



150

PvuI (7)
SgfI (6)
1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCCGAGAAGTTGGGGGAGGGGTCGGCAATTGAACGGTGCCTA
101 GAGAAGTGGCGCGGGTAAACTGGAAAGTGATGTCGTGACTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

Psp1406I (203)
201 GTGAACGTTCTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCAGAGGGCTCGCATCTCTCTTTCACGCGCCCGCCCTACCTGAGGCC
301 GCCATCCACGCCGTTGAGTCGCGTTTTCGCCGCCTCCCGCCTGTGGTGCCTCCTGAAGTGCCTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

NgoMIV (441)
NgoMI (441)
NaeI (441)
401 GGGCCTTTGTCCGGCGCTCCCTTGGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCAACTCTACGTCTTTGTTTCGTTT

NcoI (560)
BstEII (555)
KasI (535)
AgeI (552)
501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGCGGCTACCTGAGATCACCGGTACCATTGGCGCTGAGCGGAGCATGGGGTGGCCGGGGCTCCG
1▶ M A L R R S M G W P G L R

XmaI (637)**NotI (646)**
KasI (670)
Tth111I (687)
601 GCCGCTGCTGCTGCGGGACTGGCTTCTGCTGCTCCCGGGTCTGCGGCCGAGGCTGAAGCTCATGGGCGCCCAAGTGAAGATGACCGTGTCTCAG
13▶ P L L L A G L A S L L L P G S A A A G L K L M G A P V K M T V S Q
701 GGGCAGCCAGTGAAGCTCAACTGCAGCGTGGAGGGATGGAGGACCCTGACATCCACTGGATGAAGGATGGCACCGTGGTCCAGAATGCAAGCCAGGTT
47▶ G Q P V K L N C S V E G M E D P D I H W M K D G T V V Q N A S Q V

XcmI (882)
801 CCATCTCCATCAGCGAGCACAGCTGGATTGGCTTACTCAGCCTAAAGTCAAGTGAAGCGTCTGATGCTGGCCTGACTGGTGGCAGGTGAAGGATGGGGA
80▶ S I S I S E H S W I G L L S L K S V E R S D A G L Y W C Q V K D G E

BglII (969)
901 GGAACCAAGATTTCTCAGTCAATGCTCACTGTGCAAGGTGTGCCATTCTTACAGTGAACCAAAAGATCTGGCGGTGCCACCAATGCCCTTTT
113▶ E T K I S Q S V W L T V E G V P F F T V E P K D L A V P P N A P F
1001 CAGCTGTCTTGTGAGGCTGTGGGCTCCAGAACCCGTAACCATTTACTGGTGGAGGACTACTAAGTGGGGGACCTGCTCCCTCTCCCTCTGTTT
147▶ Q L S C E A V G P P E P T I Y W W R G L T K V G G P A P S P S V
1101 TAAATGTGACAGAGTGAACCCAGCGCACAGTPTTCTTGTGAAGCCGCAACATAAAAGGCCTGGCCACTTCCGACACGCTATGTTCCGCTTCAAGC
180▶ L N V T G V T Q R T E F S C E A R N I K G L A T S R P A I V R L Q A

NheI (1252)
1201 ACCGCTGCAGCTCCTTTCAACACCACAGTAACAACGATCTCCAGCTACAACGTAAGCTGGCCTGGGTGCCAGGTGCTGACGGCCTAGCTCTGCTGCAT
213▶ P P A A P F N T T V T T I S S Y N A S V A W V P G A D G L A L L H
1301 TCCTGTACTGTACAGGTGGCACACGCCCCAGGAGAATGGGAGGCCCTTGTGTTGTGTTCTGTGCCACCTTTTACCTGCTGCTTCCGAACTTGGCCC
247▶ S C T V Q V A H A P G E W E A L A V V V P V P P F T C L L R N L A
1401 CTGCCAACACTACAGCCTTAGGGTGGCTGTGCCAATGCCTTGGGCCCTTCCCTACGGGACTGGGTGCCCTTTCAGACAAAGGGCTAGCGCCAGC
280▶ P A T N Y S L R V R C A N A L G P S P Y G D W V P F Q T K G L A P A

XmnI (1561)
AvrII (1593)
1501 CAGAGCTCCTCAGAATTTCCATGCCATTCGTACCGACTCAGGCCTTATCCTGGAATGGGAAGAGTTCCTGAGGACCTGGGGAAGGCCCTTAGGA
313▶ R A P Q N F H A I R T D S G L I L E W E E V I P E D P G E G P L G

