



PvuI (7)
SgfI (6) 1 GGATCTGCATCGCTCCGGTGCCCGTCAGTGGGCGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTCGGCAATTGAACGGGTGCCTA
101 GAGAAGGTGGCGGGGTAACCTGGGAAAGTGTGCTGTACTGGCTCCGCCTTTTTCCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

HindIII (245)
201 GTGAACGTTCTTTTTGCAACGGGTTTCCCGCCAGAACACAGCTGAAGCTTCAGAGGGGCTCGCATCTCTCTTTCACGCGCCCGCCGCTACCTGAGGCC
301 GCCATCCACGCGGGTTGAGTCCGGTTCTGCCGCTCCCGCTCTGGTGCCTGAAGTGGTCCGCGCTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

NgoMIV (441)
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGGCTGACCCTGCTTGTCAACTCTACGCTTTTGTTCGTTT

KasI (535) **NgoMIV (557)**
501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGGGCGCTACTCTGAGATCACCGGGCCGCCACCATTGGGAAATCAGCTTGTGGCATTGCTCCCTCC
1► M G N Q L A G I A P S

Scal (666) **XhoI (688)**
601 CAGATCCTTTCTGTAGAGAGTTATTTTTCAGATATTCATGACTTTGAATATGATAAAAGCCTGGGGAGTACTCGGTTTTTAAAGTTGCTCGAGCCAAGC
12► Q I L S V E S Y F S D I H D F E Y D K S L G S T R F F K V A R A K

StuI (707) **BamHI (740)**
701 ACCGAGAAGCGCTGGTCTGTGAAGGTTTTGCAATTCAGGATCCCATGCTTTAACCGACTATAAAACAAGAGCTGGAGGAACTGAAAATCAGGCT
45► H R E G L V V V K V F A I Q D P T L P L T S Y K Q E L E E L K I R L
801 TAATTCTGCACAGAAATTGCTACCTTTCCAGAAAGCATCAGAAAAAGCATCTGAGAAAGCAGCTATGCTCTTTAGGCAGTATGTGCGAGACAATCTCTAT
78► N S A Q N C L P F Q K A S E K A S E K A A M L F R Q Y V R D N L Y

Eco4VII (940)
901 GATCGCATCAGTACCCTGCTTCTGAATAACATTGAGAAGGCTGGATTGCTTTCCAGATCCTGACAGCTGTGGACCAAGCACACAAATCTGGAGTTC
112► D R I S T R P F L N N I E K R W I A F Q I L T A V D Q A H K S G V

BstEII (1031)
1001 GTCATGGGACATCAAGACTGAGAATGTGATCACCAGTTGGAATGGGTTCTTAACTGATTTTCCAGTTTTAAGCCCACTTATCTTCCAGAAGA
145► R H G D I K T E N V M V T S W N W V L L T D F A S F K P T Y L P E D
1101 CAACCCGGCAGATTTCAATTATTTCTTTGACACATCACGGAGGAGAATTGCTATATTGCTCCTGAACGTTTTGTTGATGGTGGGATGTTTCCACTGAG
178► N P A D F N Y F F D T S R R R T C Y I A P E R F V D G G M F A T E
1201 TTAGAATATATGAGAGATCCTTCAACTCCGCTTGTAGACTTAAATAGCAATCAGAGAACAAGAGGAGAGTTGAAGAGAGCAATGGACATCTTTTCAGCAG
212► L E Y M R D P S T P L V D L N S N Q R T R G E L K R A M D I F S A
1301 GTTGTGTGATAGCTGAGCTTTTACAGAAGGTGACCATTATTTGATCTCTCAACTTTTGGCTTATAGAAAATGGACATTTTTTCCCTGAACAAGTGC
245► G C V I A E L F T E G V P L F D L S Q L L A Y R N G H F F P E Q V L
1401 AAATAAAATGAAGATCACAGTATCAGAGAATTGTAACCTCAGATGATCACCCTGAGCCAGATAAAGCTTTAGAGGCAGAAGATTACTTAAAAACAGCAG
278► N K I E D H S I R E L V T Q M I H R E P D K R L E A E D Y L K Q Q
1501 CGTGGCAATGCCTTCTGAAATATTTTACACTTTTCCAGCCCTACATGGCCCACTGTTGCAAGGAAACGTTTCTTCTGCAGATGAGCGTATTCTG
312► R G N A F P E I F Y T F L Q C P Y M A Q T F A K E T F L S A D E R I L
1601 TTATACGGAAGGATTTGGGCAACATTATTCACAATCTCTGTGGACATGATCTGCCAGAAAAAGCCGAAGGAGAGCCTAAGGAAAAATGGCTGTTATCTT
345► V I R K D L G N I I H N L C G H D L P E K A E G E P K E N G L V I L
1701 GGTATCTGTTATAACATCTGCCTACAGACCCTTAAATACTGTGATCCAAACTAGCTGCTTTGGAAGTATTCTTATTTGGCTCCAAGATTAAGTGT
378► V S V I T S C L Q T L K Y C D S K L A A L E L I L H L A P R L S V

