



PvuI (7)
SgfI (6) 1 GGATCTGCATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA
MfeI (82)
101 GAGAAGTGGCGCGGGTAAACTGGAAAGTGTGTCTGTACTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCGTATATAAGTGCAGTAGTCGCC

Psp1406I (203)
201 GTGAACGTTCTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCAGAGGGCTCGCATCTCTCCTTACGCGCCCGCCCTACCTGAGGCC
Bsu36I (291)
301 GCCATCCACGCGGGTTGAGTCGCGTTTCTGCCGCCTCCCGCCTGTGGTGCCTCCTGAAGTGCCTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

NgoMIV (441)
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCTCAACTCTACGTCTTTGTTTCGTTT

NcoI (566)
501 TCTGTTTGTGCGCGGTTACAGATCCAAGCTGTGACCGGCGCCTACCTGAGATCACCGCCCCGGGCACCATGGCTGAGCATGGGGAGTCCCTCCGAGGATCG
XmaI (558)
1▶ M A E H G E S S E D R

NsiI (656)
601 GATTTCTGAGATTGATTGAATTTCTCCCGAGCTCTCTGCTTCTCGGGTGGATGCATTTACAGTGGCAAAGAGCCAAGAAGAAGAGCATAAA
11▶ I S E I D Y E F L P E L S A L L G V D A F Q V A K S Q E E E E H K

FspI (737)
701 GAACGGATGAAAAAAGAAAGGTTTTAACTCACAGATGCGCAGTGAAGCCAAACGACTAAAGACCTTTGAGACCTATGACACGTTTTCAGATCATGGACGC
45▶ E R M K M K K G F N S Q M R S E A K R L K T F E T Y D T F R S W T

Bsu36I (891)
801 CACAGGAGATGGCAGCTGCTGGGTTTTACCACACAGGGGTGAGACTTGGCGTTTTCAGTGTCTTTGCTGTAGCTTATCCTCTTTGGTAACAGCCTCAGGAA
78▶ P Q E M A A A G F Y H T G V R L G V Q C F C C S L I L F G N S L R K

BspEI (930)
901 GCTTCCCATAGAGAGACACAAGAAATTACGTCGGAATGTGAGTTCCTTCAGGGCAAAGATGTTGGTAACATTGGCAAGTATGACATCCGGGTGAAGAGG
111▶ L P I E R H K K L R P E C E F L Q G K D V G N I G K Y D I R V K R

Acc65I (1031) **PshAI (1052)** **NcoI (1086)**
1001 CCAGAGAAGATGCTGAGAGGTGGCAAAGCCAGGTACCATGAAGAGGAGGCCAGACTGGAGTCTTTGAGGACTGGCCATTTTATGCCCATGGGACATCAC
145▶ P E K M L R G G K A R Y H E E E A R L E S F E D W P F Y A H G T S

BbrPI (1100)
1101 CAGGTGTACTCTCAGCAGCTGGCTTTGTCTTTACAGTAAAAGGGACACTGTGCAAGTGTCTTCTGTGGCGAAGCTTGGGCAACTGGGAAGAAGGAGA
178▶ P R V L S A A G F V F T G K R D T V Q C F S C G G S L G N W E E G D

SphI (1215)
1201 TGACCCCTGGAAGGAGCATGCCAAGTGGTTCGCCAAATGTGAATTTCTCAAAGTAAGAAATCCTCAGAGGAAATTGCCAGTATATTCAAAGCTACGAG
211▶ D P W K E H A K W F P K C E F L Q S K K S S E E I A Q Y I Q S Y E

Tth11I (1381)
1301 GGATTTGTTTATGTAACGGGAGAACATTTTGTGAAGTCTGGGTCAGAAGAGAATTACCTATGGTATCAGCTTACTGCAATGACAGTGTCTTCGTAATG
245▶ G F V H V T G E H F V K S W V R R E L P M V S A Y C N D S V F A N

