



PvuI (7)
SgfI (6) **MfeI (82)**
1 GGATCTGCATCGCTCCGGTGCCCGTCAGTGGGCAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA
101 GAGAAAGTGGCGCGGGTAAACTGGAAAGTGATGTCGTGTAAGTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

HindIII (245)
Psp1406I (203) **PvuII (239)** **Bsu36I (291)**
201 GTGAACGTTCTTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGGCTCGCATCTCTCTTACAGCGCCCGCCGCCCTACCTGAGGCC
301 GCCATCCACGCGGTTGAGTGCAGTCTGCCGCTCCCGCCTGTGGTGCCTCCTGAAGTGCCTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

NgoMIV (441)
401 GGGCCTTTGTCCGGCGCTCCCTTGGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTCCTGACCCGCTGTTGCTCAACTCTACGCTTTGTTTCGTTT

KasI (535) **AgeI (552)** **BspHI (560)** **NgoMIV (567)**
501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGCGCCCTACCTGAGATCACCGGTCATCATGAAGCCGGCGGCGGGAGGCGGGCTGCCTCCGCG
1 M K P A A R E A R L P P R

XmaI (604) **SrfI (603)** **FspI (664)**
601 CTCGCCCGGGCTGCGCTGGGCGCTGCCGCTGCTGCTGCTGCTGCTGCTGCGCCTGGCCAGATCCTGTGCGCAGGTGGCACCCCTAGTCCAATTCCTGACCCT
13 S P G L R W A L P L L L L L L R L G Q I L C A G G T P S P I P D P
701 TCAGTAGCAACTGTTGCCACAGGGAAAATGGCATAACGCAGATCAGCAGTACAGCAGAATCCTTTCATAAACAGAATGGAAGTGAACACCTCAGGTGG
47 S V A T V A T G E N G I T Q I S S T A E S F H K Q N G T G T P Q V
801 AACAAACACCAGTGAGGATGGTAAAGCTCTGGAGCCAACGATAGTTTAAAGAACCTGAACAAGGATCTAATGGGACTGATGGGCATCTCAAAAAAC
80 E T N T S E D G E S S G A N D S L R T P E Q G S N G T D G A S Q K T
901 TCCCAGTAGCACTGGCCAGTCCCTGTGTTGACATTAAGCTGTTTCCATCAGTCCAACCAATGTGATCTTAACTTGGAAAAGTAAATGACACAGCTGCT
113 P S S T G G P S P V F D I K A V S I S P T N V I L T W K S N D T A A
BbsI (1041) **NcoI (1066)**
1001 TCTGAGTACAAGTATGTAGTAAAGCATAAGATGGAAAAATGAGAAGACAATTACTGTTGTGCATCAACCATGGTGAACATCACAGGCTTACGTCCAGCGA
147 S E Y K Y V V K H K M E N E K T I T V V H Q P W C N I T G L R P A
NdeI (1103)
1101 CTTCATATGTATTCTCCATCACTCCAGGAATAGGCAATGAGACTTGGGGAGATCCCAGAGTCATAAAAGTCATCACAGAGCCGATCCCAGTTTCTGATCT
180 T S Y V F S I T P G I G N E T W G D P R V I K V I T E P I P V S D L
1201 CCGTGTGGCCCTACGGGTGTGAGGAAGGCTGCTCTCCTGGAGCAATGGCAATGGCTGCTCCTGCCGGGTTCTTCTTGAAGCATTGGAAGCCAT
213 R V A L T G V R K A A L S W S N G N T A S C R V L L E S I G S H
1301 GAGGAGTACTCAAGACTCAAGACTTCAAGTCAATATCTCGGGCCTGAAGCCAGGGTTCAATAACAACATCAACCCGTATCTTCTCAATCAATAAGA