AvrII (1857)
1801 GAAATCCTTTGGATCGTATTACTCCATATCTTTGCATTTCCAGCAATGACTCTGTTCTAGGGTGGGGCTGAAGCCTTGAGGACGTTGACCAAAGTTC
412► E I L L D R I T P Y L L H F S N D S V P R V R A E A L R T L T K V

EcoRV (1929) **BspEI (1943)**
1901 TTGCTCTCGTCAAAGAGTTCTCGTAATGATCAATATTTTCCGGAATACATTCTGCCAGGCATAGCCCACTTAGCCCAAGATGATGCTACTATCGT
445► L A L V K E V P R N D I N I Y P E Y I L P G I A H L A Q D D A T I V
2001 TAGACTAGCCTATGCTGAAAACATAGCTCTGCTGGCAGAAACAGCTCTGAGATTCTGGAATAGTACAGTTAAAAATCTTAATATGAAAAATGACCCC
478► R L A Y A E N I A L L A E T A L R F L E L V Q L K N L N M E N D P
2101 AATAATGAAGAAATAGATGAGGTTACACATCCAATGGAATGACACAGAGCTCCAAGCCTTACATGAAATGGTCCAGCAGAAAGTTGTTACTTTGC
512► N N E E I D E V T H P N G N Y D T E L Q A L H E M V Q K V V T L
2201 TAAGTGACCTGAAAATATTGTAACAAACCTTGATGAAAAATGGAATAACACGCGTGTGTGATTCTTTGGACGTCAGAAAACCAACGATGTTTTGTT
545► L S D P E N I V K Q T L M E N G I T R L C V F F G R Q K A N D V L L
2301 GTCCACATGATTACTTTCTAAATGATAAGAATGATTGGCATCTACGTGGAGCATTTTTTGTAGTATAGTTGGTGTGCTGCCTATGTTGGCTGGCAA
578► S H M I T F L N D K N D W H L R G A F F D S I V G V A A Y V G W Q
2401 AGCTCCTCAATTCAAGCCTCTGCTGCAACAAGGTCTTAGTGATGCTGAGGAAATTTGTCATTGTGAAAGCTTTTATGCCCTTACTTGTATGTGCGAGT
612► S S S I L K P L L Q Q G L S D A E E F V I V K A L Y A L T C M C Q
2501 TAGGACTGCTACAAAACCCCATGTTTACGAATTTGCCAGTGATATTGCCCTTCTGTGTCATCCCAATTTATGGATACGTTATGGTCCGCTGGGATT
645► L G L L Q K P H V Y E F A S D I A P F L C H P N L W I R Y G A V G F
2601 TATCACAGTGGTACGTCGTCAAATAAGTACAGCTGATGCTACTGTAACCTGATGCCTTATCTTGACCCATATATTCCCAACCAATAACAGATGAA
678► I T V V A R Q I S T A D V Y C A K L M P Y L D P Y I T Q P I I Q I E
2701 AGAAAACTGTTCTGCTCAGTGTTTTAAAGGAACAGTAAGTCTGTTCTATATTTGATTATGCTTTGAGGTCTAAAGATATTACTAGCTTGTTCAGACATC
712► R K L V L L S V L K E P V S R S I F D Y A L R S K D I T S L F R H

BamHI (2855)
2801 TTCACATGCGTCAGAAGAAACGAAATGGTTCTCTTCCGACTGCCTCCGCCAGAGGATCCTGCCATAGCACAGCTTCTGAAGAAGTTGCTCTCACAGGG
745► L H M R Q K K R N G S L P D C P P P E D P A I A Q L L K K L L S Q G
2901 AATGACAGAGGAAGAGGAAGACAAACTTCTGGCACTGAAAGACTTTCATGATGAAATCTAATAAAGCAAAGGCCAATATAGTGACAGAGCCATCTTCAT
778► M T E E E E D K L L A L K D F M M K S N K A K A N I V D Q S H L H
3001 GATAGTAGTCAGAAAGGTGTAATTGACTTGGCAGCTTTAGGCATAACTGGGAGACAAGTTGATCTTGTAAAACCAAACAAGAACCAGATGACAAACGGG
812► D S S S Q K G V I D L A A L G I T G R Q V D L V K T K Q E P D D K R
3101 CCAGAAAACATGAAAACAGACTCAAATGAAATGAAGAATGAAAAGCATGTTGGTCTACTGGACCCCAACATGCCACAGCCCTACTTAAAGG
845► A R K H V K Q D S N V N E E W K S M F G S L D P P N M P Q A L P K G