Tth11I (1498)
1401 AAGAACTAAGGATGGACATGTTTAAAGACTGGCCCAAGAATCACCTGTGGGTGTTGAAGCTCTAGTCAGAGCAGGCTTTTTCTACACTGGCAAAAAGGA
278▶ E E L R M D M F K D W P Q E S P V G V E A L V R A G F F Y T G K K D
1501 CATTGTCCGGTGTTTTTCTGTGGAGGATGTTTGGAAAAGTGGGCGAAGGTGACGACCAATGGAAGATCACATCAAGTTTTTCCGCAATGTGTATTT
311▶ I V R C F S C G G C L E K W A E G D D P M E D H I K F F P E C V F

BbrPI (1679) **NcoI (1692)**
1601 CTTCAAACCTTGAAGTCTCTGCAGAAGTAATCCAACCTTCAGAGCCAATATGCACTTCCAGAAGCCACGAAACACAGTGAAGCAACCATGGTG
345▶ L Q T L K S S A E V I P T L Q S Q Y A L P E A T E T T R E S N H G
1701 ATGCAGCAGCAGTTCATTCTACAGTGGTGGACTTGGGTAGGAGTGAAGCCAGTGGTTTCAAGAGGCCAGGAGTCTGAGTGAAGCACTAAGAGACAAC
378▶ D A A A V H S T V V D L G R S E A Q W F Q E A R S L S E Q L R D N Y
1801 CACTAAAGCCACTTTCGCCACATGAACCTGCCAGAAGTGTGCTCCAGCCTTGGCAGTACCAGTGTCTCAGTCCGATGTGTCCATTTCAAAGCAC
411▶ T K A T F R H M N L P E V C S S L G T D H L L S C D H L S C D V S I I S K H
1901 ATCAGCCAGCCTGTGCAAGAGGCCCTGACGATCCCGAGGCTTCTCCAATCTCAACTCTGTGATGTGTGGAGGGGAAACTGGCAGTGGAAAAGACAA
445▶ I S Q P V Q E A L T I P E V F S N L N S V M C V E G E T G S G K T

BsrGI (2051)
2001 CCTCCTGAAGAGATAGCTTTTCTGTGGCATCAGGATGCTGCCCTGTGTACAGTTCAGCTGGTCTTCTATCTCCTCTTAGTTCATCACACC
478▶ T F L K R I A F L W A S G C C P L L Y R F Q L V F Y L S L S S I T P

AvrII (2136)
2101 AGATCAGGGACTGGCCAACATCATCTGTGCCCACTCTAGGGGAGGAGGTTGCATTAGTGAAGTGTGTCTGAGCAGCAGTCCAGCAGTTACAACAC
511▶ D Q G L A N I I C A Q Q L G A G G C I S E V C L S S S I Q Q L Q H
2201 CAGGTGCTGTTCTGTTGGATGACTACAGTGGGCTGGCCTCACTCCCAAGCCCTACACACTGATTACAAAAAACTACTGTACAGGACCTGCTTAT
545▶ Q V L F L L D D Y S G L A S L P Q A L H T L I T K N Y L S R T C L

AvrII (2343) **XbaI (2355)**
2301 TGATCGCTGTGCATACAAACAGGGTCCAGAGACATCCGCCTATACCTAGGTACAAGTCTAGAGATCCAAGAGTTCCCTTCTATAATACTGTCTGTATT
578▶ L I A V H T N R V R D I R L Y L G T S L E I Q E F P F Y N T V S V L
2401 ACGGAAGTTTTTTCACATGACATAATCTGTGTGAAAAGCTTATAATTTACTTTATTGATAATAAAGATTTACAGGGAGTTTACAAGACCCCTCTCTTT
611▶ R K F F S H D I I C V E K L I I Y F I D N K D L Q G V Y K T P L F

NsiI (2531)
2501 GTAGCAGCAGTATGACTGACTGGATTCAAAATGCATGCCCCAGGATAAATTTCAAGATGTGACACTTTTCCAGTCTACATGCAATACCTGTCTCTAA
645▶ V A A V C T D W I Q N A S A Q D K F Q D V T L F Q S Y M Q Y L S L
2601 AATACAAAGCTACAGCTGAGCCTCTCCAGGCCACTGTGTCTCATGTGGGAGCTGGCCTTACAGGGGCTTTTCTCATCATGCTTTGAGTTCAATAGTGA
678▶ K Y K A T A E P L Q A T V S S C G Q L A L T G L F S S C F E F N S D