BamHI (1683)
1601 CTTATAAGCTGTCTGGGTCCAAGAAAATGGAACCCAGGATGAGCTGATGGTGGAGGGACAGGGCCAATCTGACCGACTGGGATCCCAAGAGGACC
347▶ P Y K L S W V Q E N G T Q D E L M V E G T R A N L T D W D P Q K D
1701 TGATTTTGCCTGTGTGCTCCAAATGCAATTGGTGTGAGTGGGCCCTGGAGTCAAGCCACTGGTGGTGTCTTCTCATGACCATGCAGGGAGGCAGGGCCCTCC
380▶ L I L R V C A S N A I G D G P W S Q P L V V S S H D H A G R Q G P P
1801 CCACAGCGCACATCCTGGGTGCCTGTGGTCTGGGCGTGTCTACCGCCTGATCACAGCTGTGCTTGGCCCTCATCTGCTTCCGAAAGAGACGCAAG
413▶ H S R T S W V P V V L G V L T A L I T A A A L A L I L L R K R R K

MluI (1903)
Tth111I (1924)
1901 GAGACGCTTTTGGGCAAGCCTTTGACAGTGTGATGGCCCGAGGGGAGCCAGCTGTACACTTCCGGGCGAGCCGATCTTTCAATCGAGAAAGGCCTGAAC
447▶ E T R F G Q A F D S V M A R G E P A V H F R A A R S F N R E R P E
2001 GCATTGAGGCCACATTTGGATAGCTGGGCATCAGCGATGAATGAAGGAAAAGCTGGAGGATGTCTCATTCCAGAGCAGCAGTTACCCCTCGGTGCGAT
480▶ R I E A T L D S L G I S D E L K E K L E D V L I P E Q Q F T L G R M
2101 GTTGGGCAAAGGAGATTTGGATCAGTGCGGGAAGCCAGCTAAAGCAGGAAGATGGCTCCTTGTGAAAGTGGCAGTGAAGATGCTGAAAGCTGACATC
513▶ L G K G E F G S V R E A Q L K Q E D G S F V K V A V K M L K A D I

BbrPI (2266)
BspEI (2294)
2201 ATTGCCTCAAGCGACATAGAAGAGTTCCTCCGGGAAGCAGCTTGCATGAAGGAGTTTGACCATCCACAGTGGCCAAGCTTGTGGGGTGGAGCTCCGGA
547▶ I A S S D I E E F L R E A A C M K E F D H P H V A K L V G V S L R

NcoI (2327)
2301 GCAGGGCTAAAGTGTCTCCCATTTCCATGGTGCCTTCCATGAAACATGGAGACTTGCACGCCTTTCTGCTGCCTCCGAAATCGGGGAGAA
580▶ S R A K G R L P I P M V I L P F M K H G D L H A F L L A S R I G E N

PshAI (2421)
2401 CCCTTTTAACTGCCCTCCAGACCCTGGTTCATGGTGGACATTGCCTGTGGCATGGAGTACCTGAGCTCCCGAACTTCCATCCACCGAGACCTA
613▶ P F N L P L Q T L V R F M V D I A C G M E Y L S S R N F I H R D L

SphI (2513)
2501 GCAGCTCGGAATTCATGCTGGCCGAGGACATGACAGTGTGTGGCTGATTTTGGACTCTCTCGGAAAATCTATAGCGGGGACTATTATCGTCAGGGCT
647▶ A A R N C M L A E D M T V C V A D F G L S R K I Y S G D Y Y R Q G

Bst1107I (2655)
BstEII (2688)
2601 GTGCCTCAAATTCGCCGTAAGTGGCTGGCCCTGGAGAGCTTGGCTGACAACCTGTACTGTACACAGTGTGTGGGCTTCCGGGGTGGACCATGTG
680▶ C A S K L P V K W L A L E S L A D N L Y T V H S D V W A F G V T M W

2701 GGAGATCATGACTCGTGGGCAGACGCCATATGCTGGCATTGAAAATGCCGAGATTTACAACACTCCTCATCGGGCGGAACCGCCTGAAGCAGCCTCCGGAG
713▶ E I M T R G Q T P Y A G I E N A E I Y N Y L I G G N R L K Q P P E

NdeI (2726) BspEI (2793)

2801 TGCATGGAGGAAGTGTATGATCTCATGTACCAGTGTGGAGCGCCGACCCCAAGCAGCGCCCAAGCTTACGTGTCTGCGAATGGAACGGAGAACATTC
747▶ C M E E V Y D L M Y Q C W S A D P K Q R P S F T C L R M E L E N I

BbrPI (2868)

2901 TGGGCCACCTGTCTGTGCTGTCCACCAGCCAGGACCCCTGTACATCAACATTGAGAGAGCTGAGCAGCTACTGAGAGTGGCAGCCCTGAGGTCCTACTG
780▶ L G H L S V L S T S Q D P L Y I N I E R A E Q P T E S G S P E V H C

3001 TGGAGAGCGATCCAGCAGCGAGGACGGCAGTGGCGTGGGGGCGTAGGTGGCATCCCAAGTACTCTCGGTACATCTTCAGCCCGGAGGCGCTA
813▶ G E R S S S E A G D G S G V G A V G G I P S D S R Y I F S P G G L

3101 TCCGAGTACCAGGCGAGCTGGAGCAGCAGCCAGAAAGCCCTCAATGAGAACCAGAGGCTGTTGTTGCTGCAGCAAGGGCTACTGCCTCACAGTAGCT
847▶ S E S P G Q L E Q Q P E S P L N E N Q R L L L L Q Q G L L P H S S