247 E E L T Q D S R L Q V N I S G L K P G V Q Y N I N P Y L L Q S N K
1401 CAAAGGGAGACCCCTTGGGCACAGAAGGTGGCTTGGATGCCAGCAATACAGAGAGAAGCCGGGAGGGAGCCACCCGCCCTGTGCATGATGAGTCCCT
280 T K G D P L G T E G G L D A S N T E R S R A G S P T A P V H D E S L
1501 CGTGGGACCTGTGGACCCATCCTCCGGCCAGCAGTCCCAGACACGGAAGTCTGCTTGTGCGGTTAGAGCCTGGCACCCGATACAATGCCACCGTTTAT
313 V G P V D P S S G Q Q S R D T E V L L V G L E P G T R Y N A T V Y
XemI (1602)
1601 TCCCAAGCAGCGAATGGCACAGAAGGACAGCCCGAGCCATAGAGTTCAGGACAAATGCATTCAGGTTTTGACGTCACCCGCTGTGAACATCAGTGCCA
347 S Q A A N G T E G Q P Q A I E F R T N A I Q V F D V T A V N I S A
BspLU11I (1764)
1701 CAAGCCTGACCCTGATCTGGAAAGTCAAGGATAACGAGTGCATCTAACTATACCTACAAGATACATGTGGCGGGGAGACAGATTCTTCCAATCTCAA
380 T S L T L I W K V S D N E S S S N Y T Y K I H V A G E T D S S N L N
BsrBI (1833) **DraIII (1857)** **AvrII (1872)**
1801 CGTCAGTGAAGCTCGCGCTGCATCCCCGGACTCCGCTCCAGCACCTTCTACAACATCACAGTGTGCTCTGCTAGTGCATCGAGGGCAGCCGGGC
413 V S E P R A V I P G L R S S T F Y N I T V C P V L G D I E G T P G
ApaLI (1909) **PshAI (1947)**
1901 TTCCTCAAAGTGCACACCCCTGTTCCAGTTTCTGACTTCCGAGTGCAGTGGTGCAGCAGCAGGAGATCGGCTTAGCATGGAGCAGCCATGATGCAG
447 F L Q V H T P P V P V S D F R V T V V S T T E I G L A W S S H D A
NsiI (2011)
BsaBI (2010)
2001 AATCATTTTCAAGTGCATATCACACAGGAGGAGCTGGCAATTCTCGGGTGAAGAAATAACCAACCAACAAAGTATTATCATTGGTGGCTTGTCCCTGGAAC
480 E S F Q M H I T Q E G A G N S R V E I T T N Q S I I I G G L F P G T
2101 CAAGTATTGCTTTGAAATAGTTCCAAAAGGACCAATGGGACTGAAGGGGCATCTCGGACAGTTTGAATAGAAGTGTCCAGTGCAGTGTGTTGACATC
513 K Y C F E I V P K G P N G T E G A S R T V C N R T V P S A V F D I
BbrPI (2200)
2201 CAGTGGTCTACGTCACCAACCGAGATGTGGCTGGACTGGAAGAGCCCTGACGGTGTCTCCGAGTATGTCTACCATTAGTGCATAGAGTCCAAGCATG
547 H V V Y V T T T E M W L D W K S P D G A S E Y V Y H L V I E S K H
Tth111I (2392)
2301 GCTCTAACACACAAGCAGCTATGACAAAGCGATTACTCTCCAGGGCCTGATTCCGGGCACCTTATATAACATCACCATCTCTCCAGAAGTGGACCACGT
580 G S N H T S T Y D K A I T L Q G L I P G T L Y N I T I S P E V D H V
SandI (2205)
2401 CTGGGGGACCCCACTCCACTGCACAGTACACACGGCCAGCAATGTGTCCAACATTGATGTAAGTACCAACACCACAGCAGCAACTTTAAGTTGGCAG
613 W G D P N S T A Q Y T R P S N V S N I D V S T N T T A A T L S W Q
2501 AACTTTGATGACGCTCTCCACGTAAGTCTACTGCTTCTTATTGAGAAGGCTGAAATTCAGCAACGCAACACAAGTAGTCACGGACATTGGAATTA
647 N F D D A S P T Y S Y C L L I E K A G N S S N A T Q V V T D I G I