PshAI
3201 GAGTGATCAGGAGGTGATTACAGACTGGGAAACCTCCTCGTTCGAGTCTCTGCTGGCATTGTTGTCCTTTGTCAACTTCTTACAGGTTCCAGAAGTG
878► S D Q E V I Q T G K P P R S E S S A G I C V P L S T S S Q V P E V

3301 **AgeI (3329)** ACAACTGTCCAAAATAAAAAACAGTAATACCGGTTTTAAGTAGTACAATCTTACCATCCACCTATCAGATTCGAATTACAACCTGTAACCTGAACTTC
912▶ T T V Q N K K P V I P V L S S T I L P S T Y Q I R I T T C K T E L **XcmI (3489)**

3401 AGCAACTCATCCAGCAAAGCGGGAGCAGTGCAATGCTGAGAGAATAGCTAAGCAGATGATGGAAAATGCTGAATGGGAGAGTAAACCACCACCACCTGG
945▶ Q Q L I Q Q K R E Q C N A E R I A K Q M M E N A E W E S K P P P P G

3501 ATGGCGTCTAAAGGGCTGTTAGTTGCCATCTTCATGAGCATAAATCTGCTGTGAATCGAATTAGAGTCTCTGATGAACACTCACTTTTGGCAACATGT
978▶ W R P K G L L V A H L H E H K S A V N R I R V S D E H S L F A T C **BglIII (3663)**

3601 TCAATGATGGCACAGTGAAGTCTGGAACAGTCAAAAGATGGAGGGGAGACCACCCTACAGATCTATTCTTACATACAGCCGAATTGGAGGACGAG
1012▶ S N D G T V K I W N S Q K M E G K T T T T R S I L T Y S R I G G R

3701 TCAAGACGCTCACATTCTGCAAGGCTCCCACTATTTAGCCATAGCATCTGATAATGGTGTCTGCCAGCTTCTTGGAATTGAGGCTTCTAAGCTGCCAA
1045▶ V K T L T F C Q G S H Y L A I A S D N G A V Q L L G I E A S K L P K **XbaI (3833)**

3801 **EcoRI (3829)** GTCTCCTAAAATCCATCCTCTACAAAGCAGAATTCTAGATCAGAAGGAGGACGGTTGTGTGGATATGCATCACTTCAACTCTGGAGCACAGTCTGTT
1078▶ S P K I H P L Q S R I L D Q K E D G C V V D M H H F N S G A Q S V **NsiI (3867)**

3901 CTTGCCTATGCCACTGTGAATGGCTCTCTGGTTGGCTGGGACCTTAGGTCTTCAAGCAATGCGTGGACTTTAAAGCATGATTTAAAGTCGGGCCTCATCA
1112▶ L A Y A T V N G S L V G W D L R S S S N A W T L K H D L K S G L I **Acc65I (4053)**

4001 CTTCTTTGCTGTGGACATCCACCAATGCTGGCTCTGCATTGGTACAAGCAGTGGTACCATGGCTTGTGGGACATGAGGTTCCAGTTGCCAATTTCAAG
1145▶ T S F A V D I H Q C W L C I G T S S G T M A C W D M R F Q L P I S S **XcmI (4198)**

4101 TCACTGTATCCTTCCAGGGCTCGAATCAGACGCTCTCAATGCACCCTCTGTATCAGTCTGGGTGATTGCAGCTGTTCCAGGCAACACGAAGTGTCC
1178▶ H C H P S R A R I R R L S M H P L Y Q S W V I A A V Q G N N E V S **ApaLI (4249)**

4201 ATGTGGGACATGGAGACTGGTGACAGAAGATTTACTCTCTGGGCCAGCAGTGCACCACCTTCTGAATTACAGCCTTCTCCTCATAGCGTCCATGGTA
1212▶ M W D M E T G D R R F T L W A S S A P P L S E L Q P S P H S V H G

4301 TCTACTGTAGTCCGAGATGAAAATCCCTACTAACAGCTGGCTCAGATATGAAAATAAGGTTTTGGGACTTGGCTTACCAGAAAGGTCCTATGT
1245▶ I Y C S P A D G N P I L L T A G S D M K I R F W D L A Y P E R S Y V **SpeI (4413)**

4401 TGTTCAGGAAGTACTAGTTCCCCATCTGTGTCCTACTACAGGAAAATAATTGAAGGCACTGAAGTTGTCAGGAAATTCAGAATAAGCAGAAAGTAGGA
1278▶ V A G S T S S P S V S Y Y R K I I E G T E V V Q E I Q N K Q K V G **ScaI (4410)**

