



PvuI (7)
SgfI (6) 1 GGATCTGCATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCCGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA
MfeI (82)
101 GAGAAAGTGGCGCGGGTAAACTGGAAAAGTATGTCGTGACTGGCTCCGCTTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

Psp1406I (203) 201 GTGAACGTTCTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCCTTCACGCGCCCGCCCTACCTGAGGCC
HindIII (245)
301 GCCATCCACGCCGGTTGAGTCGCGTTCTGCCGCTCCCGCTGTGGTGCTCCTGAACTGCGTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCAACTCTACGCTTTTGTTCGTTT

NgoMIV (441)
501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGCGCCTACCTGAGATCACCGGCACGCGTCAGCATGCTGTGGGTGATATTACTGGTCCTGGC
KasI (535) **MluI (558)** **SphI (566)**
1▶ M L L W V I L L V L A
PshAI (660)
601 TCCTGTCAGTGGACAGTTTGAAGGACACCCAGGCCATTATTTTCTCCAGCCTCCATGGACCACAGTCTTCCAAGGAGAGAGAGTACCCTCACTTGC
NcoI (655) **BbsI (667)**
11▶ P V S G Q F A R T P R P I I F L Q P P W T T V F Q G E R V T L T C
701 AAGGGATTTGCTTCTACTCACCACAGAAAACAAAATGGTACCATCGGTACCTTGGAAAAGAAATACTAAGAGAAAACCCAGACAATATCCTTGAGGTTCC
45▶ K G F R F Y S P Q K T K W Y H R Y L G K E I L R E T P D N I L E V
ApaLI (853)
801 AGGAATCTGGAGAGTACAGATGCCAGGCCAGGGCTCCCTCTCAGTAGCCCTGTGCACTTGGATTTTTCTCAGCTTCGCTGATCCTGCAAGCTCCACT
78▶ Q E S G E Y R C Q A Q G S P L S S P V H L D F S S A S L I L Q A P L
901 TTCTGTGTTTGAAGGAGACTCTGTGGTCTGAGGTGCCGGCAAAGCGGAAGTAACACTGAATAATACTATTACAAGAATGATAATGTCCTGGCATTCC
111▶ S V F E G D S V V L R C R A K A E V T L N N T I Y K N D N V L A F

NsiI (1031)
1001 CTTAATAAAGAAGTACTGACTTCCATATTCATGTCATGCTCAAGGACAATGGTGCATATCGTGTACTGGATATAAGGAAAGTTGTTGCCCTGTTTCTT
145▶ L N K R T D F H I P H A C L K D N G A Y R C T G Y K E S C C P V S
1101 CCAATACAGTCAAATCCAAGTCCAAGACCATTTACACGTCCAGTGTGAGAGCCAGCTCCTTCCAGCCATCAGCGGGAACCCAGTGACCTGACCTG
178▶ S N T V K I Q V Q E P F T R P V L R A S S F Q P I S G N P V T L T C

XbaI (1215) **BsrBI (1234)**
1201 TGAGACCCAGCTCTCTAGAGAGGTACAGATGTCCCGTCCGGTTCGGCTTCTCAGAGATGACCAGACCCTGGGATTAGGCTGGAGTCTCTCCCGAAT
211▶ E T Q L S L E R S D V P L R F R F F R D D Q T L G L G W S L S P N
1301 TTCCAGATTACTGCCATGTGGAGTAAAGATTGAGGTTCTACTGGTGTAAAGCAGCAACAATGCCTTACAGCGTCATATGACAGCCCGAGATCCTGGA
245▶ F Q I T A M W S K D S G F Y W C K A A T M P Y S V I S D S P R S W
1401 TACAGGTGCAGATCCCTGCATCTCATCTGTCTCACTCTCAGCCCTGAAAAGGCTCTGAATTTTGAAGGAAACCAAGGTGACACTTACTGTGAAACCCA
278▶ I Q V Q I P A S H P V L T L S P E K A L N F E G T K V T L H C E T Q

FspI (1511) **BsrGI (1520)**
1501 GGAAGATTCTCTGCGCACTTTGTACAGTTTTTATCATGAGGGTGTCCCCCTGAGGCACAAGTCACTCCGCTGTGAAAGGGGAGCATCCATCAGCTTCTCA
311▶ E D S L R T L Y R F Y H E G V P L R H K S V R C E R G A S I S F S

