



PvuI (7)
SgfI (6) 1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCCGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA
MfeI (82)
101 GAGAAGTGGCGCGGGTAAACTGGAAAGTGTGTCTGTACTGGTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

Psp1406I (203) 201 GTGAACGTTCTTTTCGCAACGGGTTTCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTTCACGCGCCCGCCCTACCTGAGGCC
HindIII (245)
301 GCCATCCACGCGGGTTGAGTCGCGTTTCCGCCCTCCCGCTGTGGTGCCTCCTGAAGTGCCTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCAACTCTACGCTTTTGTTCGTTT

NcoI (560)
BstEII (555)
AgeI (552) 501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGGCGCCTACCTGAGATCACCGGTACCCATGAGCCGGCCGCGCGGCTCGAGACCTGGGCAA
SacII (573)
1 M E P G R G G V E T V G K
SalI (659)
601 GTTCGAGTCTCTCGCAAGGACCTGATTGGACACGGCGCCTTCGCGGTGGTCTCAAGGTCGACACCGCAGAAAGCAGCAGCTGGAGGTGGCCGTCAA
NsiI (699)
13 F E F S R K D L I G H G A F A V V F K G R H R E K H D L E V A V K
701 TGCATTAACAAGAAGAACCTTGCCAAAGTCCCAAACACTGCTGGAAAGGAAATCAAATCCTGAAGGAACTAAAGCAGCAAAACATCGTGGCGCTGTATG
47 C I N K K N L A K S Q T L L G K E I K I L K E L K H E N I V A L Y
FspI (881) 801 ACTCCAGGAAATGGCTAATCTGTCTACCTGGTCAATGGTGGAGACCTGGCTGACTACCTGCACACTATGCGCACACTGAGTGAAGA
80 D F Q E M A N S V Y L V M E Y C N G G D L A D Y L H T M R T L S E D
901 CACTGTGAGGCTTTTCTACAGCAGATCGTGGCGCCATGCGGCTGCTGCACAGCAAGGGCATCATCCACCGGACCTGAAGCCCAAAACATCCTGCTG
113 T V R L F L Q Q I A G A M R L L H S K G I I H R D L K P Q N I L L
Acc65I (1070) 1001 TCCAACCTGGGGCCGCCGGGCAACCCAGCAACATCCGAGTCAAGATTGCTGACTTTGGATTGCTCGGTACCTCCAGAGCAACATGATGGCGGCA
147 S N P G G R R A N P S N I R V K I A D F G F A R Y L Q S N M M A A
BsrGI (1118) 1101 CACTCTGTGGTTCCTATGTACATGGCTCCTGAGGTCATTATGTCCAGCACTACGATGAAAGGCTGACCTGTGGAGCATTGGCACCATTGTCTACCA
180 T L C G S P M Y M A P E V I M S Q H Y D G K A D L W S I G T I V Y Q
SpeI (1275) 1201 GTGTCTGACAGGGAAGGCCCTTTTTCAGGCCAGCAGCCCTCAGGATTTGCGCCTGTTTATGAGAAGAACAAGACACTAGTTCCTGCCATCCCCGGGAG
213 C L T G K A P F Q A S S P Q D L R L F Y E K N K T L V P A I P R E
1301 ACATCAGCTCCCTGCGGAGCTGCTCCTGGCTCTGTTGACGGGAACCAAGGACCGCATGGACTTTGATGAATTTTCCACCACCTTTCTTGGATG
247 T S A P L R Q L L L A L L Q R N H K D R M D F D E F F H H P F L D
1401 CCAGCACCCATCAAGAAATCCCAACCTGTGCCTGTGCCTCATATCCAAGCTCAGGTCCTGGCAGCAGCTCCAGCAGCAGCTGCCTCCACCTGGC
280 A S T P I K K S P P V P V P S Y P S G S G S S S S S A S H L A
