



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

Psp1406I (203) HindIII (245) Bsu36I (291) EcoNI (287)
201 GTGAACGTTCTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTACACGCGCCGCCGCCCTACCTGAGGCC
301 GCCATCCACGCGGTTGAGTGCAGTCTGCCGCTCCCGCCTGTGGTGCCTCTGAACTGCGTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

NgoMIV (441)
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCTAACTCTACGCTTTTGTTCGTTT

NcoI (560) BstEII (555) BssHII (598)
501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGGGCGCTACCTGAGATCACCGGTACCATTGGACTCACTTTTGGGTGTGGTGTCACTGCGCGTGC
1 M D S L L G C G V S A A A

SacII (613) XmaI (635)
601 GCGCGAGCCGGTCCGCGGTAAGTAACTTCGCAGCCCCGGGTGTGGAGGTAGCCATGCAGAGCGCACCTTGGAGCAGCCAGCTAAGCGACCCCGCTGC
13 R E P V P R Y L T S Q P R V S E V A M Q S A P L E Q P A K R P R C

PstI (752)
701 GATGGCAGCCCAAGGACGCCACCGAGCACTCCTCTGCAACAGCTAATCTGTGTCAGACGACTTCCAAAACACCGACTCCGAACCTGGGAACCGG
47 D G S P R T P P S T P P A T A N L S A D D D F Q N T D L R T W E P

NgoMIV (877)
801 AGGACGTGTGCTCCTTCTTAGAGAATCGTGGTTTCCGAGAGAAGAAAGTGTGGACATCTTCAGAGACAATAAAATCGCCGGCTCGTTTCTGCCCTTTT
80 E D V C S F L E N R G F R E K K V L D I F R D N K I A G S F L P F L

BsaBI (901) BglIII (918)
901 GGATGAGGATCGTCTGGAAGATCTGGGAGTAAGTCTTGGAGGAGAGGAAGAAGATGATAGAATGTATCCAGCAGCTGAGTCAGTCTCGATTGATCTA
113 D E D R L E D L G V S S L E E R K K M I E C I Q Q L S Q S R I D L

MscI (1026)
1001 ATGAAGGTATTTAATGATCCATTGATGCCACATTGAGTTCACCCTCTCCTTATCAGAATCATCGACACACCTCAGTTCAGCGACTTCGCTATATCA
147 M K V F N D P I H G H I E F H P L L I R I I D T P Q F Q R L R Y I

BstBI (1150) Acc65I (1172)
1101 AGCAGCTGGGGGGCGGCTACTATGTTTTCCCTGGAGCGTCCCAACATCGCTTCGAACACAGTCTCGGAGTGGGGTACCTAGCAGGCTCGCTGGTGCAGC
180 K Q L G G G Y Y V F P G A S H N R F E H S L G V G Y L A G C L V R A

AvrII (1278) PshAI (1276)
1201 ACTTGCCGAAAAACAGCCAGAGCTACAGATCAGTGAGCGAGATATACTCTGTGTTTCAGATTGCGGGGCTGCGCACGACTAGGTCATGGGCCATTTTCT
213 L A E K Q P E L Q I S E R D I L C V Q I A G L C H D L G H G P F S

NdeI (1300) XcmI (1336)
1301 CATATGTTTGATGGAAGTTTATCCACGGGCTCGCCAGAGAAAAAGTGAAGCAGCAACAGGGCTCCATTGAGATGTTTGAGCATCTGGTCAATTCTA
247 H M F D G R F I P R A R P E K K W K H E Q G S I E M F E H L V N S

BspHI (1415)
1401 ATGAACCTCAAACCTGTGATGAAGAACTATGGTCTCGTCCCTGAAGAAGACATTACCTTTATCAAGGAACAAATTATGGGACCACCTATAACACAGTCAA
280 N E L K L V M K N Y G L V P E E D I T F I K E Q I M G P P I T P V K

