



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

Psp1406I (203) 201 GTGAACGTTCTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTACGCGCCCGCCCTACCTGAGGCC
HindIII (245)
301 GCCATCCACGCGGGTTGAGTCGCGTTTCTGCCGCTCCCGCTGTGGTGCCTCCTGAAGTGCCTCCGCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC
401 GGGCCTTTGTCCGGCGCTCCCTTGGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTACTCACTTACGTCTTTGTTTCGTTT

NcoI (560)
BstEII (555) 501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGGCGCCTACCTGAGATCACCGGTACCATGGAGAACACGGCCATCATGAGATGGAAGGCACCCC
AgeI (552) 1 M E E H G H H E M E G T P
BspHI (579)

BstEII (651) 601 ATTGGGTTGCTACTCCCACATTAACACTGCTGAAGATCAACAGGGAACATCTGGTCACCAACATTCGGAACACTCAGTGTCTGGTGGACAACCTGCTGGAG
13 L G C H S H I K L L K I N R E H L V T N I R N T Q C L V D N L L E
DraIII (669)

Tth111I (757) 701 AATGGCTACTTCTCAGCCGAAGATGCAGAGATTGTGTGCTGTCCACCAAGCCTGACAAGTCCGAAAGATCCTTGACCTGGTGCAGAGCAAAGGCG
47 N G Y F S A E D A E I V C A C P T K P D K V R K I L D L V Q S K G
801 AGGAGGTGTCTGAGTTCTTCTCTACGTGCTGCAGCAGCTGGAGGATGCTTACGTGGACCTCAGGCTGTGGCTCTCAGAAATTGGCTTCTCCCTTCCCA
80 E E V S E F F L Y V L Q Q L E D A Y V D L R L W L S E I G F S P S Q

Bst1107I (945) 901 GCTCATTCCGACAAAATATCGTCAATACTGACCCAGTAAGCAGGTATACCAACAGCTGCGACACCAACTGGCCCGGACTCCAAGTTCATGCTGTGC
113 L I R T K T I V N T D P V S R Y T Q Q L R H Q L G R D S K F M L C
AvrII (1089)

1001 TACGCCAGAAAGGAGACCTGCTGCTGGAGGAGACCTATATGGACACACTCATGGAGCTGGTAGGCTTCAACAATGAAAACCTGGGCAGCCTAGGAGGCC
147 Y A Q K E D L L L E E T Y M D T L M E L V G F N N E N L G S L G G
1101 TGGATTGCCTGCTGGACCACAGTACGGCGTCTCAACGAGCATGGCGAGACTGTCTTCTGTTCCGGGACGCGGGAGTGGGCAAGTCCATGCTGCTGCA
180 L D C L L D H S T G V L N E H G E T V F V F G D A G V G K S M L L Q
1201 GAGGTTGCAGAGCCTCTGGCGTCAGGCAGGTTGACCTCCACAGCAAATCTTCTTCACTTCCGCTGCCGCATGTTCAAGTGTCTCAAGGAGAGCGAC
213 R L Q S L W A S G R L T S T A K F F F H F R C R M F S C F K E S D
Eco47III (1395)

1301 ATGCTGAGTCTGCAGGACCTGCTCTTCAAGCATTCTGCTACCCGGAGCAGGACCCCGAGGAGGTGTTCTCTTCTTGTGCGCTTTCCCCACACAGCC
247 M L S L Q D L L F K H F C Y P E Q D P E E V F S F L L R F P H T A
1401 TTTCACTTTTACGGCTGGATGAGCTGCAGCTCAGACTTCGACCTGAGCCGCGTCCGGATGCTGCCCCCTGGGAGCCGCTCACCTCTGGTCT
280 L F T A T D G L D E L H S D F L S R V P D S C C P W E P A H P L L
FspI (1589)

1501 GCTGGCTAACCTCCTAAGTGGGAGGCTGCTCAAGGGTGCCGGCAAATTGCTCACTGCTCGCACAGGCGTGGAGGTCCCCCGCCAGCTCCTGCGCAAAAAG
313 L A N L L S G R L L K G A G K L L T A R T G V E V P R Q L L R K K
BssHII (1632)