EcoRI (1611) **KasI (1651)**
1601 CTGACTACAGAGAATTCAGGGAATACTACTGCACAGCTGACAATGGCCTTGGCGCCAAAGCCAGTAAGGCTGTGAGCCTCTCAGTACTGTTCCCGTGT
345▶ L T T E N S G N Y Y C T A D N G L G A K P S K A V S L S V T V P V
1701 CTCATCTGTCTCAACCTCAGCTCTCTGAGGACCTGATTTTTGAGGGAGCAAGGTGACACTTACTGTGAAGCCAGAGAGGTTCACTCCCATCCT
378▶ S H P V L N L S S P E D L I F E G A K V T L H C E A Q R G S L P I L

MscI (1862)
1801 GTACCAGTTTCATCATGAGGATGCTGCCCTGGAGCGTAGGTGGCCAACTCTGCAGGAGGAGTGGCCATCAGCTTCTCTGACTGCAGAGCATTGAGGG
411▶ Y Q F H H E D A A L E R R S A N S A G G V A I S F S L T A E H S G
1901 AACACTACTGCACAGCTGACAATGGCTTTGGCCCCAGCGCAGTAAGGCGGTGAGCCTTCCATCAGTGTCCCTGTGTCTATCCTGCTCCTACCCTCA
445▶ N Y Y C T A D N G F G P Q R S K A V S L S I T V P V S H P V L T L
2001 GCTCTGCTGAGGCCCTGACTTTTGAAGGAGCCACTGTGACACTTACTGTGAAGTCCAGAGAGTTCCCAACAATCCTATACCAGTTTTATCATGAGGA
478▶ S S A E A L T F E G A T V T L H C E V Q R G S P Q I L Y Q F Y H E D
2101 CATGCCCTGTGGAGCAGCTCAACACCTCTGTGGAAAGAGTGTCTTCACTTCTCTGACTGAAGGACATTCAGGGAATTAATACTGCACAGCTGAC
511▶ M P L W S S S T P S V G R V S F S F S L T E G H S G N Y Y C T A D
2201 AATGGCTTTGGTCCCGCAGCGCAGTGAAGTGGTGGGCTTTTGTCTGCTGTTCCAGTGTCTCGCCCATCCTCACCCTCAGGTTCCAGGGCCAGGCTG
545▶ N G F G P V S E V V S L F V T V P V S R P I L T L R V P R A Q A
2301 TGGTGGGGACCTGCTGGAGCTTCACTGTGAGGCCCGGAGAGGCTCTCCCAATCTGTACTGGTTTTATCATGAGGATGTACCCTGGGGAGCAGCTC
578▶ V V G D L L E L H C E A P R G S P P I L Y W F Y H E D V T L G S S S

HindIII (2417)
2401 AGCCCCCTCTGGAGGAGAAGCTTCTTTCAACCTCTCTGACTGCAGAACATTCTGAAAATACTCATGTGAGGCCAACAATGGCCTAGTGGCCAGCAC
611▶ A P S G G E A S F N L S L T A E H S G N Y S C E A N N G L V A Q H

DraIII (2513)
2501 AGTGACACAATATCACTCAGTGTATAGTTCCAGTATCTGTCATCCTCACCTTACAGGCTCCAGGGCCAGGCTGTGGTGGGGACCTGCTGGAGC
645▶ S D T I S L S V I V P V S R P I L T F R A P R A Q A V V G D L L E

2601 T T C A C T G T G A G G C C C T G A G A G G C T C C T C C C C A A T C C T G T A C T G G T T T T A T C A T G A A G A T G T C A C C C T G G G T A A G A T C T C A G C C C C C T C T G G A G G A G G G G C
678▶ L H C E A L R G S S P I L Y W F Y H E D V T L G K I S A P S G G G A
PshAI (2755)

2701 C T C C T T C A A C C T C T C T G A C T A C A G A A C A T T C T G G A A T C T A C T C C T G T G A G G C A G A C A A T G G T C T G G A G G C C A G C G C A G T G A G A T G G T G A C A C T G A A A
711▶ S F N L S L T T E H S G I Y S C E A D N G L E A Q R S E M V T L K
SandI (2845)
XmaI (2842)

