATTTTCCCAAGGTTTGAAC TAGCTCTTCAT
SspI (4148) SmaI (4162)
4101 TTCTTTATGTTTTAAATGCAGTACCTCCACATTCCCTTTTTAGTAAATATTCAGAAATAATTTAAATACATCATTGCAATGAAAATAAATGTTTTTT
4201 ATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGGAACCTTTAATAGAAATTTGGACAGCAA
4301 GAAAGCGAGCTTCTAGCTTTAGTTCCTGGTGTACTTGAGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCCATTCTCAATGAGCACAAAG
141▶ • N R T Y K L P I L E E I T T K V L K G N M E I L V F
4401 CAGTCAGGAGCATAGTCAGAGATGAGCTCTCTGCACATGCCACAGGGGCTGACCACCTGATGGATCTGTCCACCTCATTAGAGTGGGGTGCCTGACAG
113▶ C D P A Y D S I L E R C M G C P S V V R I S R D V E D S Y P H R V A
4501 CCACAATGGTCAAAGTCTTCTGCCGTTGCTCAGCAGACCCAAATGGCAATGGCTTCAGCAGACAGAGTACCCTGCCAATGTAGGCGCTCAATGTG
80▶ V I T D F D K Q G N S V A S G I A I A E A C V T V R G I Y A E I H
4601 GACAGCAGAGATGATCTCCCGTCTGGTCTGATGGCCGCCGACATGGTCTGTTGTCTCATAGAGCATGGTATCTTCTCAGTGGCGACCTCC
47▶ V A S I I E G T K T R I A A G V H H K N D E Y L M T I K E T A V E
BspHI (4737) BbsI (4733) XmnI (4729) AseI (4795)
4701 ACCAGCTCCAGATCCTGCTGAGAGATGTTGAAGGCTTTCATGATGGCCCTCTATAGTGAAGTCTATTATACTATGCCGATATACTATGCCGATGATTA
13▶ V L E L D Q Q S I N F T K M
4801 TTGTCAAACACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTTCCTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCCTACCGCCATTT
SpeI (4950)
4901 GCGTCAATGGGGCGGAGTTGTTACGACATTTTGGAAAGTCCCCTTGATTTACTAGTCAAAACAAACTCCCATTGACGTCAATGGGGTGGAGACTTGGAA
SnaBI (5078)
5000 ATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGACTGCCAAGT
NdeI (5183)
5100 AGGAAAGTCCCATAAGGTCTACTGAGCATAATGCCAGGGGCCATTTACCGTCATTGACGTCAATAGGGGGCGTACTTGGCATATGATACTACTGA
5200 TGTACTGCCAAGTGGGAGTTTACCCTAAATACTCCACCCATTGACGTCAATGAAAGTCCCTATTGGCGTACTATGGGAACATACGTCAATTATTGACG
SdaI (5361) PacI (5369) BspLU11I (5379)
5300 TCAATGGGCGGGGTCGTTGGGCGTCAAGCAGCGGGCCATTTACCGTAAGTTATGTAACGCCCTG C A 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 A G G C C
5398 AGCAAAAGGCCAGGAACCGTAAAAAGCCGCTTGTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCAAAAAATCGACGCTCAAGTCAGAG
5498 GTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTTCCCCTGGAAGCTCCCTCGTGGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTG

ApaI (5693)

5598 TCCGCCTTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTTCGCTCCAAGCTGGGCTGTGTGC
5698 ACGAACCCCGTTTCAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCAC
5798 TGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATC
5898 TGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGGTTGCAAGC
5998 AGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGTCTGACGCTCAGTGAACGAAAACTCACGTTAAGGGATTTT

EagI (6129)

PacI (6109) SwaI (6118)

NotI (6128)

6098 GGTCATGGCTAGTTAATTAACATTTAAATC AGCGGCCGCAATAAAATATCTTTATTTTCATTACATCTGTGTGTTGGTTTTTTTGTGTGAATCGTAACTAA
6198 CATACGCTCTCCATCAAACAAAACGAAACAAAACAACTAGCAAAATAGGCTGTCCCCAGTGCAAGTGCAGGTGCCAGAACATTTCTCTATCGAA