1501 AGATTCCTGTGGCCGTATAAAGCCGCCCTGCCACGAAGAGCTTCTTTACGAGATAGTGTCTAACAAAGAGGAATGGCATCGACGTAGACAAATGGGAT
313 D S L W P Y K G R P A T K S F L Y E I V S N K R N G I D V D K W D

Eco47III (1652) AfeI (1652)
1601 TATTTTCCAGAGACTGTACCATCTTGAATCCAAAATAATTTTATTACAAGCGCTTCATTAAGTTTGCCTGATCTGTGAAGTGGAGTACAAGGTCA
347 Y F A R D C H H L G I Q N N F D Y K R F I K F A R I C E V E Y K V

BspLU11I (1772)
1701 AGGAGACAAGACCTACATCCGTAAGTGAAGCACATTTGTTTCGAGAGAAAAGGAGTTGGAATCTGTATGACATGTTCCACACTCGCAACTGCTTACA
380 K E D K T Y I R K V K H I C S R E K E V G N L Y D M F H T R N C L H

1801 CCGAAGAGCTTACCAACACAAGATCAGCAACCTCATCGACATAATGATTACAGATGCCTTCTCAAAGCAGACCCCTACGTGGAGATTACAGGGACTGCC
413 R R A Y Q H K I S N L I D I M I T D A F L K A D P Y V E I T G T A

XcmI (1925)
1901 GGAAGAAGTTCCGATTTCCACAGCCATTGATGACATGGAAGCCTTCACTAAGTTGACGGATAACATTTTTCTGGAGTTTTACTCTACTGATCCAC
447 G K K F R I S T A I D D M E A F T K L T D N I F L E V L H S T D P

2001 AGTTGCTGAGGCCCAAAGTATTTAAGGAACATTGAATGCCGAATCTATACAAGTATTTGGGTGAGACCCAGCCAAAGCGTGAAGAATTAGGAAGGA
480 Q L S E A Q S I L R N I E C R N L Y K Y L G E T Q P K R E K I R K E

2101 AGAATATGAACGGCTTCCCAAGAAGTTGCTAAAGCCTGAAAGCCCGGATGTTGAACTGAAGGCCGAAGATTTATAGTTGATGTTATCAAT
513 E Y E R L P Q E V A K A K P E K A P D V E L K A E D F I V D V I N

PvuI (2232) ClaI (2230)
2201 GTGGATTATGGGATGGAAGACAAGAATCCAATCGATCGTTCCTTCTATTGTAAGAGCAACAGCAAGCGGTGAGGATCAATAAAGAGCAGGTGT
547 V D Y G M E D K N P I D R V H F Y C K S N S K Q A V R I N K E Q V

2301 CACAACCTGCTCCAGAGAAAATTTGCAGAGCAGCTCATTCCGGTGTACTGTAAGAAGAAAAGCAGGGAAGAGCCTGGACGCCCGGGAAGCACTTTGTTCA
580 S Q L L P E K F A E Q L I R V Y C K K K D G K S L D A A G K H F V Q

Eco109I (2459)
2401 GTGGTGTGCGCTCAGGGACTTCACCAAGCCACAGCAATGTGGGCTGGAGAGATGGCTGAGGACCCTGATTCAATTCCAGCACCAGCAGCCACATGCG
613 W C A L R D F T K P Q Q C G A G E M A E D P D S I P S T Q Q P H A

MscI (2549)

2501 GCTCACACCAGCTGTAACCTCCAGTTCCAGAGGATCTGATGCCGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACACTAGA
647▶ A H N Q L •

NheI (2543)

HpaI (2681) MfeI (2692)

2601 ATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACCAAGTTAACCAACAACCAATTGCA

EcoRI (2777)

2701 TTCATTTTATGTTTCAGGTTTCAGGGGGAGGTGTGGGAGGTTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGAATTCATAAATACAGCATAGCA

2801 AAACCTTAACCTCCTCAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTG

2901 CAGCCTCACCTTCTTTCATGAGGTTAAGATATAGTGATTTTTCCAAGGTTTGAAGTCTCTTCTTTATGTTTAAATGCACTGACCTCCAC

SspI (3016) SwaI (3030) EcoO109I (3091)