AseI (2619)
2601 CTGACGCTACAGTCACTGAATTAATACCTGGCTCATCATAACAGTGGAGATCTTTGCACAAGTAGGGGATGGGATCAAGTCACTGGAACCTGGCCGGAA
680▶ T D A T V T E L I P G S S Y T V E I F A Q V G D G I K S L E P G R K

BsrGI (2707) NcoI (2723) KasI (2794)
2701 GTCATTCTGTACAGATCTGCGTCCATGGCCTCCTTCGACTGCGAAGTGGTCCCAAGAGCCAGCCCTGGTTCTCAAATGGACCTGCCCTCCTGGCGCC
713▶ S F C T D P A S M A S F D C E V V P K E P A L V L K W T C P P G A

2801 AATGCAGGCTTTGAGCTGGAGGTCAGCAGTGGAGCCTGGAAACAATGCGACCCACTGAGAGCTGCTCCTCTGAGAATGGCACTGAGTATAGAACGGAAG
747▶ N A G T F E L E V S S G A W N N A T H L E S C S E N G T E Y R A C T E

2901 TCACGTATTTGAATTTTTCTACCTCGTACAACATCAGCATCACCATCTGTGCTCTGTGAAAGATGGCAGCCCCACCCGGAACACCTGCACACTGGCAT
780▶ V T Y L N F S T S Y N I S I T T V S C G K M A A P T R N T C T T G I

BamHI (3022)SspI (3031)
3001 CACAGATCCCCCTCCTCCAGATGGATCCCCTAATATTACATCTGTGAGTCAACAATTCAGTAAAGGTCAAGTTCAGTGGATTTGAAGCCAGCCACGGACCC
813▶ T D P P P P D G S P N I T S V S H N S V K V K F S G F E A S H G P

PstI (3149)
3101 ATCAAAGCCTATGCTGTCATTCTCACCACCGGGAAGCTGGTACCCTTCTGCAGATGTCTGAAATACAGTATGAGGATTTCAAAAAGGGAGCCCTCAG
847▶ I K A Y A V I L T T G E A G H P S A D V L K Y T Y E D F K K G A S

3201 ATACTTATGTGACATACCTCATAAGAACAAGAAAAGGGACGTTCTCAGAGCTTGTCTGAAGTTTTGAAATATGAAATTGACGTTGGGAATGAGTCAAC
880▶ D T Y V T Y L I R T E E K G R S Q S L S E V L K Y E I D V G N E S T

3301 CACACTTGGTTATTACAATGGGAAGCTGGAACCTCTGGCTCCTACCGGGCTTGTGTGCTGGCTTCCACAACATTACCTTCCACCTCAAAAACAGGGG
913▶ T L G Y Y N G K L E P L G S Y R A C V A G F T N I T F H P Q N K G

BamHI (3465) BsrBI (3485)
3401 CTCATTGATGGGGCTGAGAGCTATGTGCTCTCAGTCTGACTCAGATGCTGTTTCTTGGCCAGGATCCAGGTGTCATCTGTGGAGCGGTTTTTGGCT
947▶ L I D G A E S Y V S F S R Y S D A V S L P Q D P G V I C G A V F G

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

3601 TAAACCTAAAAAATCTAAGTTAATCAGAGTGGAGAATTTTGGGCTACTTCAAGAAGCAGCACTGACTCCAATGTGGGTTCCGAGAGGAATCGAA
1013▶ K P K K S K L I R V E N F E A Y F K K Q Q A D S N C G F A E E Y E

HindIII (3706)
3701 GATCTGAAGCTTGTGGAATTAGTCAACCTAAATATGCAGCAGAAGTGGCTGAGAATAGAGGAAAAGATCGCTATAATAATGTTCTGCCCTATGATATTT
1047▶ D L K L V G I S Q P K Y A A E L A E N R G K N R Y N N V L P Y D I