2701 TGACCTGGCAGAGGCAGGAGTTGATGAAGATGAAAAGCTTACCACCCTTTGATGAGCAAATTCACCGCCAGAGACTGAGACCAGTCTACCGGTTTTTA
711▶ D L A E A G V D E D E K L T T L L M S K F T A Q R L R P V Y R F L
AgeI (2789)
BglIII (2874)
BstXI (2871)
2801 GGTCTCTGTTCCAGGAGTTTCTTGCTGCCGTGAGGTTGACTGAACTCCTGAGTTCAGATAGGCAGGAAGACCAAGATCTGGACTTTATTATTTGAGAC
745▶ G P L F Q E F L A A V R L T E L L S S D R Q E D Q D L G L L Y Y L R
2901 AAATCGACTCACCCTGAAGGCAATAAACCCTTTAACATATTTTGTATTATGTCTCCAGCCACTCTCCTCAAAGGCAGCGCAACAGTTGTATCTCA
778▶ Q I D S P L K A I N S F N I F L Y Y V S S H S S S K A A P T V V S H
3001 TTTGCTTCAGTTGGTGGATGAGAAAGATCACTGGAGAACATGCTGAAAATGAGGATTACATGAAGTCCATCCACAACTTTTCTATGGTTTCAGTTT
811▶ L L Q L V D E K E S L E N M S E N E D Y M K L H P Q T F L W F Q F
3101 GTTAGAGGGTTGTGGCTGGTGTCTCCTGAATCTTCTTTCATTCTGTTTCAGAACATTTATTCGCCTTGTCTAATCTTTGCTTATGAAAGCAACACAG
845▶ V R G L W L V S P E S S S S F V S E H L L R L A L I F A Y E S N T
ScaI (3258) ScaI (3272)
3201 TTGCTGAATGCTCTCCATTTATTTTGAATTCCTTCGAGGAAAAACACTGGCTTTAAGAGTACTGAATTTACAGTACTTTAGGGACCACCCAGAAAGCCT
878▶ V A E C S P F I L Q F L R G K T L A L R V L N L Q Y F R D H P E S L
3301 GTTACTGTTGAGGAGCTTAAAGGTTTCCATAAAATGAAATAAAATGTCATCTTATGTAGATTATTCATTCAAGACATATTTTAAAACTTACAGCCACCA
911▶ L L L R S L K V S I N G N K M S S Y V D Y S F K T Y F E N L Q P P
Bst1107I (3414)
3401 GCTATAGATGAGGAGTATACATCTGCCTTTGAGCATATAAGTGAATGGAGGAGAAATTTTGTCTCAAGATGAGGAGATCATAAAAACTATGAAAAATCC
945▶ A I D E E Y T S A F E H I S E W R R N F A Q D E E I I K N Y E N I
3501 GACCCAGCCCTACCAGACATCAGTGAAGGTTACTGAAACTGTCCCAAGCCATGCAAGATCCCAAGCTGGAAGTTCAAGTGAACAACACGGATGC
978▶ R P R A L P D I S E G Y W K L S P K P C K I P K L E V Q V N N T D A
3601 AGCAGATCAAGCACTGCTCCAGGCTCCTCATGGAAGTCTTCTCAGCTTACAGAGTATTGAGTTCGTTTATTCAACAGCAGTGGCTTCTTGAAGCATC
1011▶ A D Q A L L Q V L M E V F S A S Q S I E F R L F N S S G F L E S I
StuI (3722) XcmI (3743)
3701 TGCCAGCTCTGGAGCTGAGTAAGGCCTCTGTCCCAAGTGTTCATGTCCAGCTGGAGCTCAGCAGAGCAGAACAGGAGCTGTTTCTACCCTGCCTG
1045▶ C P A L E L S K A S V T K C S M S R L E L S R A E Q E L L L T L P
XhoI (3811)
3801 CCCTGCAGTCTCTCGAGGTTCTCAGAGACAAACCAGTTACCAGAACAGCTTCCATAACTTGCACAAGTTCCTGGGCCTGAAAGAACTGTGTGTGAGACT
1078▶ A L Q S L E V S E T N Q L P E Q L F H N L H K F L G L K E L C V R L
3901 AGATGGCAAACCGAATGCTCTCAGTCCCTCAGTCTAGAGAGTTCCTCAAACTCCTTACATGGAGAAGTTATCCATCCAAACCTCCACGGAGCTGACCTC
1111▶ D G K P N V L S V L P R E F P N L L H M E K L S I Q T S T E S D L
SpeI (4005)
4001 TCCAAACTAGTTAAATTCATCCAGAACTTTCCAAATCTCCATGTTTTCCATCTGAAATGTGATTTCTTTCAAATTTGTGAGTCTCTCATGGCTGTGCTTG