3001 ATTCCCTTTTATAGTAAATATTCAGAAATAATTTAAATACATCATTGCAATGAAAATAAATGTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTC

3101 ATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGAACCTTAAATAGAAATTTGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCCTGGTGT
141◀ • N R T Y

SacI (3291)

3201 ACTTGAGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTCCATTCTCAATGAGCACAAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTCT
136◀ K 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

BstXI (3320)

3301 GCACATGCCACAGGGGCTGACCACCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCCGTTG
103◀ C 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

StuI (3455)

3401 CTCACAGCAGACCAATGGCAATGGCTTCCAGCAGACAGTACCCTGCAATGTAGGCTCAATGTGGACAGCAGAGATGATCTCCCAAGTCTTGGTCC
69◀ S 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

3501 TGATGGCCGCCCCGACATGGTGTCTGTTGCTCATAGAGCATGGTATCTTCTCAGTGGCGACTCCACCAGCTCCAGATCCTGCTGAGAGATGTTGAA
36◀ I 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

AseI (3663)

3601 GGTCTTCATGGTGGCCCTCTATAGTGAGTCGTATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACAGCGTGGATGGCGTCTCCAGC T
3◀ T K M

SacI (3720)

3701 TATCTGACGGTTCACATAACGAGCTCTGTTATATAGACCTCCACCCTACACGCCTACCGCCATTTGCGTCAATGGGCGGAGTTGTTACGACATTTT

SpeI (3818)

3801 GGAAAGTCCCGTTGATTTACTAGTCAAAAACAACTCCATTGACGTCAATGGGTGGAGACTTGAAATCCCGTGAGTCAAACCGCTATCCAGGCCCA

SnaBI (3946)

3900 TTGATGTAAGTCCAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGTAAGTCCCAAGTGGAAAGTCCCATAGGTCATGTAAGTGGGAT

NdeI (4051)

4000 AATGCCAGGCGGGCCATTTACCGTCAATGACGTCAATAGGGGGCTACTTGGCATATGATACACTTGTACTGCAAGTGGGAGTTTACCGTAAATA

4100 CTCCACCCATTGACGTCAATGAAAGTCCCTATTGGCGTACTATGGGAACATACGTCAATATTGACGTCAATGGGCGGGGCTGTTGGGCGTCAAGCA

PstI (4230) SdaI (4229) PacI (4237) BspLU11I (4247)

4200 GGGCGGCCATTTACCGTAAGTTATGTAACGCTG 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 A A A A G G C C A G A A C C G T A A A A A G G C C G C G
4298 TTGCTGGCGTTTTTCCATAGGCTCCGCCCTGACGAGCATCAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACC

4398 AGGCCTTTCCCTGGAAGCTCCCTCGTGCCTCTCTGTTCCGACCCTGCCGTTACCGGATACCTGTCCGCTTTTCTCCCTTCGGGAAGCGTGGCGCT

ApaLI (4561)

4498 TTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCGTTCAGCCCGACCGCTGCGCC

4598 TTATCCGGTAACTATCGTCTTGTGCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGTAACAGGATTAGCAGAGCGAGGTATGTAG

4698 GCGGTGTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAA

4798 AAGAGTTGGTAGCTCTTGATCCGGCAACAAACACCGCTGGTAGCGGTGTTTTTTTTGTTTGAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAA

PacI (4977) SwaI (4986) NotI (4996)

4898 GAAGATCCTTTGATCTTTTCTACGGGTCTGACGCTCAGTGGAACGAAAACCTCACGTTAAGGGATTTTGGTCAATGGCTAGTTAATTAACATTTAAATC AG

EagI (4997)

4998 CGGCCGCAATAAAATATCTTTATTTTTCATTACATCTGTGTGTTGGTTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAAAACAAACGAAACAA

5098 AACAAACTAGCAAAATAGGCTGTCCCAGTGCAAGTGCAGGTGCCAGAACATTTCTCTATCGAA