1501 CTCTCCACCTGCTGGGGAGATGCCACAGCTACAGAAGACCTTACCTCCAGCCGATGCTGCTGGCTTTCTTCCAGGCTCCCGGACTCTGGTGGC
313 S P P S L G E M P Q L Q K T L T S P A D A A G F L Q G S R D S G G
Tth11II (1627) 1601 AGCAGCAAAGACTCCTGTGACACAGATGACTTTGTATGGTCCAGCCAGTTTCCAGGTGATCTAGTTGCTGAGGCAGCAGTGCACAGCCCACTG
347 S S K D S C D T D D F V M V P A Q F P G D L V A E A A S A K P P P
EagI (1755) 1701 ATAGCCTGCTGTGTAGTGGGAGCTCATTGGTGGCCTCTGCTGGCCTAGAGAGCCAGCCGCTACCCCTCTCCCTCTCCGACCTGCAGCAGCTCTCCAG
380 D S L L C S G S S L V A S A G L E S H G R T P S P S P T C S S S P S
SfiI (1807) 1801 CCCCTCTGGCCGGCTGGCCCTTCTCCAGCAACAGGTACGGTGCCTCGGTCCCCATTCTGTCCCCACTCAGGTGCACAATTACCAGCGCATCGAGCAA
413 P S G R P G P F S S N R Y G A S V P I P V P T Q V H N Y Q R I E Q
1901 AACCTGCAATCGCCACTCAACAGCAGACAGTCCCTTGCATCCGAAGTCCAGGAGCACCAGCCCTGGGCTTTGGCCGGGACCCATCAC
447 N L Q Q Q T Q Q T A R S S A I R R S G S T S P L G F G R A S P S
2001 CCCCTCCACACCGATGGAGCCATGCTGGCCAGGAAGCTGTCACTTGGAGGTGGCCGCTCCCTACACACCTTCTCCCAAGTGGGAACCATCCAGAGCG
480 P P S H T D G A M L A R K L S L G G G R P Y T P S P Q V G T I P E R
BstEII (2153) 2101 ACCAGCTGGAGCAGAGTGCCTCCCCACAAGGAGCTGATGTGCGGGTTGGCAGGTACCACAGCCGGTTCCTCTGTGCTGAGCACTCTCCAAGAACC
513 P S W S R V P S P Q G A D V R V G R S P R P G S S V P E H S P R T
2201 ACTGGGCTGGGCTGCCGCTGCACAGTGCCTAACCTGTCCGACTTCCATGTTGTGCGTCCCAAGCTGCCTAAGCCCCAACAGACCCACTGGGAGCCA
547 T G L G C R L H S A P N L S D F H V V R P K L P K P P T D P L G A
2301 CCTTAGCCACCCAGACCGCACCAGCCATGCCAGGGCTACAGTCTTCCGGCCACTGCGTGGCTCACCTAAGCTGCCTGACTTCTACAGCG
580 T F S P P Q T S A P Q P C P G L Q S C R P L R G S P K L P D F L Q R
AvrII (2418) 2401 GAGTCCCCTACCCCATCTAGGCTCTCTACCAAGGCGGGCCCTCTTTGACTTCCCCAAAACCCAGCTCTCAGAATTTGCTGACCCTGTTGGCT
613 S P L P P I L G S P T K A G P S F D F P K T P S S Q N L L T L L A
Bsp120I (2440)
NcoI (2568) 2501 AGGAGGGGGTAGTAATGACACCACCTCGAACCCTGACTGCCTGACCTCTCCGAGGCCAGTCCCTTCCATGGCCAGCAGCTGGGCTCTGGCCTTCGCC
647 R Q G V V M T P P R N R T L P D L S E A S P F H G Q Q L G S G L R
SandI (2616) 2601 CCGCTGAAGACACCCGGGTCCTTTGGACGGTCTTCCAGCACCAGCCGATTACGGACCTGCTGCTTAAGGCTGCATTTGGGACTCAGGCCCTGACTC
680 P A E D T R Q C P F G R S F S T S R I T D L L K A A F G T Q A S D S
2701 AGGAGCAGACAGCAGCTACAGGAGAAACCTATGGAGATTGCTCCCTCTGCTGGCTTTGGAGGACTCTGCATCCAGGAGCTCGTGGTGGAGGGCCAGC
713 G S T D S L Q E K P M E I A P S A G F G G T L H P G A R G G G A S