2801 G T T G C A G T T C C G G T G T C T C G C C C G G T C C T C A C C C T C A G G G C T C C C G G G A C C C A T G C T G C G G T G G G G G A C C T G C T G G A G C T T C A C T G T G A G G C C C T G A G A G
745▶ V A V P V S R P V L T L R A P G T H A A V G D L L E L H C E A L R
AgeI (2918)
AvrII (2943)

2901 G C T C T C C C C T G A T C C T G T A C C G G T T T T T C A T G A G G A T G T C A C C C T A G G A A A T A G G T C G T C C C C C T C T G G A G A G C G T C C T T A A A C C T C T C T G A C T G C
778▶ G S P L I L Y R F F H E D V T L G N R S S P S G G A S L N L S L T A
3001 A G A C A C T C T G G A A A C T A C C T C T G T G A G G C C G A C A A T G C C C T G G G G C C A G C G C A G T G A G A C A G T G A C A C T T T A T A T C A C A G G G C T G A C C G C G A A C A G A
811▶ E H S G N Y S C E A D N G L G A Q R S E T V T L Y I T G L T A N R
StuI (3147)
BstAPI (3145)
XhoI (3186)

3101 A G T G G C C C T T T T G C C A C A G G A G T C G C C G G G G C C T G C T C A G C A T A G C A G G C C T T G C T G C G G G G C A C T G C T G C T A C T G C T G G C T C T C G A G A A A A G C A G
845▶ S G P F A T G V A G G L L S I A G L A A G A L L L Y C W L S R K A
BsrGI (3299)

3201 G G A G A A G C C T G C C T C T G A C C C C G C C A G G A G C C T T C A G A C T C G G A C T C C C A A G A G C C C A C C T A T C A C A A T G T A C C A G C C T G G G A A G A G T G C A A C C A G T
878▶ G R K P A S D P A R S P S D S D S Q E P T Y H N V P A W E E L Q P V
3301 G T A C A C T A A T G C A A A C T A G A G G A G A A A A T G T G G T T A C T C A G A A G T A C G G A T C A T C C A A G A G A A A A G A A A C A T G C A G T G G C C T C T G A C C C C A G G C A T
911▶ Y T N A N P R G E N V V Y S E V R I I Q E K K K H A V A S D P R H
BamHI (3463)
BspEI (3460)

3401 C T C A G G A A C A A G G T T C C C C T A T C A T C T A C T C T G A A G T T A A G G T G G C G T C A A C C C C G G T T T C C G G A T C C C T G T T C T T G G C T T C C T C A G T C C C T C A C A G A T
945▶ L R N K G S P I I Y S E V K V A S T P V S G S L F L A S S A P H R
MseI (3523)
NheI (3517)

3501 G A G T C C A C A C G T C T C T C G C T A G C T G G C C A G A C A T G A T A A G A T A C A T T G A T G A G T T T G G A C A A A C C A C A A C T A G A A T G C A G T G A A A A A A T G C T T T A T T T G
978▶ •

3601 T G A A A T T T G T G A T G C T A T T G C T T T A T T T G T A A C C A T T A A G C T G C A A T A A A C A A G T T A A C A C A A C A A T T G C A T T C A T T T T A T G T T C A G G T T C A G G G G
HpaI (3655) MfeI (3666)

3701 G A G G T G T G G G A G G T T T T T T A A G C A A G T A A A C C T C T A C A A A T G T G G T A T G G A A T T C T A A A A T A C A G C A T A G C A A A C T T T A A C C T C C A A A T C A A G C C T C
EcoRI (3751)

3801 T A C T T G A A T C C T T T T C T G A G G G A T G A A T A A G C A T A G G C A T C A G G G G C T G T T G C C A A T G T G C A T T A G C T G T T T G C A G C C T C A C C T T C T T T C A T G G A G T T T

3901 A A G A T A T A G T G T A T T T T C C C A A G G T T T G A A C T A G C T C T T C A T T T C T T A T G T T T T A A A T G C A C T G A C C T C C C A C A T T C C C T T T T A G T A A A A T A T T C A G A
SspI (3990)

4001 A A T A A T T T A A A T A C A T C A T T G C A A T G A A A A T A A A T G T T T T T T A T T A G G C A G A A T C C A G A T G C T C A A G G C C C T T C A T A A T A T C C C C C A G T T T A G T A G T T G G
SwaI (4004)

