



PvuI (7)
SgfI (6) 1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGGCAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA
MfeI (82)
101 GAGAAAGTGGCGCGGGTAAACTGGAAAGTGTGTCTGTACTGGCTCCGCCTTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

Psp1406I (203) **PvuII (239)** **Bsu36I (291)**
201 GTGAACGTTCTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTACGCGCCCGCCCTACCTGAGGCC
301 GCCATCCACGCGGGTTGAGTCGCGTTTCTGCCGCCTCCCGCCTGTGGTGCCTCCTGAAGTGCCTCCGCCGTCTAGGTAAGTTAAAGCTCAGGTCGAGACC

NgoMIV (441)
401 GGGCCTTTGTCGGCGCTCCCTTGAGCCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCAACTCTACGCTTTGTTTCGTTT

KasI (535) **AgeI (552)** **BspHI (560)**
501 TCTGTTCTGCGCGTTACAGATCCAAGCTGTGACCGCGCGCTACCTGAGATCACCGGTATCATGACCCTTCACTTTTTGCTCCTGACCTGCCTTTCTCT
1▶ M T L H F L L L T C L F L

XbaI (643)
601 GCTAATTCCTGATTCTGTGAGTCTTCTACTGGAGCCAATTATTCTAGAAGCTACCCTTGCATGAGAGAAAAGAAAATGGCTCTGTCTGATTCAGAGTGC
13▶ L I P D S C E F F T G A N Y S R S Y P C D E R K E N G S V I A E C

XmnI (793)
701 AA CAATCGTCAACTTCAGGAAGTACCCGAAGAGTGGCAACTATGTGACTGAACTGGACCTGTCTGATAACTTCATCAGACGCATAACCAATGAATCCT
47▶ N N R Q L Q E V P R R V G N Y V T E L D L S D N F I R R I T N E S
801 TTCAAGGGCTGCAAAATCTGACTAAAATAAATCTAAACCAACGCCAAGCTGTGGCCCGAGAGTGAAAACGGTATGACTATTACAGATGGGGCGTTTCT
80▶ F Q G L Q N L T K I N L N H N A K L W P Q S E N G M T I T D G A F L

Bsu36I (912)
901 CAACCTCCATCACCTCAGGGAGTTGCTGCTGGAAGACAACAGTTACGTGAAATACCCACTGGCTTGCCAGAATCTTTGAGAGAGCTTAGTCTAATTCAA
113▶ N L H H L R E L L L E D N Q L R E I P T G L P E S L R E L S L I Q

BspLU1I (1028)
1001 AACAAAATCATTCTGTTAAATACAAGAATGTTGGACTTAGGAACTGGAAAGTCTCTATTTGGGCTGGAAGTCTATTTACTTGTAAATGACACCT
147▶ N K I I L L N T K N M F G L R K L E S L Y L G W N C Y F T C N D T
1101 TTATCATAGACGAGGGAGCATTGAAAATTTACGAATTTGAAGTGTCTGATTATCTTTAACACCTTTACCGGGTCCACCCAACTGCCAGCTC
180▶ F I I D E G A F E N F T N L K V L S L S F N T L Y R V P P K L P S S

ScaI (1278)
1201 CCTGACAAAATCTATCTTAGCAACACCAAGATAAGAAACATCAATCAGGAAGACTTCAAGGGCTGGAAAATCTAAGAGTACTGGATCTAAGCGGGAAC
213▶ L T K L Y L S N T K I R N I N Q E D F K G L E N L R V L D L S G N

BstAPI (1331)
1301 TGCCCGAGATGTTTTAACGCACCCTTCCCTGCAACCTTGCCCGGAGATGCTTCAATTCAAATACACCTCTGGCTTTTCGCTACCTGACCGA ACTTC
247▶ C P R C F N A P F P C N P C P G D A S I Q I H P L A F R Y L T E L