1601 GTGCTGCTCCGGGCTTCTCCCAAGTCACTGCGCGCCTATGCCGCGGATGTTCCCGAGCGCACAGCGCAGGAGCATCTGCTGCAGCAGCTGGATG
347 V L L R G F S P S H L R A Y A R R M F P E R T A Q E H L L Q Q L D
BsrBI (1732)

1701 CCAACCCCAACTCTGCAGCCTGTGCGGGTGCCGCTCTTCTGTTGGATCATCTTCCGTTGTTTCCAGCACTTCCAGACGGTCTTTCGAGGGCTCTCTTC
380 A N P N L C S L C G V P L C T C W I I F R C F Q H F Q T V F E G S S S
PshAI (1827)

1801 ACAGTTGCCGGACTGTGCTGTGACCCTGACCGATGCTTTCTGCTGCTCACTGAGGTGCATCTGAACAGGCCGAGCCAGCAGCCTGGTGCAGCGCAAC
413 Q L P D C A V T L T D V F L L V T E V H L N R P Q P S S L V Q R N
SphI (1944)

1901 ACGCGAGCCCGCGGAAACCTACGTGCAGGCTGGCGCAGCTGCATGCGTGGGAGAGGTGGCTCACCGAGGCACGACAAGAGCCTTTTGTGTTTG
447 T R S P A E T L R A G W R T L H A L G E V A H R G T D K S L F V F
BglIII (2037) 2001 GCCAGGAGAGGTGCAGGCGTCAAGACTGCAGGAAGATCTGCAGCTGGGCTTCTGCGGGCTTTGCCGATGTGGCCCTGAGCAGGCCAGTCTTA
480 G Q E E V Q A S K L Q E G D L Q L G F L R A L P D V G P E Q G Q S Y
Bsp120I (2076)

2101 CGAATTTTCCACCTTACGCTCCAGGCCTTCTTCCAGCCTTCTTCTGTTAGCAGATGACAAAGTGAACACCCGGGAGTTGCTGAGGTTCTTTTCGAGAA
513 E F F H L T L Q A F F T A F F L V A D D K V S T R E L L R F F R E
XmaI (2171)
Bsp120I (2283)

2201 TGGACGTCTCTGGAGAGGCAACAAGCTCGTCTGCCATTCTTCTTCTTCTTCTTCCAGTGCCTGGGCGGAGAAAGCCGGTTGGCCCTGATCCTTTCA
547 W T S P G E A T S S S C H S S F F S F Q C L G G R S R L G P D P F
2301 GGAACAAAGATCACTTCCAGTTCACCAACTCTTCTGTGCGGGTACTGGCCAAAGCCGACAGAACTCCTTCCGAGCTGGTGCCTCAAGGCTATCCT
580 R N K D H F Q F T N L F L C G L L A K A R Q K L L R Q L V P K A I L
NheI (2437) 2401 GAGGAGAAAGCGCAAGGCCCTGTGGGCTCACCTGTTTGTAGCCTGCGCTCCTACTTGAAGAGCTACCTCGGGTCCAGTCTGGAGGCTTTAACCAGGTG
613 R R K R K A L W A H L F A S L R S Y L K S L P R V Q S G G F N Q V
2501 CATGCCATGCCACATCTGTGGATGCTGCGTGCATCTATGAGCTGCAGAGCAGAAAGGTTGGGCGCCTCGCCGAGGGGCATCAGTGGGACTACC
647 H A M P T F L W M L R C I Y E T Q S Q K V G R L A A R G I S A D Y
2601 TCAAGCTGGCCTTTTGAACGCTTGTCTGCGGACTGCAGCGCCTGTCTTCTGCTGCTGCTCACTTCCACAGGCAGCTGGCCCTAGACCTGGACAACAA
680 L K L A F C N A C S A D C S A L S F V L H H F H R Q L A L D L D N N
SphI (2499)