4101 A C T T A G G G A C A A A G G A A C C T T T A A T A G A A A T T G G A C A G C A A G A A G C G A G C T T C T A G C T T T A G T T C C T G G T G T A C T T G A G G G G G A T G A G T T C C T C A A T G
141◀ • N R T Y K L P I L E E I
SacI (4265)
BstXI (4294)

4201 G T G G T T T T G A C C A G C T T G C C A T T C A T C T C A A T G A G C A C A A A G C A G T C A G G A G C A T A G T C A G A G A T G A G C T C T C T G C A C A T G C C A C A G G G G C T G A C C A C C C
127◀ 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 C P S V V R
4301 T G A T G G A T C T G T C C A C C T C A T C A G A G T A G G G G T G C C T G A C A G C C A C A A T G G T G T C A A A G T C C T T C T G C C C G T T G C T C A C A G C A G A C C C A A T G G C A A T G G C
94◀ 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 V A S G I A I A
StuI (4429)

4401 T T C A G C A C A G A C A G T G A C C C T G C C A A T G T A G G C C T C A A T G T G G A C A G C A G A G A T G A T C C C C A G T C T T G G T C C T G A T G G C C G C C C C G A C A T G G T G C T T G
61◀ 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 A G V H H K
BbsI (4575)
XmnI (4571)

4501 T T G T C C T C A T A G A G C A T G G T G A T C T T C A G T G G C G A C C T C C A C C A G C T C C A G A T C C T G T G A G A G A T G T T G A A G G T C T T C A T G G T G G C C C C T C T A T A G T
27◀ 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
SacI (4694)

4601 G A G T C G T A T T A T A C T A T G C C G A T A C T A T G C C G A T G A T T A A T T G T C A A A A C A G C G T G G A T G G C G T C C A G C T T A T C T G A C G G T T C A C T A A A C G A G C T C
AseI (4637)

4701 T G C T T A T A T A G A C C T C C C A C C G T A C A C G C T A C C G C C A T T T G C G T C A A T G G G G C G G A G T T G T T A C G A C A T T T T G G A A A G T C C C G T T G A T T T A C T A G T C A
SpeI (4792)

4801 A A C A A A C T C C C A T T G A C G T C A A T G G G G T G G A G A C T T G G A A A T C C C C G T G A G T C A A A C C G C T A T C C A C G C C C A T T G A T G T A C T G C C A A A A C C G C A T C A T C

SnaBI (4920)

4901 ATGGTAATAGCGATGACTAATACGTAGATGTACTGCCAAGTAGGAAAGTCCCATAAGGTCATGTACTGGGCATAATGCCAGGCGGGCCATTTACCGTCAT

NdeI (5025)

5001 TGACGTCAATAGGGGGCGTACTTGGCATATGATACACTTGATGTACTGCCAAGTGGGCAGTTTACCGTAAATACTCCACCCATTGACGTCAATGGAAAGT

5101 CCCTATTGGCGTTACTATGGGAACATACGTCATTATTGACGTCAATGGGCGGGGTCTGTTGGGCGGTCAGCCAGGCGGGCCATTTACCGTAAGTTATGTA

PacI (5211)

SdaI (5203)

BspLU11I (5221)

5201 ACGCCTGCAGGTTAATTAAGAACATGTGAGCAAAGGCCAGAAACCGTAAAAAGGCCGCTTGTGGCGTTTTTCCATAGGCTCCGCC

5301 CCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCTGGAAGCTCCCTCGTG

5401 CGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTCACGCTGTAGGTATCTCA

ApaLI (5535)

5501 GTTCGGTGTAGGTCGTTCCGCTCCAAGCTGGGCTGTGTGCAGCAACCCCGTTCCAGCCGACCCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAA

5601 CCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGTACAGAGTCTTGAAGTGGTGG

5701 CCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAC

5801 AAACCACCGCTGGTAGCGGTGGTTTTTTTTGTTTGAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTC

EagI (5971)

PacI (5951) SmaI (5960) NotI (5970)

5901 TGACGCTCAGTGAACGAAAACCTCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATCAGCGGCCCAATAAAATATCTTTATTTTCAT

6001 TACATCTGTGTGGTTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAACAAAACGAAACAAAACAACTAGCAAATAGGCTGTCCCCAG

6101 TGCAAGTGCAGGTGCCAGAACATTTCTCTATCGAA