BspEI (1427) **EcoRI (1486)**
1401 GCTACCTAAACCTCTCTAGCACTTCGCTCCGGAGGATTCCCGCAACTGGTTTGGAGAATCTGCATCATCTGAAGGTGCTGCACCTGGAATTCAACTATTT
280▶ R Y L N L S S T S L R R I P A T W F E N L H H L K V L H L E F N Y L
1501 GATGGACGAAATCGCCTCTGGGGAATTTTTGGCGAAATGCCCTCCTTAGAAATCTTGAATCTTACAACCTAAGAACAGAAAAATATCCCCAGTAC
313▶ M D E I A S G E F L A K L P S L E I L D L S Y N Y E Q K K Y P Q Y

AseI (1600)
1601 ATTAATATTTCCATTACTTTGCTAATCTTACATCTCTCCAGATATTACACTTAAGAGCTTATGTCTTCCAGGAACCTAGAAAAGAAGATTTCCAGCCTC
347▶ I N I S H Y F A N L T S L Q I L H L R A Y V F Q E L R K E D F Q P
1701 TGAGAAACCTCTTGCATTTAAAGTTTATCAATTTGGGCATTAACCTCATTAAAGCAAAATGATTTTACCATTTTCTCGGAGTTCTCAACCTGTCAATCAT
380▶ L R N L L H L K F I N L G I N F I K Q I D F T I F S E F S N L S I I
1801 TTACTTGTGAGAAAACAGAAATATCGCCCTTAGCTCAATTAACCGGCAAAAAGAAATGGAGATAGACCTTTTCCAAAGTCATGCTTAAAGCCAGCTCA
413▶ Y L S E N R I S P L V N N T G Q K N G D R P S F Q S H V L K P R S
1901 GCAACTCCTAAGTTTGAACACATTCAATTTTTATCATAACCAAGCCTTTAATAAACACAGTGTTCACATTATGGCAAAGCCTTAGATTTAAGCT
447▶ A T P K F D P H S N F Y H N T K P L I K P Q C S H Y G K A L D L S
2001 TGAACAGTATTTCTTATTGGCCAAACCAATTTGAAGCCTTTAAGGACATTGCCTGTTAAATCTGCTTCAAATGGCAACGGGCAGGTGTATACGG
480▶ L N S I F F I G P N Q F E A F K D I A C L N L S S N G N G Q V L H G
2101 ATCTGAATTTTACATTTGCCTGGTATCAAGTATTTGGACTTGACAAACAATAGACTAGACTTTGATGATGACGCTGCTTTCAGTGAAGCTGCCGTTGTTA
513▶ S E F S H L P G I K Y L D L T N N R L D F D D D A A F S E L P L L

PvuII (2284)
2201 GAAGTTCTGGATCTGAGCTACAACCTCCACTATTTCCGAATAGCAGGAGTGACACACCGTCTAGGATTTATTCAAATTTGCCTCAGCTGAGAGTTTAA
547▶ E V L D L S Y N S H Y F R I A G V T H R L G F I Q N L P Q L R V L
2301 ACTTGAGCCACAACAGCATCTTTACTTTAACAGAAACGTACTTAAAAAGCACGTCCTGAAAGAATTAGTTTTAGTGGAAACCGCTGGACCTTTTGTG
580▶ N L S H N S I F T L T E T Y L K S T S L K E L V F S G N R L D L L W
2401 GAATGCCAAAGATGACAGTACTGGCAAATTTCAAATCTCAGCAGCTGACCCATCTCGATTTATCATCTAATAACCTTCAGCACATCCCCAGTGA
613▶ N A Q D D R Y W Q I F K N L S T L T H L D L S S N N L Q H I P S E
2501 GCCTTCTTAACTTGCCCGAGACTCTCACCGAATATATAAGTGATAATAGGTTAAATTTCTTAACTGGTCATTACTCCAGCAGTTTCCGAATCTCA
647▶ A F L N L P Q T L T E L Y I S D N R L N F F N W S L L Q Q F P N L
2601 CCTTGCTGACTTAAGCGGAAATGAGCTCTCTTTTTAACAGATAGCCTATCTAAATCACCCTTCTTTCAGACACTGATACTGAGGCAGAACAGGAT
680▶ T L L D L S G N E L S F L T D S L S K F T T S L Q T L I L R Q N R I
2701 TTCCTACCTGCTGCTGGCTTTCGGAAGCAGCAGTCTGACGCACTTGATTTAAGTTCCAAGCTCAAGATGGTCAACATATCCAAGCTTAC
713▶ S Y L P S G L L S E A S S L T H L D L S S N Q L K M V N I S K L H