2801 AGCCAGCACCTGTGGTATTTACTGTAGGCTCCACCCAGTGGTCCACCCACCCAGAGTACCCGTACCAGAATGTTCTCAGTGGGCTCTCCAGCT
747▶ S P A P V V F T V G S P P S G A T P P Q S T R T R M F S V G S S S
2901 CCCTGGGCTCTACTGGCTCCTCCTCGCCGCCACTTAGTGCCTGGGGCTGTGGAGAGCCCGGAGCTTTCTGCCAGGCCACTGTAGCCTTGC
780▶ S L G S T G S S S A R H L V P G A C G E A P E L S A P G H C C S L A
3001 TGACCCCTTGTGCAACTTGGAGGGGCTGTGACCTTCGAGGCTCCTGACCTCCAGAGGAGACCTCATGGAGCAAGAGCACACGAAACCTACAC
813▶ D P L A A N L E G A V T F E A P D L P E E T L M E Q E H T E T L H

SapI (2888)

3101 AGTCTGCGCTTCACACTAGCGTTTGACAGCAAGTCTGGAGATTGCAGCCCTGAAGGGAAGTCCAGTGAGGCCGCGGCTGAGTACCAGCTCC
847▶ S L R F T L A F A Q Q V L E I A A L K G S A S E A A G G P E Y Q L
3201 AGGAAAGTGTGGTGGCTGACCAGATCAGTCAGTTGAGCCGAGAGTGGGGCTTTCAGAGCAACTGGTTCTGTACTTGAAGGTGGCTGAGCTGCTGCCTC
880▶ Q E S V V A D Q I S Q L S R E W G F A E Q L V L Y L K V A E L L S S

SgrAI (3174)

3301 AGGCCTACAGACTGCCATTGACCAGATTCGAGCTGGCAAACCTGCTCTTTCATCTACTGTGAAGCAGGTGGTACGCAGACTAAATGAGCTGTACAAGGCC
913▶ G L Q T A I D Q I R A G K L C L S S T V K Q V V R R L N E L Y K A

BsrGI (3389)

Eco47III (3437) BamHI (3473) BsrBI (3493)

3401 AGCGTGGTATCCTGCCAGGGCCTCAGCTTGCAGCTTTCAGCGCTTCTTTCGGACAAACACGGCTGCTGGACGGATCCATGGTGTACTGCAGAGCGGC
947▶ S V V S C Q G L S L R L Q R F F L D K Q R L L D G I H G V T A E R

EcoRV (3581)

3501 TCATCCTCAGCCATGCTGTGCAATGGTACAATCAGCTGCCCTTGATGAGATGTTCCAGCACCGAGAGGGCTGTGTACCGAGATATCACAAAGCCCTGCT
980▶ L I L S H A V Q M V Q S A A L D E M F Q H R E G C V P R Y H K A L L
3601 ATTGCTGGAGGGTTCAGCACACTCTCACGGACCAGGACAGATTGAGAATGCAAAATGCAAGCTGTGCATTGAGAGGAGACTCTCGGCCCTGCTG
1013▶ L L E G L Q H T L T D Q A D I E N I A K C K L C I E R R L S A L L

NheI (3733)

3701 AGTGGTGTCTATGCCTGACTACCTGCTGCCAACCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAA
1047▶ S G V Y A •

HpaI (3871) MfeI (3882)

3801 AAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAAACAAGTTAAACAACAACATTCATTCTTTAT

EcoRI (3967)

3901 GTTTCAGGTTTCAGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGAATTCAAAAACACGATAGCAAACTTTAAC

4001 CTCCAAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGACGCCTCACC

SapI (4149)

