



PvuI (7) SgfI (6) MfeI (82) EcoNI (96)  
1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA  
101 GAGAAGGTGGCGGGGTAAGTGGAAAGTGATGTCGTGTAAGTGGTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

HindIII (245) Bsu36I (291)  
Psp1406I (203) PvuII (239) EcoNI (287)  
201 GTGAACGTTCTTTTTCGCAACGGGTTTGGCCGAGAACACAGCTGAAGCTTCGAGGGGCTCGCATCTCTCTTACCGCGCCCGCCCTACCTGAGGCC  
301 GCCATCCACGCGGTTGAGTGCAGTCTGCCGCTCCCGCCTGTGGTGCCTCTGAAGTGCCTCCGCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

NgoMIV (441)  
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCAACTCTACGCTTTTGTTCGTTT

NcoI (560) BstEII (555) AgeI (552)  
501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGGGCCCTACCTGAGATCACCGGTACCATTGGCTGTCAGCGACGCGTGTCCCATCTTTCTCCAC  
601 GTTCGCGTCTGGCCGGCGGAAGGAGAAGACTGCGTCAAGCAGGTGCCCGAATAACCGCTGGCGGAGGAGCTCCACATGAAGCGACTTCC  
13▶ F A S G P A G R E K T L R Q A G A P N N R W R E E L S H M K R L P  
701 CCAGTCTTCCCGCCGCCCTATGACCTGGCGGCGGACCGTGGCCACAGACTGGAGAGCGGCGGAGCCGTTGCGGCTTGGCGGTTAGCAACTGG  
47▶ P V L P G R P Y D L A A A T V A T D L E S G G A G A A C G G S N L

BspEI (882)  
801 CGCCCTACCTCGGAGAGACCGAGGAGTTCAACGATCTCCTGGACCTGACTTTATTCTCTCAATTGCTGACCCATCTCCGGAGTCAGTGGCCG  
80▶ A P L P R R E T E E F N D L L D L D F I L S N S L T H P P E S V A A

BssHII (962) PstI (975)  
901 CACCGTGTCTCGTACGCTCAGCCTCTCTTCTGTCGTCGCGCTCGAGCAGCGGCCCTGCCAGCGCCCTCCACTGACGTTACCTATCCGATCCGG  
113▶ T V S S S A S A S S S S S S S G P A S A P S T C S F T Y P I R

XmaI (1011) StuI (1041)  
1001 GCCGGAAACGACCCGGCGTGGCGCCGGCGGACGGCGGAGGCTCCTCTATGGCAGGGAGTCCGCTCCCTCCGACGGCTCCCTTCAACTGGCGG  
147▶ A G N D P G V A P G G T G G G L L Y G R E S A P P P T A P F N L A

BsrGI (1166)  
1101 ACATCAACGACGTGAGCCCTCGGGCGCTTCTGTCGCGAGCTCTGCGGCCAGAATTGGACCGGTGACATTCCGCGCAGCAGCCGAGCCGCCAGG  
180▶ D I N D V S P S G G F V A E L L R P E L D P V Y I P P Q Q P Q P P G  
1201 TGGCGGGCTGATGGCAAGTTCTGTCGTAAGGGCTCGTGAAGCGCCCTGGCAGCGAGTACGGCAGCCGTCGGTTCATCAGCGTCAGCAAAGGACGCCCT  
213▶ G G L M G K F V L K A S L S A P G S E Y G S P S V I S V S K G S P

XcmI (1392)  
DraIII (1309) BbrPI (1350) ApaLI (1386)  
1301 GACGGCAGCCACCCGGTGGTGGTGGCGCCCTACAACGGCGGGCGCCGCGCACGTGCCCAAGATCAAGCAGGAGGGGCTCTCTTCTGTCACCCACTTGG  
247▶ D G S H P V V V A P Y N G G P P R T C P K I K Q E A V S S C T H L

NgoMIV (1431)  
1401 GCGCTGACCCCTCTCAGCAATGGCCACCGCGGCTGCACACGACTTCCCTGGGGCGGAGCTCCCGCAGGACTACCCGACCTGGGTCTTGA  
280▶ G A G P P L S N G H R P A A H D F P L G R Q L P S R T T P T L G L E

Bsp120I (1567) EcoO109I (1566) XmaI (1563)  
1501 GGAAGTGTGAGCAGCAGGGACTGTACCCCTGCCCTGCCGTTCTCCCGGTTCCATCCCAACCCGGGGCCCAATTACCCATCTTCTGCTGATCAG  
313▶ E V L S S R D C H P A L P L P P G F H P H P G P N Y P S F L P D Q

SphI (1655) PvuI (1690)  
1601 ATGCAGCCGCAAGTCCCGCGCTCCATTACCAAGAGCTCATGCCACCCGTTCTGTCATGCCAGAGAGCCCAAGCCAAAGAGGGGAAGCAGTCTGGCC  
347▶ M Q P Q V P P L H Y Q E L M P P G S C M P E E P K P K R G R R S W  
1701 CCCGAAAAGGACCGCCACCCACTTGTGATTACGGGGCTGCGGCAAAACCTACACAAAGAGTTCCCATCTCAAGGCACACCTGCAACCCACACAGG  
380▶ P R K R T A T H T C D Y A G C G K T Y T K S S H L K A H L R T H T G  
1801 TGAGAAACCTTACCCTGTGACTGGGACGGCTGTGGATGGAATTCGCCCGCTCAGATGAACTGACGAGGACTACCGTAAACACAGGGGCACCGCCG  
413▶ E K P Y H C D W D G C G W K F A R S D E L T R H Y R K H T G H R P  
1901 TTCCAGTGCCAAAATGCGACCGAGCATTTCCAGTGGACCACTCGCCTTACACATGAAGAGGCATTTTTAAATCCAGACAGTGGATGACCCAC  
447▶ F Q C Q K C D R A F S R S D H L A L H M K R H F •