BstBI (2876) **BsaBI (2890)**
2801 GCAAAGACCACCACCAACTTAGCCATTTTAAAACCTAGATAGAAACCTTTTACTGTACCTGTGACATCAGAGATTTTCAAATGGATGGATGAGAATC
747▶ A K T T T N L A I L K L D R N P F D C T C D I R D F R K W M D E N

PshAI (2922)

2901 TGAAGGTCACAATCCAGACTGACGGATGTCATTTGTGCCAGTCTGGGGATCAAACGCGGGAGGAGATTGTGAGTCTGGAGCTCACAACTTGTGTTTC
780▶ L K V T I P R L T D V I C A S P G D Q R G R S I V S L E L T T C V S
3001 GGATACCATTGCGGCGATAATATGTTTCTTACCTTTTTGTACCAGCACAGTTATGTTGGCTGCCCTGGCTCACCCTGTTTACTGGGATGCTTGG
813▶ D T I A A I I C F F T F F V T S T V M L A A L A H H W F Y W D A W

AgeI (3137)

3101 TTCATCTACCATGTGTGCTTAGCCAAGGTAAGGCTACCGGTCGCTTCCCACATCCCAGACTTCTACGATGCTTATGTTTCTATGACACCAAGACG
847▶ F I Y H V C L A K V K G Y R S L P T S Q T F Y D A Y V S Y D T K D

**SadI (3293)
EcoO109I (3293)**

3201 CCTCTGTACAGACTGGGTGATGAATGAGCTGCGCTTCCACCTGGAAGAGAGTGAGGGGAAAAATGTGCTCCTCTGTTTGGAGGAGAGGGACTGGGACCC
880▶ A S V T D W V M N E L R F H L E E S E G K N V L L C L E E R D W D P

MscI (3305)

3301 AGGACTGGCCATCATCGACAACCTCATGCAGAGCATCAACCAAGCAAGAAGACAATATTCGTTTTAACCAAAAAATATGCCAAGAACTGGAACCTTAAA
913▶ G L A I I D N L M Q S I N Q S K K T I F V L T K K Y A K N W N F K

PstI (3478) Scal (3491)

3401 ACAGCATTCTACTTGGCCTTGCAGAGGCTAATGGATGAGAACATGGACGTGATCGTATTCTGCTGGAGCCAGTGTGCAGCATTCCGAGTACTTGA
947▶ T A F Y L A L Q R L M D E N M D V I V F I L L E P V L Q H S Q Y L

3501 GGCTGCGGAGAGATCTGCAAAAGCTCCATCCTCCAATGGCCGACAAACCCCAAGCGGAAGGCTTGTGTTGGCAAAGTCTGAAAAATGTCGCTTAAAC
980▶ R L R Q R I C K S S I L Q W P D N P K A E G L F W Q S L K N V V L T

MscI (3676)

NheI (3670)

3601 GGAAAATGATTTCGCGGTATAACAGTTTGTATGTCAATTCATTAAGTAATCCTCGGTGATGTTTGGTCTGCTAGCTGGCCAGACATGATAAGATACATT
1013▶ E N D S R Y N S L Y V N S I K •

3701 GATGAGTTTGACAAACCACAAC TAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCA

HpaI (3808) MfeI (3819)

3801 AATAACAAGTTAAACAACAACAATTGCATTCATTTATGTTTCAGGTTCCAGGGGAGGTGTGGGAGTTTTTTAAAGCAAGTAAAACCTCTACAAATGTGG

EcoRI (3904)

3901 TATGGAATTCTAAATAACAGCATAGCAAACTTTAACCTCCAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGG

SapI (4086)

4001 CTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTCTTTTCATGGAGTTAAGATATAGTGTATTTTCCAAGGTTTGAAGTACTGCTCTTCATTTCTT