2701 CAACCTCAATGACTATGGCGTGCAGGAGCTGCAGCCTTGCTTTAGCCGTCACGGTTATCAGACTCAGCGTCAACCAGATCACCGACACGGGGTGAAG
713▶ N L N D Y G V Q E L Q P C F S R L T V I R L S V N Q I T D T G V K
EcoRV (2869)
2801 GTGCTATGTGAGGAACTGACCAAGTATAAGATCGTGACGTTTCCTGGGTTTATAACAACACAGATAACTGATCGGAGCCAGGTATGTGCCAAATCC
747▶ V L C E E L T K Y K I V T F L G L Y N N Q I T D I G A R Y V A Q I
2901 TGGATGAATGCAGAGGCCTCAAGCACCTTAAACTAGGGAAAAACAGAATAACAAGTGAGGGCGGAAGTGTGTGGCTTTGGCTGTGAAGAACAGCACCTC
780▶ L D E C R G L K H L K L G K N R I T S E G G K C V A L A V K N S T S
3001 CATCGTTGATGTTGGGATGTGGGTAAATCAGATTGGAGACGAAGGGCAAAGGCCCTTCGAGAGGCATTGAAGGACCACCCAGCCTGACCACTCTCAGT
813▶ I V D V G M W G N Q I G D E G A K A F A E A L K D H P S L T T L S
BspEI (3120) FspI (3141)
3101 CTTGCATTCAATGGCATCTCTCCGGAGGGAGGGAAGAGCCTTGCAGGCCCTGAAGCAGAACCACACTGACAGTAATCTGGCTGACCAAAAATGAAC
847▶ L A F N G I S P E G G K S L A Q A L K Q N T T L T V I W L T K N E
3201 TTAATGATGAGTCTGCAGAGTGCCTTCGCTGAGATGCTGAGAGTGAACACAGACGCTACGGCATTATGGCTGATCCAGAATCGCATCACAGCCAAGGGGAC
880▶ L N D E S A E C F A E M L R V N Q T L R H L W L I Q N R I T A K G T
3301 AGCGCAGCTGGCGAGGGCACTGCAGAAGAACACAGCCATAACAGAGATTTGTCTCAATGGAACTTGATTAAGCCGAGGAGGCCAAAGTCTTCGAGAAT
913▶ A Q L A R A L Q K N T A I T E I C L N G N L I K P E E A K V F E N
NheI (3477)
3401 GAGAAGAGAATCATCTGCTTCTGACGGACGCTCCTGGCAGGATCTTTGTCTAGGTTGCTCCTCAGTCACGAATTCGCTAGCTGGCCAGACATGATAAG
947▶ E K R I I C F •
EcoRI (3471)
3501 ATACATTGATGAGTTGGACAAACCACAACACTAGAATGCAGTGAATAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATA
HpaI (3615) MfeI (3626)
3601 AGCTGCAATAAACAGTTAAACAACAACATTGCATTCATTTTTATGTTTCAGGTTTCAGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAACCTCTACA
EcoRI (3711)
3701 AATGTGGTATGGAATCTAAAATACAGCATAGCAAACCTTAACTCCAATCAAGCCTCTACTTGAATCCTTTCTGAGGGATGAATAAGGCATAGGCA
3801 TCAGGGGCTGTTGCCAATGTGCATTAGCTGTTGCAGCCTCACCTCTTTTCATGGAGTTAAGATATAGTGTATTTTCCAAGTTTGAAGTACTAGCTCTTC
SspI (3950) SmaI (3964)
3901 ATTTCTTTATGTTTTAAATGCACTGACCTCCACATTCCTTTTTAGTAAAATATTCAGAAAATAATTTAAATACATCATTGCAATGAAAATAAATGTTTT
4001 TTATTAGGCAGAATCCAGATGCTCAAGGCCCTTATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGGAACCTTTAATAGAAATTGGACAGC
4101 AAGAAAGCGAGCTTCTAGCTTTAGTTCTGGTGTACTTGGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCATTCTCAATGAGCACAA
141▶ • N R T Y K L P I L E E I T T K V L K G N M E I L V F
SacI (4225)