NheI (2007)  
2001 ACTGCCAGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGT

HpaI (2145) MfeI (2156)  
2101 GATGCTATTGCTTTATTTGTAACCATTATAAGTGAATAAACAAGTTAAACAACAACAATTGCATTATTTATGTTTCAGGTTACAGGGGAGGTGTGGG

EcoRI (2241)  
2201 AGGTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGAATTCTAAAATACAGCATAGCAAACCTTAAACCTCAAATCAAGCCTCTACTTGAATC  
2301 CTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTTGGCAATGTGCATTAGCTTTTGCAGCCTCACCTTCTTTCATGGAGTTAAGATATAGT

SspI (2480) SmaI (2494)  
2401 GTATTTTCCCAAGGTTTGAAGTACTCTTCATTCTTTATGTTTTAAATGCACTGACCTCCACATTCCTTTTGTAGTAAAATATTCAGAAAATTTAA

2501 ATACATCATTGCAATGAAAATAAATGTTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAA

2601 CAAAGGAACCTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTTCCTGGTACTTGAGGGGGATGAGTTCCTCAATGGTGGTTTTGA  
 141 • N R T Y K L P I L E E I T T K V

2701 CCAGTTGCCATTTCATCTCAATGAGCACAAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTGCACATGCCACAGGGGCTGACCACCTGATGGATCT  
 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

2801 GTCCACCTCATCAGAGTAGGGGTGCCTGACAGCCAAATGGTGTCAAAGTCTTCTGCCGTTGCTCACAGCAGACCCAATGGCAATGGCTTCAGCACAG  
 91 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

StuI (2919)

2901 ACAGTGACCTGCCAATGTAGGCCTCAATGTGGACAGCAGAGATGATCTCCCCAGTCTTGGTCTGATGGCCGCCCGACATGGTGTGTTGTCCTCAT  
 57 V 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 (3069)

XmnI (3061)

3001 AGAGCATGGTATCTTCTCAGTGGCGACCTCCACCAGCTCCAGATCCTGCTGAGAGATGTTGAAGGTCTTCATGATGGCCCTCTATAGTGAGTCGTATT  
 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

AseI (3127)

3101 ATACTATGCCGATATACTATGCCGATGATTAATTGTCAAAACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTCACTAAACGAGCTCTGCTTATATA

SpeI (3282)

3201 GACCTCCCACCGTACACGCCTACGCCCATTTGCGTCAATGGGGCGGAGTTGTTACGACATTTTGAAAGTCCCGTTGATTTACTAGTCAAAAACAACTC

3301 CCATTGACGTCAATGGGGTGAGACTTGAAATCCCCGTGAGTCAAACCCTATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATGGTAATAG

SnaBI (3410)

3401 CGATGACTAATACGTAGATGTACTGCCAAGTAGGAAAGTCCATAAGGTCATGTACTGGGCATAATGCCAGGCGGGCCATTTACCGTCATTGACGTCAAT

NdeI (3515)

3501 AGGGGGCGTACTTGGCATATGATACACTTGATGTACTGCCAAGTGGGCAGTTTACCGTAAATACTCCACCCATTGACGTCAATGGAAAGTCCCTATTGGC

PstI (3694)

SdaI (3693)

3601 GTTACTATGGAAACATACGTCATTATTGACGTCAATGGGGGGGGTCTGTTGGCGGTACGCCAGGCGGGCCATTTACCGTAAAGTTATGTAACGCTGCGAG

PacI (3701)

BspLU11I (3711)

3701 GTTAATTAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCTTCTGCGGTTTTTCCATAGGCTCCGCCCCCTGACGAG

3801 CATCAGAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTTCCCTGGAAGTCCCTCGTGCCTCTCCTG

3901 TTCCGACCCTGCCGTTACCGGATACCTGTCCGCTTTCTCCCTCGGAAAGCGTGGCGTTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTGA

ApaLI (4025)

4001 GGTGTTGCTCCAAGCTGGGCTGTGTGACGAACCCCCGTTAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAAGTCCAACCCGGTAAGA

4101 CACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTCTTGAAGTGGTGCCTAACTACG

4201 GCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGC

4301 TGGTAGCGGTGTTTTTTTTGTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAG

PacI (4441) SwaI (4450) NotI (4460)

4401 TGGACGAAAACCTACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATCAGCGGCCAATAAAATATCTTTATTTTATTACATCTGTG

4501 TGTTGGTTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAAACAAAACGAAACAAAACAACTAGCAAATAGGCTGTCCCCAGTGCAAGTGCA

4601 GGTGCCAGAACATTTCTCTATCGAA