1145▶ S K L V K F I Q N F P N L H V F H L K C D F L S N C E S L M A V L
PshAI (4155)
4101 CTTCTGCAAGAAACTCAGAGAGATTGAGTTTTCTGGACGATGCTTTGAGCCATGACCTTTGTCAACATTTTGC AAATTTTGTCTCTGAGATACT
1178▶ A S C K K L R E I E F S G R C F E A M T F V N I L P N F V S L K I L
4201 GAATCTTAAAGATCAACAATTTCCAGATAAGGAAACGTGAGAAAGTTTGGCCAGGCTCTGGGTTCTCTCAGGAACCTGGAGGAACTGCTCGTCCCCT
1211▶ N L K D Q Q F P D K E T S E K F A Q A L G S L R N L E E L L V P T
BstAPI (4338)
4301 GGGACGGGATTCACCAAGTGGCCAAACTGATTGTCCGGCAGTGTCTGCAGCTTCCGTGCTCCGAGTCTCACCTTTACGACATCTTGAGCAGTAC
1245▶ G D G I H Q V A K L I V R Q C L Q L P C L R V L T F H D I L D D D
4401 GTGTGATTGAAATGGCAGGGCGCAACCTGAGGTTTCCAGAACTTGAAGAATTTAGATATTTCCATGAATCACAAGATTACCGAGGAAGGATATAG
1278▶ S V I E I A R A A T S G F Q K L E N L D I S M N H K I T E E G Y R
4501 AAATTTCTTTCAAGCCCTGGACAACCTGCCAAACCTACAAGAGCTGAACATCTGCAGGAATATCCAGGACGCATTCAAGTTCAGGCCACCACTGTCAAG
1311▶ N F F Q A L D N L P N L Q E L N I C R N I P G R I Q V Q A T T V K
AseI (4687)
4601 GCTCTGGTCAATGTGTGTCCGACTGCCAGCCTCATCAGACTGCATGCTCAGTTGGCTCCTGGATGAAGAGGACATGAAAGTGATTAATGATGTGA
1345▶ A L G Q C V S R L P S L I R L H M L S W L L D E E D M K V I N D V
4701 AGGAAAGACATCCCAGTCTAAACGCTTGAATATCTTCTGAAATTTGATAGTCCCATTCTCTCTGTTATCCTGGAGTAAAGGATGCTCCTGAAGACTAC
1378▶ K E R H P Q S K R L I I F W K L I V P F S P V I L E •
NheI (4810)
4801 TGACAGTTCAGCTAGCTGCATGATAAGATACATTGATGAGTTTGGACAAACCAACTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTG
HpaI (4973) MfeI (4984)
4901 ATGCTATTGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAAACAAGTTAAACAACAACAATTGCATTCATTTT
EcoRI (5069)
5001 ATGTTTCAGGTTCCAGGGGAGGTGTGGGAGTTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGAATTCTAAATACAGCATAGCAAACTTTA
5101 ACCTCAAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCA
5201 CCTCTTTTCTGAGTTTAAAGATATAGTATTTTCCAAAGTGTGAACTAGCTTCTCATTCTTTATGTTTTAAATGCACTGACCTCCACATTCCCTT
SspI (5308) SmaI (5322)
5301 TTTAGTAAATATTCAGAAATAATTTAAATACATCATTGCAATGAAAAATAATGTTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATC
5401 CCCAGTTTAGTAGTTGACTTAGGGAACAAAGGAACCTTTAATAGAAATTTGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCCTGGTGTACTTGAGG
141▶ • N R T Y K L
5501 GGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCATTCTCAATGAGCACAAGCAGTCAAGGAGCATAGTCAAGATGAGCTCTCTGCATGC
133▶ 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 M G
BstXI (5612)
5601 CACAGGGGCTGACCACCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCGTTGCTCACAGC
100▶ 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 O G N S V A

