



PvuI (7)
SgfI (6) 1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA
MfeI (82)
101 GAGAAAGTGGCGCGGGTAAACTGGAAAGTGATGTCGTGTAAGTGGTCCGCCTTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

Psp1406I (203) 201 GTGAACGTTCTTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCCTTACGCGCCCGCCGCTACCTGAGGCC
HindIII (245)
Bsu36I (291)
301 GCCATCCAGCGCGGTTGAGTCGCGTTTCTGCCGCCTCCCGCCTGTGGTGCCTCCTGAAGTGCCTCCGCGCTAGGTAAGTTAAAGCTCAGGTCGAGACC

NgoMIV (441)
NgoMI (441)
NaeI (441)
401 GGGCCTTTGTCCGGCGCTCCCTTGGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCAACTCTACGTCTTTGTTTCGTTT

KasI (535) 501 TCTGTTCTGCGCGGTTACAGATCCAAGCTGTGACCGCGCGCTACCTGAGATCACCGGCTCCGGACACCATGGCCGTGATGGAAGTGGCCTGCCCGGGCAC
BspEI (558) 1▶ M A V M E V A C P G T
XmaI (591)
SmaI (591)
SrfI (590)

Tth11II (651) 601 TCCTGGGTGAGCAGTCCGGCAGCAGAAGGAGCTTGCCAAAGCCAAAGGAGAAGACACAGTCACTGGGAAAGAAGCAGAGCTGCATCTTCAAGCTTGAGGCC
HindIII (688)
11▶ P G S A V G Q Q K E L A K A K E K T Q S L G K K Q S C I F K L E A
701 GTGGAGAAGAGCCCGTGTCTGTGGAAAGTGGGAGATCTAAACGACGTGATACCAAAGGCACAGCCAAAGGACGGCTCTGAGGGAGGACCACCGGCCA
45▶ V E K S P V F C G K W E I L N D V I T K G T A K D G S E G G P P A
801 TCTCCATCATCGCCAGGCTGAATGTGAGAATAGCCAAGATTCAGCCCCACCTTCTCAGAGCGCATTTTCATCGCGGGTTCACAGCAGTACAGCCAGTC
78▶ I S I I A Q A E C E N S Q E F S P T F S E R I F I A G S Q Q Y S Q S
901 TGAGAGTCTGCATCAAATCCCAACAATGTGGCCATGCAACTGAAGGCAAAATGGCCCGTGTGTGCCGGAGGGGAAAACGTCACGGCAAAGCCGAAAA
111▶ E S L D Q I P N N V A H A T E G K M A R V C R R G K R R G K A R K
1001 AAACGTAGGAAGAAGAGGTGCAAGTCACTGGCCAGGCAGGATGGCCTTAGCCAAAGCCCTGCCAGAACCCCTGAGCAAGAGAGCTGTACCATCCAG
145▶ K R R K K R S K S L A Q A G V A L A K P L P R T P E Q E S C T I P
1101 TACAGGAAGATGAGTCTCCACTAGGCAACCTCTATGCCAGAAATGTCTCCAGTTCACCAAGCCTCTGGGGGACAGGCCTTGGCCACCTGTGCTTTAA
178▶ V Q E D E S P L G N L Y A R N V S Q F T K P L G G P G L G H L C F K

PmlI (1279)
Eco72I (1279)
BbrPI (1279)
1201 GAAACAAGATGAAGGCGTCCGACTGCCTCGACCAGAAGTCCACAACTGATCAGCCCTTGCAATGTCTAAACACGTTGGAACTCCACCAC
211▶ K Q D E G L R P V L P R P E L H K L I S P L Q C L N H V W K L H H
1301 CCCAGGCCACAGGCCCGCCACCCGACTCACCCCTCCCTACAGCGAATGCCCATCCTTTCCATTCTACCCCTGGAGCCCTGGAAACCT
245▶ P Q A T G P R P H P T H P F P Y S G M P H P F P F Y P L E P W K P
1401 ATATGCTGGACTCTGCCGTCTGGACAACTAGCCGGTGTGAGCGCCAGCGCCTCTGCTGGCCACCGCATTAAGCCAACTGGCCATGGAGACAG
278▶ Y M L D S A V L D K L A G V S G Q R P L P G P P H L S Q L A H G D S