4501 CCAAGTGTGACACCCCTCGAAGGGGCCAGAGTCCCTGCCCGTGGGACATCATGACATCACTGATGTCGCCACATTCCAGACCACACAGGGCTTCA
1312▶ P S D D T P R R G P E S L P V G H H D I I T D V A T F Q T T Q G F **Bsp120I (4523)**

4601 TCGTAACTGCTTCTAGAGATGGGATTGTGAAGGTGTGAAATAAAACCTGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACA
1345▶ I V T A S R D G I V K V W K • **MscI (4655)**

4701 **NheI (4649)** ACTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGTTAACAAACA
HpaI (4787) MfeI (4798)

4801 **EcoRI (4883)** ATTGCAATCATTATGTTTCAGGTTCCAGGGGAGGTGTGGGAGTTTTTTAAAGCAAGTAAACCTCTACAATGTGGTATGGAATTCTAAAATACAGC
4901 ATAGCAAACTTTAACCTCAAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGC
5001 TGTTTGCAGCCTCACCTTCTTTCATGGAGTTTAAAGATATAGTGTATTTTCCAAAGTTTGAAGTAGCTCTTCAATTTCTTTATGTTTTAAATGCACTGACC

5101 **SwaI (5136)** TCCCACATTCCTTTTTAGTAAAATATTGAGAAATAATTTAAATACATCATTGCAATGAAAATAAATGTTTTTTATTAGGCAGAAATCCAGATGCTCAAGG
5201 CCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGAACCTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCC
5301 TGGTGTACTTGAGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCATTCTCAATGAGCACAAGCAGTCAAGGAGCATAGTCAGAGATGAG
138▶ T Y K 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 • N R

5401 CTCTCTGCACATGCCACAGGGCTGACCACCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTCCCTGACAGCCACAATGGTGTCAAAGTCCCTCTGC
105▶ E R C M 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 **StuI (5561)**

5501 CCGTTGCTCACAGCAGACCAATGGCAATGGCTTCCAGCAGACAGTACCTGCAATGTAGGCTCAATGTGGACAGCAGAGATGATCTCCCAGTCT
71▶ G N S V A S 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

5601 TGGTCTGATGGCCGCCGACATGGTCTTGTGCTCATAGAGCATGGTGTCTTCTCAGTGGCGACCTCCACCAGCTCCAGATCTGCTGAGAGAT
38▶ T R I 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 **AseI (5769)**

5701 **AseI (5769)** GTTGAAGTCTTTCATGATGGCCCTCTATAGTGAAGTCTATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACAGCGTGGATGGCGTCT
5▶ N F T K M

5801 CCAGCTTATCTGACGGTCACTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCTACCGCCATTGCGTCAATGGGCGGAGTTGTTACGA

5901 **SpeI (5924)** CATTGTTGAAAGTCCCGTTGATTTACTAGTCAAAACAACTCCCACTTACGCTCAATGGGGTGGAGACTTGGAAATCCCGTGAGTCAAACCGCTATCCAC

6001 **SnaBI (6052)** GCCCATTGATGACTGCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGACTGCCAAGTAGGAAAGTCCCATAGGTCATGACTG

6101 GGCATAATGCCAGGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCGTACTTGGCATATGATACCTTGATGTACTGCCAAGTGGGCAGTTACCGT
6201 AAATACTCCACCCATTGACGTCAATGGAAAGTCCCTATTGGCGTTACTATGGGAACATACGTCATTATTGACGTCAATGGGCGGGGTCGTTGGGCGGTC

6301 AGCCAGGCGGGCCATTTACCGTAAGTTATGTAACGCTGCAGGTTAATTAAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCC
6401 GCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGAT
6501 ACCAGGCGTTTTCCCTGGAAAGCTCCCTCGTGCGCTCTCTGTTCCGACCCCTGCCGTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGC

6601 GCTTCTCATAGCTCAGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTGCTCCAAGCTGGGCTGTGTGCACGAACCCCGTTAGCCCGACCGCTGC
6701 GCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATG
6801 TAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGG
6901 AAAAAAGATTGGTAGCTCTTGATCCGGCAAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTGTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCT

7001 CAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGAACGAAAACCTCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAAT

EagI (7103)
NotI (7102)
7101 CAGCGGCCGCAATAAAATATCTTTATTTTCATTACATCTGTGTGGTTTTTTGTGTAATCGTAACTAACATACGCTCTCCATCAAAACAAAACGAAA
7201 CAAAACAACTAGCAAAATAGGCTGTCCCAAGTGCAGGTGCCAGAACATTTCTATCGAA