4201 AGCAGTCAGGAGCATAGTCAGAGATGAGCTCTTCGCACATGCCACAGGGGCTGACCACCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCCTGAC
114▶ 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 H R V
4301 AGCCAAATGGTGTCAAAGTCTTCTGCCGTTGCTCAGCAGACCCAAATGGCAATGGCTTCCAGCAGACAGTACCCTGCCAATGTAGGCCTCAATG
81▶ 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 A E I
4401 TGGACAGCAGAGATGATCTCCCGTCTGGTCTGATGGCCGCCGACATGGTCTGTTGTCTCATAGAGCATGGTATCTTCTCAGTGGCGACCT
47▶ 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 A V E
XmnI (4531) AseI (4597)
4501 CCACCAGCTCCAGATCCTGCTGAGAGATGTTGAAGTCTCATGGTGGCCCTCTATAGTGAGTCTGATTATACTATGCCGATATACTATGCCGATGATT
14▶ V L E L D Q Q S I N F T K M
SacI (4654)
4601 AATTGTCAAACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTTCCTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCTACCGCCAT
SpeI (4752)
4701 TTGCGTCAATGGGGCGGAGTTGTTACGACATTTTGAAAGTCCCGTTGATTTACTAGTCAAAAACAACTCCATTGACGTCAATGGGGTGGAGACTTGA
SnaBI (4880)
4801 AATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTAAGTCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGTACTGCCAAG
NdeI (4985)
4901 TAGGAAAGTCCATAAGGTCATGTAAGTGGGCATAATGCCAGGCGGGCCATTTACCGTCAATGACGTCAATAGGGGGCGTACTTGGCATATGATACACTTG
5001 ATGTAAGTCCAAAGTGGGAGTTTACCGTAAATACTCCACCCATTGACGTCAATGAAAGTCCCTATTGGCGTTACTATGGGAACATACGTCATTATTGAC
PacI (5171)
5101 GTCAATGGGCGGGGTCTGTTGGCGGTGACCCAGCGGGCCATTTACCGTAAGTTATGTAACGCCTGCAGGTTAATTAAGAACATGTGAGCAAAGGCCA
SdaI (5163) BspLU11I (5181)
5201 GCAAAAGGCCAGGAACCGTAAAAAGCCGCTTGTGGCTTTTTCCATAGGCTCCGCCCTGACGAGCATCAAAAATCGACGCTCAAGTCAGAGG
5301 TGGCGAAACCCGACAGGACTATAAAGATACCAGGCTTTCCCTGGAAGTCCCTCGTGGCTCTCTGTTCCGACCTGCCGCTTACCGGATACCTGT
ApaLI (5495)
5401 CCGCTTTCTCCCTCGGAAAGCGTGGCGTTTTCTCATAGCTCAGCTGTAGGTATCTCAGTTCGGTGTAGGTGTTCTCGCTCCAAGCTGGGCTGTGTGCA
5501 CGAACCCCGTTCCAGCCGACCGCTGCGCTTATCCGGTAACTATCGTCTTGTAGTCCAAACCGTAAGACACGACTTATCGCACTGGCAGCAGCCACT
5601 GGTAAACAGGATTAGCAGAGCGAGGTATGTAGCGGTGCTACAGAGTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCT

5701 GCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTGGCAAGCA

5801 GCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACTCACGTTAAGGGATTTG

EagI (5931)

PacI (5911) SwaI (5920) **NotI (5930)**

5901 GTCATGGCTAGTTAATTAACATTTAAATC AGCGGCCGCAATAAAATATCTTTATTTTCATTACATCTGTGTGTTGGTTTTTTGTGTGAATCGTAACTAAC

6001 ATACGCTCTCCATCAAAACAAAACGAAACAAAACAAACTAGCAAATAGGCTGTCCCGAGTGCAAGTGCAGGTGCCAGAACATTTCTCTATCGAA