SphI (1587)
SexAI (1580)
1501 TCAGAAGCCGCTGCCTGGCCACACCTGGAGTCCAGCTGCCCGTCTCGGGGTGCCTAGAAAAGTTCCTGGGAGGAATACCTGGTGCATGCGCTCCAA
311▶ Q K P L P G P H L E S S C P S R G A L E K V P V E E Y L V H A L Q

Tth11II (1647)
1601 GGAAGTGTGAGCTCAGGCCAGGCCACAGCCTGGCCAGCCTGGCTAAGACATGGTCTCGGGAAGCGCAAGTGCAGAGGCTCGGCCCGAACTGAGG
345▶ G S V S S G Q A H S L A S L A K T W S S G S A K L Q R L G P E T E
1701 ACAACGAGGGGTCTGCTTACTGAGAACTCAAGCCAGTGGATTATGAGTATCGAGAAGAGTCCACTGGATGACACACCAGCCTCGGGTGGCAGAGG
378▶ D N E G V L L T E K L K P V D Y E Y R E E V H W M T H Q P R V G R G

XhoI (1870) 1801 CTCCTTCGGCGAGGTCCACAGAATGAAGGACAAGCAGACAGGCTTCCAGTGTGCTGTCAAAAAGTACGACTCAGGTTTCGGGTAGAGGAAGTGTG
411▶ S F G E V H R M K D K Q T G F Q C A V K K V R L E V F R V E E L V
1901 GCCTGTGCTGGTCTGAGCTCGCCAGAATCGTCCCTCTCTATGGAGCTGTGAGAGAAGGCCCGTGGGTGAACATCTTTCATGGAAGTGTGAGAGTGGCT
445▶ A C A G L S S P R I V P L Y G A V R E G P W V N I F M E L L E G G
2001 CGTGGTTCAGTCTATAAAGCAAATGGGCTGTCTCCAGAAGACCGAGCCCTTACTACTGGCCAGGCCCTGGAGGGGCTGGAGTACTCCACACAGC
478▶ S L G Q L I K Q M G C L P E D R A L Y Y L G Q A L E G L E Y L H T R

BsrBI (2159)
2101 CAGGATTCTGCATGGCGATGTCAAAGCTGACAACGTGCTCCTGTCCAGTGTGATGGAAGCCGAGCGGCCCTCTGCGACTTTGGCCACGCCTTGTGCTGCAA
511▶ R I L H G D V K A D N V L L S S D G S R A A L C D F G H A L C L Q

AvrII (2208)
2201 CCTGACGGCTAGGAAATCCTTGTCTCACAGGGGACTACATTCCTGGCACGGAGACCCACATGGCACCAGAAGTGGTGTGAGGAAAGCCCTGCGATGCCA
545▶ P D G L G K S L L T G D Y I P G T E T H M A P E V V M G K P C D A

ScaI (2366)
2301 AGGTGACATCTGGAGCAGTGTGCTGATGCTCCACATGCTCAACGGTGCACCCCTGGACTCAGTACTCCGAGGCCCGCTTTGTCTCAAGATTGC
578▶ K V D I W S S C C M M L H M L N G C H P W T Q Y F R G P L C L K I A