5701 AGACCCAATGGCAATGGCTTCAGCACAGACAGTGACCCTGCCAATGTAGGCCTCAATGTGGACAGCAGAGATGATCTCCCAAGTCTTGGTCCTGATGGCC
67 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 A **StuI (5747)**

5801 GCCCGACATGGTGTCTTGTCTCATAGAGCATGGTATCTTCTCAGTGGCGACCTCCACCAGCTCCAGATCTGCTGAGAGATGTTGAAGTCTTCA
33 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 K M **BspHI (5897)**

5901 TGATGGCCCTCTATAGTGAGTCGTATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACAGCGTGGATGGCGTCTCCAGCTATCTGAC
0 **AseI (5955)**

6001 GGTTCACTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCCTACCGCCATTTGCGTCAATGGGGCGGAGTTGTTACGACATTTTGAAAGTC

6101 CCGTTGATTTACTAGTCAAACAACTCCCATTTGACGTCAATGGGGTGGAGACTTGAAATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTAC
SpeI (6110)

6201 TGCCAAAACCGCATCATCATGGTAATAGCGATGACTAATCGTAGATGTACTGCCAAGTAGGAAAGTCCATAAGGTCATGTACTGGGCATAATGCCAGG
SnaBI (6238)

6301 CGGCCATTTACCGTCATTGACGTCAATAGGGGGCTACTTGGCATATGATACACTTGTACTGCTCAAGTGGGCAGTTTACCGTAAATACTCCACCCA
NdeI (6343)

6401 TTGACGTCAATGGAAAGTCCTATTGGCGTTACTATGGGAACATACGTCAATTATTGACGTCAATGGGGGGGGTCTTGGGCGGTGAGCCAGGCGGGCCA

6501 TTTACCGTAAGTTATGTAACGCCCTGCAGGTTAAATAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGCCGCGTTGCTGGCGTT
SdaI (6521) **PacI (6529)**

6601 TTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCC

6701 CCTGGAAGCTCCCTCGTGCCTCTCTGTTCGGACCTGCCGCTTACCGGATACTGTCCGCCTTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCT

6801 CACGCTGTAGGTATCTCAGTTCCGGTGTAGGTGCTTCGCTCCAAGCTGGGCTGTGTCACGAACCCCGTTTACGCCCAGCCGCTGCGCCTTATCCGGTAA
ApaLI (6853)

6901 CTATCGTCTTGTAGTCCAACCCGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACA

7001 GAGTCTTGAAGTGGTGGCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGAAAAAGAGTTGGTA

7101 GCTCTTGATCCGGCAAACAACCCGCTGGTAGCGGTGTTTTTTTTGTTTGAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTT

7201 GATCTTTTCTACGGGTCTGACGCTCAGTGAACGAAACTCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATCAGCGGCCGAATA
EagI (7289) **PacI (7269)** **Swal (7278)** **NotI (7288)**

7301 AAATATCTTTATTTTATTACATCTGTGTGTTGGTTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAAACAAAACGAAACAAAACAACTAGC

7401 AAAATAGGCTGTCCCCAGTGCAAGTGCAGGTGCCAGAACATTTCTCTATCGAA