3801 CCCGTGTCAAACCTTCGGTCCAGACCCATTCAACGGATGACTACATCAATGCCAATACATGCCTGGCTACCCTCCAAGAAAGATTTTATTGCCACACA
1080▶ S R V K L S V Q T H S T D D Y I N A N Y M P G Y H S K K D F I A T Q

3901 AGGACCTTACCGAACACTTTGAAAGATTTTTGGCGTATGTTTTGGGAGAAAATGTATATGCCATCATTATGTTGACTAAATGTGTTGAACAGGGAAGA
1113▶ G P L P N T L K D F W R M V W E K N V Y A I I M L T K C V E Q G R

BspEI (4083)
4001 ACCAAATGTGAGGAGTATTGGCCCTCCAAGCAGGCTCAGGACTATGGAGACATAACTGTGGCAATGACATCAGAAATTGTTCTCCGGAATGGACCATCA
1147▶ T K C E E Y W P S K Q A Q D Y G D I T V A M T S E I V L P E W T I

MscI (4168)
4101 GAGATTTACAGTGAAAAATATCCAGACAAGTGAAGTCAACCCTCTGAGACAGTTCATTTACCTCCTGGCCAGACCACGGTGTCCCGACACCACTGA
1180▶ R D F T V K N I Q T S E S H P L R Q F H F T S W P D H G V P D T T D

Acc65I (4217)
4201 CCTGCTCATCAACTTCCGGTACCTCGTTCTGTGACTACATGAAGCAGAGTCTCCCGAATCGCCGATTCTGGTGCATTGCAAGTGTGGGTCGGAAGGACG
1213▶ L L I N F R Y L V R D Y M K Q S P P E S P I L V H C S A G V G R T

NsiI (4387)
4301 GGCATTTTATTGCCATTGATCGTCTCATCTACCAGATAGAGAATGAGAACACCGTGGATGTGTATGGGATTGTGTATGACCTTCAATGCATAGGCCTT
1247▶ G T F I A I D R L I Y Q I E N E N T V D V Y G I V Y D L R M H R P

BstBI (4382)
4401 TAATGGTGACAGACAGAGGACCAGTATGTTTTCTCAATCAGTGTGTTTTGGATATTGTGAGATCCCAGAAAGACTCAAAGTAGATCTTATCTACCAGAA
1280▶ L M V Q T E D Q Y V F L N Q C V L D I V R S Q K D S K V D L I Y Q N

MscI (4592)
4501 CACAACCTGCAATGACAATCTATGAAAACCTTGCGCCGTGACCACATTTGAAAAGACCAATGGTTACATCGCCTAATCCAAAGGAGCTAGCTGGCCAGA
1313▶ T T A M T I Y E N L A P V T T F G K T N G Y I A •

NheI (4586)
4601 CATGATAAGATACATTGATGAGTTTGGACAAAACCAACTAGAATGCAGTGAAAAAATGCTTTATTTTGTGAAATTTGTGATGCTATTGCTTTATTTGTA

HpaI (4724) MfeI (4735)
4701 ACCATTATAAGCTGCAATAAACAAGTTAACAACAACAATTGCATTCTTTTATGTTTCAGGTTTCAGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAA

EcoRI (4820)
4801 ACCTCTACAAATGTGGTATGGAATCTAAAATACAGCATAGCAAACTTTAACCTCCAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAG
4901 GCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTCTTTTCATGGAGTTAAGATATAGTGATTTTTCCAAGGTTTGAAC

SspI (5059) SwaI (5073)
5001 TAGCTCTTCAATTTCTTTATGTTTTAAATGCACTGACCTCCACATTCCCTTTTTAGTAAAATATTCAGAAATAATTTAAATACATCATTGCAATGAAAAT
5101 AAATGTTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGAACCTTTAATAGAAA
5201 TTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCTGGTGTACTTGGGGGATGAGTTTCTCAATGGTGGTTTTGACCAGCTTGCATTCTCTCAA
1414 • N R T Y K L P I L E E I T T K V L K G N M E I