SwaI (4157)

4101 TATGTTTTAAATGCACTGACCTCCACATTCCTTTTTAGTAAAATATTCAGAATAATTTAAATACATCATTGCAATGAAAAAATGTTTTTTATTAG

EcoO109I (4218)

4201 GCAGAATCCAGATGCTCAAGGCCCTTATAATATCCCCAGTTTGTAGTGTGGACTTAGGGAACAAGAACCTTTAATAGAAATGGACAGCAAGAAAG

4301 CGAGCTTCTAGCTTTAGTTCCTGGTGTACTTGAGGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCCATTCTCAATGAGCACAAAGCAGTC
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 C D

BstXI (4447)

4401 AGGAGCATAGTCAGAGATGAGCTCTCTGCACATGCCACAGGGGCTGACCACTTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCCTGACAGCCACA
112▶ 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 V

StuI (4582)

4501 ATGGTGTCAAAGTCCTTCTGCCGTTGCTCACAGCAGACCCAATGGCAATGGCTTTCAGCACAGACAGTACCCTGCCAATGTAGGCTCAATGTGGACAG
78▶ 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 G E I H V A

4601 CAGAGATGATCTCCCAGTCTTGGTCTGATGGCCGCCGACATGGTCTTGTGCTCTCATAGAGCATGGTATCTTCTCAGTGGCAGCTCCACCAG
45▶ 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 V L

BspHI (4732)

XmnI (4724)

AseI (4790)

4701 CTCCAGATCCTGCTGAGAGATGTTGAAGGCTTTCATGATGGCCCTCTATAGTGAAGTCTATTATACTATGCCGATATACTATGCCGATGATTAATTGTC
12▶ E L D Q Q S I N F T K M

4801 AAAACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTCTACTAAACGAGCTCTGCTTATATAGACCTCCCACCGTACACGCTACCGCCATTTGCGTC

SpeI (4945)

4901 AATGGGGCGGAGTTGTTACGACATTTTGGAAAGTCCCGTTGATTTACTAGTCAAAAACAACTCCATTGACGTCAATGGGGTGGAGACTTGGAAATCCC

SnaBI (5073)

5000 CGTGAGTCAAACCGCTATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATGGAATAGCGATGACTAATACGTAGATGACTGCCAAGTAGGAA

NdeI (5178)

5100 AGTCCATAAGGTGATGACTGGGCATAATGCCAGGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCGTACTTGGCATATGATACACTTGTATGAC

5200 TGCCAAGTGGGAGTTTACCCTAAATACTCCACCCATTGACGTCAATGGAAAGTCCCTATTGGCGTACTATGGGAACATACGTCAATTATTGACGTCAAT

PstI (5357)

SdaI (5356) PacI (5364)

BspLU11I (5374)

5300 GGGCGGGGTCGTTGGGCGTCCAGCCAGGCGGGCCATTTACCGTAAGTTATGTAACGCCCTG C A G G T T A A T T A A G A A C A T G T G A C A A A A G G C C A G C A A

5398 AAGGCCAGGAACCGTAAAAAGGCCGCTTGTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGC

5498 GAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCTGTTCCGACCTGCCGCTTACCGGATACCTGTCCGC

ApaI (5688)

5598 CTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTTCGCTCCAAGCTGGGCTGTGTGCACGAA
5698 CCCCCGTTCCAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTA
5798 ACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGC
5898 TCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGGTTTGAAGCAGCAG
5998 ATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGTCTGACGCTCAGTGAACGAAAACTCACGTTAAGGGATTTTGGTCA

EagI (6124)

PacI (6104) SwaI (6113) **NotI (6123)**

6098 TGGCTAGTTAATTAACATTTAAATC AGCGGCCGCAATAAAATATCTTTATTTTCATTACATCTGTGTGTTGGTTTTTTGTGTGAATCGTAACTAACATAC
6198 GCTCTCCATCAAACAAAACGAAACAAAACAACTAGCAAATAGGCTGTCCCCAGTGCAAGTGCAGGTGCCAGAACATTTCTCTATCGAA