FspI (2437)
2401 CAGCGAGCCTCCACCGATCAGGGAGATCCACCTTCTGCGACCCCTCACAGCCAGGCCATCCAAGAGGGGCTGAGGAAAGAGCCCGTCCACCGAGCA
611▶ S E P P P I R E I P P S C A P L T A Q A I Q E G L R K E P V H R A
2501 TCTGCCATGGAGCTTCGGAGGAAAGTGGGCAAGGCACTACAGGAAGTGGGAGTCTGAAAAGCCCTTGAAAAGGAGAATATAAAGAACCAAGACCTCCAC
645▶ S A M E L R R K V G K A L Q E V G G L K S P W K G E Y K E P R P P
2601 CCCAAGACCAAGCCACTGCCACCAGACCTACTACTCCGCGAGAGAGAACCACAGCCAAAGGCCAACACAGACGGGGCTCTGAGCCTCAGCCTCC
678▶ P Q D Q A T C H Q T L P T P P R E N P P A K A N T D G A P E P Q P P

2701 TCTACCGCCAGAACCACCAGAACCAGGAGCAAAGCGCCAGCCTGAACCTGAGCAAGGAGGAGTCTGGCACATGGGAACCCCTGCCTCTGTCTCCCTGGAC
711▶ L P P E P P E P S K A P A L N L S K E E S G T W E P L P L S S L D
2801 CCAGCCACTGCCAAAGGCCAGCTTCCAGACCGGAGGGCAACCTTCCAGAGCTGGAGTACAGCAACTGGAGATAGAAGTGTCTCAACAGCCTGT
745▶ P A T A K G P S F P D R R A T L P E L E L Q Q L E I E L F L N S L
2901 CCCAGCCGTTCTCTGAGGAACAGGAACAAATCCTCTCCTGCCTCAGCATCGACAGCCTCTCGCTGTGAGATGACAGTGAAGAAATCCATCGAAGGC
778▶ S Q P F S L E E Q E Q I L S C L S I D S L S L S D D S E K N P S K A
XmaI (3092)
SmaI (3092)
3001 CTCTCAGAGCTCACGGGACACCTGAGTCTTGGCGTGCCTTGAACAGCCAAAGCTGAGGCAAGAACTGCAGCTGCAGCAGCGCGCTGGCCGGGG
811▶ S Q S S R D T L S S G V H S W N S Q A E A R T C S C S T A L A R G
EcoRI (3181)
3101 CGGCCTACTGACATCCCCAGCTACTTCAACGGGGTCAAGGTCCAGATCCAGTCTCTCAATGGCGAACCTGCATATCCGGGAATTCCACCGCTCAAGG
845▶ R P T D I P S Y F N G V K V Q I Q S L N G E H L H I R E F H R V K
BstEII (3255)
3201 TGGGAGACATTGCCACCGCATCAGCAGCCAGATCCCAGCCACAGCTTTCAGCCTGGTACCAAAGATGGACAGCCTGTTTGTATGACATGGAGGTGCC
878▶ V G D I A T G I S S Q I P A T A F S L V T K D G Q P V C Y D M E V P
PshAI (3389)
3301 AGACTCGGCATCGACCTGCAGTGCACCCTGGCCCTGATGGCAGCTTGTCTGGACCTGGAGGGTCAAGCATGGTGCAGTGGAGAACCAGCCAGTCC
911▶ D S G I D L Q C T L A P D G S F A W T W R V K H G Q L E N R P •
MluI (3407)
3401 TGTCTTACCGCTTCTAGCTCGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAGAAATGCTTTATTTGTGAATTT
HpaI (3576) MfeI (3587)
3501 GTGATGCTATTGCTTTATTTGTGAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAACAAGTTAAACAACAATTGCATTCAT
EcoRI (3672)
3601 TTTATGTTTCAGGTTTCAGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGAATCTAAAATACAGCATAGCAAACT
3701 TTAACCTCCAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAGCC
3801 TCACCTTCTTTCATGGAGTTAAGATATAGTGATTTTCCAAGGTTTGAAGTCTCTCATTCTTTATGTTTTAAATGCACTGACCTCCACATTCC
SspI (3911) SmaI (3925)
3901 CTTTTTAGTAAAATATTCAGAAATAATTTAAATACATCATTGCAATGAAAATAAATGTTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAAT
4001 ATCCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGGAACCTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCCTGGTACTTG
141▶ • N R T Y K
4101 AGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCATTCTCAATGAGCACAAGCAGTCAGGAGCATAGCAGATGAGTCTCTGCACA
134▶ 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 C M
4201 TGCCACAGGGGCTGACCACCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCGTTGCTCAC
101▶ 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 S V
4301 AGCAGACCAATGGCAATGGCTTCCAGCAGACAGTGCACCTGCAATGTAGGCTCAATGTGGACAGCAGAGATGATCTCCCGAGTCTTGGTCTGATG
68▶ A S G I A I A E A C V T V R G I Y T A E I H V A S I I E G T K T R I
4401 GCCGCCCCGACATGGTGTCTTGTGCTCATAGAGCATGGTATCTTCTCAGTGGCGACCTCCACCAGCTCCAGATCTGCTGAGAGATGTTGAAGGTCT
34▶ 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 T K
PagI (4500) VspI (4558)
BspHI (4500) AseI (4558)
4501 TCATGATGGCCCTCTATAGTGAGTCGTATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACAGCGTGGATGGCGTCTCCAGCTATCT
1▶ M
4601 GACGGTTCACTAAACGAGCTCTGCTTATATAGACCTCCCACCGTACACGCTACCGCCATTTGCGTCAATGGGCGGAGTTGTTACGACATTTTGAAA
SpeI (4713)
4701 GTCCCGTTGATTTACTAGTCAAAAACAACTCCATTGACGTCAATGGGTGGAGACTTGAAATCCCGTGAGTCAAACCGTATCCACGCCATTGAT
SnaBI (4841)
Eco105I (4841)
4800 GTACTGCCAAAACCGCATCATCATGTAATAGCGATGACTAATACGTAGATGTAAGTCCCAAGTAGGAAAGTCCCATAGGTCATGTACTGGGCATAATGC
NdeI (4946)
4900 CAGGCGGGCCATTTACCGTCAATAGGGGGCTACTTGGCATATGATACACTTGTACTGCCAAGTGGGAGTTTACCGTAAATACTCCA
5000 CCCATTGACGTCAATGAAAGTCCCTATTGGCGTACTATGGGAACATACGTCAATATTGACGTCAATGGGCGGGGCTGTTGGGCGGTGAGCCAGGCGG
SdaI (5124) PacI (5132) BspLU11I (5142)
5100 GCCATTTACCGTAAGTTATGTAACGCCTGCAGGTTAA TTAAGAACATGTGAGCAAAGGCCAGCAAAGGCCAGGAACCGTAAAAAGGCCGCTTGTCT
5198 GCGTTTTTCCATAGGCTCCGCCCTGACGAGCATCAGAAAATCGACGCTCAAGTCAAGGTTGGGAAACCCGACAGGACTATAAAGATACCAGGCG
5298 TTTCCCCCTGGAAGCTCCCTCGTGCCTCTCCTGTTCCGACCTGCCGTTACCGGATACCTGTCCGCTTTCTCCCTCGGGAAGCGTGGCGCTTTCTC
5398 ATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCCGCTCAAGCTGGGCTGTGTGCACGAACCCCGTTAGCCCGACCGCTGCGCTTATC
5498 CGGTAACATATCGTCTTGTGTCACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCGGT
5598 GCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGAAAAAGAG
5698 TTGGTAGCTTGTATCCGGCAACAAACCACCGCTGGTAGCGGTGTTTTTTTTGTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGA

EagI (5892)

PacI (5872) SmaI (5881) NotI (5891)

5798 TCCTTTGATCTTTTCTACGGGTCTGACGCTCAGTGAACGAAACTCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATC AGCGGCC

5898 GCAATAAAATATCTTTATTTTCATTACATCTGTGTGTTGGTTTTTGTGGAATCGTAACTAACATACGCTCTCCATCAAACAAAACGAAACAAAACAA

5998 ACTAGCAAATAGGCTGTCCCAGTGCAAGTGCAGGTGCCAGAACATTTCTCTATCGAA