SacI (5334) BstXI (5363)
5301 TGAGCACAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTGCACATGCCACAGGGGCTGACCACCTGATGGATCTGTCCACCTCATCAGAGTAGGG
117▶ 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 D V E D S Y P

5401 GTGCTGACAGCCACAATGGTGTCAAAGCTTCTGCCGTTGCTCACAGCAGACCAATGGCAATGGCTTCCAGCACAGACAGTACCCTGCCAATGTAG
84▶ 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 V T V R G I Y

5501 GCCTCAATGTGGACAGCAGAGATGATCTCCCAGTCTTGGTCCTGATGGCCGCCCGACATGGTGCTTGTGTCCTCATAGAGCATGGTGATCTTCTCAG
501 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 L M T I K E T

BbsI (5644)

5601 TGGCGACCTCCACCAGCTCCAGATCCTGCTGAGAGATGTTGAAGGTCTTCATGGTGGCCCTCTATAGTGAGTCGTATTATACTATGCCGATATACTATG
171 A V E V L E L D Q Q S I N F T K M

AseI (5706) SacI (5763)

5701 CCGATGATTAATTGTCAAACACAGCGTGATGGCGTCTCCAGCTTATCTGACGGTTCACTAAACGAGCTCTGCTTATATAGACCTCCCACCGTACACGCCT

SpeI (5861)

5801 ACCGCCCATTTGCGTCAATGGGCGGAGTTGTTACGACATTTTGAAAGTCCCGTTGATTTACTAGTCAAACAAACTCCCATTGACGTCAATGGGGTGG

SnaBI (5989)

5901 AGACTTGAAATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATGGTAATAGCGGATGACTAATACGTAGATGT

NdeI (6094)

6001 ACTGCCAAGTAGGAAAGTCCATAAGGTCATGTACTGGCATAATGCCAGGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCGTACTTGGCATATG

6101 ATACACTTGATGTACTGCCAAGTGGGCAGTTTACCGTAAATACTCCACCCATTGACGTCAATGGAAAGTCCCTATTGGCGTTACTATGGGAACATACGTC

PacI (6280)

PstI (6273) SdaI (6272) BspLU11I (6290)

6201 ATTATTGACGTCAATGGGCGGGGTCGTTGGCGGTCAGCCAGGCGGGCCATTTACCGTAAGTTATGTAACGCCTGCAGGTTAATTAAGAACATGTGAGC

6301 AAAAGGCCAGCAAAGGCCAGGAACCGTAAAAAGGCCGCTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAATCGACGCTCA

6401 AGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTTCCCTGGAAGCTCCCTCGTGCCTCTCCTGTTCCGACCCTGCCGTTACCG

6501 GATACCTGTCCGCTTTTCCCTTCGGGAAGCGTGGCGTTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCCGCTCCAAGCTGGG

ApaLI (6604)

6601 CTGTGTGCACGAACCCCCGTTAGCCCGACCGCTGCGCCTTATCCGTAACATATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCA

6701 GCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTAT

6801 TTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGAAAAAGAGTTGGTAGCTTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGTTTTTTTGT

6901 TTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGTCTGACGCTCAGTGAACGAAAACCTCACGTTAA

EagI (7040)

PacI (7020) SmaI (7029) NotI (7039)

7001 GGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATCAGCGCCGCAATAAAATATCTTTATTTTCATTACATCTGTGTGTTGGTTTTTTTGTGTAATC

7101 GTAAC TAACATACGCTCTCCATCAAACAAAACGAAACAAAACAAACTAGCAAATAGGCTGTCCCCAGTGCAAGTGCAGGTGCCAGAACATTTCTCTAT

7201 CGAA