NheI (3240)

HpaI (3200) EcoRI (3234)

3201 GTTAAACCTCAGGCAGAGAAAGTTGGGGCCCTGAATTGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACACTAGAATG
880▶ C •

HpaI (3378)

3301 CAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAAACAAGTTAAACAACAATTGCATTC

EcoRI (3474)

3401 ATTTTATGTTTCAGGTTTCAGGGGAGGTGTGGGAGTTTTTAAAGCAAGTAAAACCTCTACAAATGTGGTATGGAATTTCAAATAACAGCATAGCAAAA
3501 CTTAACCTCAAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAG
3601 CCTCACCTCTTTTTCATGGAGTTAAGATATAGTGTATTTCCCAAGGTTTGAAGTACTGCTCTTCATTTCTTTATGTTTTAAATGCAGTACCTCCACATT

SspI (3713) SwaI (3727)

3701 CCCTTTTTAGTAAAATTCAGAAATAATTTAAATACATCATTGCAATGAAAATAAATGTTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATA
3801 ATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGGAACCTTAATGAAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTATAGTTCTGGTGTACT
3901 TGAGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCATTCTCAATGAGCACAAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTCGCA
135▶ L P I L E E I T T K V L K G N M E I L V F C D P A Y D S I L E R C

4001 CATGCCACAGGGGCTGACCACCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCCGTTGCTC
102▶ M G C P S V V R I S R D V E D S Y P H R V A V I T D F D K Q G N S

4101 ACAGCAGACCCAATGGCAATGGCTTCAGCACAGACAGTACCCTGCCAATGTAGGCCTCAATGTGGACAGCAGAGATGATCTCCCAGTCTTGGTCTGA
68▶ V A S G I A I A E A C V T V R G I Y A E I H V A S I I E G T K T R I

XmnI (4294)

4201 TGGCCGCCCCGACATGGTGTGTTGTCTCATAGAGCATGGTGTCTTCTCAGTGGCGACTCCACCAGCTCCAGATCTGCTGAGAGATGTTGAAGGT
35▶ A A G V H H K N D E Y L M T I K E T A V E V L E L D Q Q S I N F T

VspI (4360)
AseI (4360)

4301 CTTATGATGGCCCTCTATAGTGAGTCGATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACAGCGTGGATGGCGTCTCCAGCTTAT
2▶ K M

4401 CTGACGGTCACTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCCTACCGCCATTGCGTCAATGGGGCGGAGTTGTTACGACATTTTGGAA

SpeI (4515)

4501 AAGTCCCCTGATTTACTAGTCAAACAAACTCCATTGACGTCAATGGGGTGGAGACTTGGAAATCCCGTGAGTCAAACCGCTATCCAGCCCATTTG

SnaBI (4643)
Eco105I (4643)

4600 ATGTAAGTCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGACTGCCAAGTAGGAAAGTCCATAAGGTGACTGTTGGGCATAAT

NdeI (4748)

4700 GCCAGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCTACTTGGCATATGATACACTTGTACTGCCAAGTGGGAGTTTACCGTAAATACTC
4800 CACCATGACGTCAATGAAAAGTCCCTATTGGCGTACTATGGGAACATACGTCAATATTGACGTCAATGGGCGGGGTGTTGGGCGGTACAGCCAGGC

SdaI (4926) PacI (4934) BspLU11I (4944)

4900 GGGCATTACCGTAAGTTATGTAACGCCTG 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 A G G A A C C G T A A A A A G C C G C G T T G
4998 CTGGCGTTTTTCCATAGGCTCCGCCCTGACGAGCATCAGAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGG
5098 CGTTTCCCCTGGAAGCTCCTCGTGGCTCTCTGTTCCGACCCTGCCGTTACCGGATACCTGTCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTC

ApaLI (5258)

5198 TCATAGCTCAGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCGTTACGCCGACCGCTGCGCCTTA
5298 TCCGGTAACTATCGTCTTGAAGTCCAACCCGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCG
5398 GTGCTACAGAGTCTTGAAGTGGTGGCCTAACTACGGTACACTAGAAGAACAGTATTTGGTATCTCGCTCTGCTGAAGCCAGTTACCTTCGGA AAAAG
5498 AGTTGGTAGCTCTTGATCCGGCAAACAAACCAGCTGGTAGCGGTGTTTTTTTTGTTTGAAGCAGCAGATTACCGCGAGAAAAAAGGATCTCAAGAA

PacI (5674) SwaI (5683) NotI (5693)

5598 GATCCTTTGATCTTTTCTACGGGCTGACGCTCAGTGGAAACGAAAACCTCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATC AGCGG
5698 CCGCAATAAAAATATCTTTATTTTATTACATCTGTGTGTTGTTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAAAACAAAACGAAAACAAAAC
5798 AAAGTAGCAAAATAGGCTGTCCCAGTGAAGTGACGGTCCAGAACATTTCTCTATCGAA