4101 TTCTTTCATGGAGTTTAAGATATAGTGATTTTTCCCAAGGTTTGAAGTACTCTTTCATTTCTTTATGTTTTAAATGCACTGACCTCCACATTCCTTTT

SspI (4206) SmaI (4220)

4201 TAGTAAAAATTCAGAAAATAATTTAAATACATCATTGCAATGAAAATAAATGTTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCC

4301 CCAGTTTAGTAGTTGGACTTAGGGAACAAAGAACCTTTAATAGAAATGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCCTGGTGTACTTGAGGGG

141◀ • N R T Y K L P

4401 GATGAGTTCCTCAATGGTGGTTTTGACCAGCTTCCATTCATCTCAATGAGCACAAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTGCACATGCCA
133▶ 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 G
4501 CAGGGGCTGACCACCCTGATGGATCTGTCCACCTCATCAGAGTAGGGTGCCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCCGTTGCTCACAGCAG
99▶ 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 A S
4601 ACCCAATGGCAATGGCTTACGACAGACAGTACCTGCAATGTAGGCTCAATGTGGACAGCAGAGATGATCTCCCAAGTCTTGGTCTGATGGCCGC
66▶ 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 I A A

XmnI (4787)

4701 CCCGACATGGTGTCTGTTGCTCCTCATAGAGCATGGTATCTTCTCAGTGGCGACCTCCACCAGCTCCAGATCCTGCTGAGAGATGTTGAAGGTCTTCATG
33▶ 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 M

AseI (4853)

4801 GTGGCCCTCTATAGTGAGTCGTATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACAGCGTGGATGGCGTCTCCAGCTTATCTGACGG

4901 TTCCTAAACGAGCTCTGCTTATATAGACCTCCACCCTACACGCTACCGCCATTTGCGTCAATGGGGCGGAGTTGTTACGACATTTTGAAAGTCCC

SpeI (5008)

5001 GTTGATTTACTAGTCAAACAAACTCCCATTGACGTCAATGGGGTGGAGACTTGAAATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTACTG

SnaBI (5136)

5101 CCAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGTAAGTCCCAAGTAGGAAAGTCCCATAAAGTTCATGTAAGTGGCATAATGCCAGGCG

NdeI (5241)

5201 GGCCATTTACCGTATTGACGTCAATAGGGGGCTACTTGGCATATGATACACTTGTACTGCAAGTGGGAGTTTACCCTAAATACTCCACCCATT

5301 GACGTCAATGAAAGTCCCTATTGGCGTACTATGGGAACATACGTCATTATTGACGTCAATGGGCGGGGCTGTTGGGCGGTGAGCCAGGCGGGCCATT

PaeI (5427)

SdaI (5419) BspLU11I (5437)

5401 TACCGTAAGTTATGTAACGCTGACAGGTTAAATTAAGAAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAGAGGCCGCTTGTGGCGTTTT

5501 TCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCC

5601 TGGAAAGTCCCTCGTGCCTCTCCTGTTCCGACCTGCCGTTACCGGATACCTGTCCGCTTCTCCTTCCGGAAGCGTGGCGTTTTCTCATAGCTCA

ApaI (5751)

5701 CGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCGTTCAAGCCGACCGCTGCGCCTTATCCGGTAACT
5801 ATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCGGTGCTACAGA
5901 GTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGC
6001 TCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTTGTTTGAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGA

EagI (6187)

PacI (6167) SmaI (6176) NotI (6186)

6101 TCTTTTCTACGGGGTCTGACGCTCAGTGGAAACGAAAACCTCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATC AGCGGCCGCAATAAA
6201 ATATCTTTATTTTCATTACATCTGTGTGTTGGTTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAACAAAACGAAACAAAACAACTAGCAA
6301 AATAGGCTGTCCCAGTGAAGTGCAGGTGCCAGAACATTTCTCTATCGAA