



150

**PvuI (7)**  
**SgfI (6)** 1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA  
**MfeI (82)**  
101 GAGAAAGTGGCGCGGGTAAACTGGAAAGTGTGTCTGTACTGGTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

**Psp1406I (203)** **HindIII (245)**  
201 GTGAACGTTCTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTTCACGCGCCCGCCCTACCTGAGGCC  
301 GCCATCCACGCCGGTTGAGTCGCGTTTCTGCCGCCTCCCGCCTGTGGTGCCTCCTGAAGTGCCTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

**NgoMIV (441)**  
**NaeI (441)**  
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCTCAACTCTACGCTTTGTTTCGTTT

**KasI (535)** **AgeI (552)** **NcoI (560)**  
501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGCGCCTACCTGAGATCACCGGTACCATTGGCGCTGAGGCGGAGCATGGGGCGCCGGGGCTCCC  
1▶ M A L R R S M G R P G L P

**SacII (622)**  
601 GCCGCTGCCGCTGCCGCCACCGGCTCGGGTGTCTGCTGGCGGCTCTGGCTTCTCTGCTGCTCCCGAGATCCGCCCGCCAGGTCGAAGTCTCATG  
13▶ P L P L P P P P R L G L L L A A L A S L L L P E S A A A G L K L M

**Tth111I (717)**  
701 GGAGCCCCGGTGAAGCTGACAGTGTCTCAGGGGAGCCGGTGAAGCTCAACTGCAGTGTGAGGGGATGGAGGAGCCTGACATCCAGTGGGTGAAGGATG  
47▶ G A P V K L T V S Q G Q P V K L N C S V E G M E E P D I Q W V K D

**BsrGI (827)** **Eco47III (884)** **NaeI (895)**  
801 GGGCTGTGGTCCAGAAGTGGACCAAGTGTACATCCAGTCCAGCGAGCAGCACTGGATCGGCTTCTCAGCCTGAAAGTCAAGTGGAGCGCTCTGACGCCGG  
80▶ G A V V Q N L D Q L Y I P V S E Q H W I G F L S L K S V E R S D A G

**XcmI (912)**  
901 CCGGACTGGTGCAGGTGGAGGATGGGGGTGAAACCGAGATCTCCAGCCAGTGTGGCTCACGGTAGAAGGTGTGCCATTTTTCACAGTGGAGCCAAAA  
113▶ R Y W C Q V E D G G E T E I S Q P V W L T V E G V P F F T V E P K  
1001 GATCTGGCAGTGCACCCAATGCCCTTTCAACTGTCTTGTGAGGCTGTGGTCCCCCTGAACCTGTACCATTGTCTGGTGGAGAGAACTACGAAGA  
147▶ D L A V P P N A P F Q L S C E A V G P P E P V T I V W W R G T T K

**BsrBI (1109)**  
1101 TCGGGGACCCGCTCCCTCTCCATCTGTTTAAATGTAACAGGGGTGACCCAGAGCACCATGTTTCTGTGAAGCTCACAACCTAAAAGGCCTGGCCTC  
180▶ I G G P A P S P S V L N V T G V T Q S T M F S C E A H N L K G L A S

**HindIII (1264)**  
1201 TTCTCGCACGCCACTGTTACCTTCAAGCACTGCCTGCAGCCCTTCAACATCACCGTGCACAAAGCTTCCAGCAGCAACGCTAGTGTGGCCTGGATG  
213▶ S R T A T V H L Q A L P A A P F N I T V T K L S S S N A S V A W M

**BsrGI (1333)**  
1301 CCAGGTGCCGATGGCCGAGCTCTGCTACAGTCTGTACAGTTCAGGTGACACAGGCCCCAGGAGGCTGGGAAGTCTGGCTGTTGTGGTCCCTGTGCCCC  
247▶ P G A D G R A L L Q S C T V Q V T Q A P G G W E V L A V V V P V P

**Bsp120I (1474)**  
1401 CCTTACCTGCTGCTCCGGGACCTGGTGCCTGCCACCAACTACAGCCTCAGGGTGGCTGTGCCAATGCCTTGGGGCCCTCTCCCTATGCTGACTGGGT  
280▶ P F T C L L R D L V P A T N Y S L R V R C A N A L G P S P Y A D W V

**Eco47III (1531)**  
1501 GCCCTTTCAGACCAAGGGTCTAGCCCCAGCCAGCGCTCCCAAAACCTCCATGCCATCCGCACAGATTGAGCCCTCATCTGGAGTGGGAAGAAGTGATC  
313▶ P F Q T K G L A P A S A P Q N L H A I R T D S G L I L E W E E V I  
1601 CCCGAGGCCCTTTGGAAGGCCCTGGGACCTACAAACTGTCTGGGTTCAAGACAATGGAACCCAGGATGAGCTGACAGTGGAGGGGACCAGGGCCA  
347▶ P E A P L E G P L G P Y K L S W V Q D N G T Q D E L T V E G T R A

**BamHI (1713)** **BsiWI (1734)**  
1701 ATTTGACAGGCTGGGATCCCAAAAGGACCTGATCGTACGTGTGTGCGCTCCTCAATGCAGTGTGGCTGTGGACCTGGAGTGCAGCCACTGGTGGTCTCTTC  
380▶ N L T G W D P Q K D L I V R V C V S N A V G C G P W S Q P L V V S S

**Bsp120I (1821)**  
**SfiI (1813)** **Asp718I (1848)**  
1801 TCATGACCGTGCAGGCCAGCGCCCTCCTCACAGCCGACATCCTGGGTACCTGTGGTCTCTTGGTGTGCTAACGGCCCTGGTACGGCTGCTGCCCTG  
413▶ H D R A G Q Q G P P H S R T S W V P V V L G V L T A L V T A A A L

**BstBI (1913)** **XmaI (1967)**  
**AsuII (1913)** **SmaI (1967)**  
1901 GCCCTCATCTGCTCGAAAGAGACGGAAGAGACCGGGTTGGGCAAGCCTTTGACAGTGTGCATGGCCGGGAGAGCCAGCGTTCACTTCCGGGCGAG  
447▶ A L I L L R K R R K E T R F G Q A F D S V M A R G E P A V H F R A  
2001 CCCGGTCTTCAATCGAGAAAGGCCGAGCGCATCGAGGCCACATTGGACAGCTTGGGCATCAGCGATGAACTAAAGGAAAACTGGAGGATGTGCTCAT  
480▶ A R S F N R E R P E R I E A T L D S L G I S D E L K E K L E D V L I  
2101 CCCAGAGCAGCAGTTACCTGGGCCGGATGTTGGGCAAGGAGAGTTTGGTTCAGTGCGGGAGGCCAGCTGAAGCAAGAGGATGGCTCCTTTGTGAAA  
513▶ P E Q Q F T L G R M L G K G E F G S V R E A Q L K Q E D G S F V K

**BbrPI (2296)**  
2201 GTGGCTGTGAAGATGCTGAAAGTGCATCATTGCCTCAAGCGACATTGAAGAGTTCTCAGGGAAGCAGCTTGCATGAAGGAGTTTGACCATCCACAG  
547▶ V A V K M L K A D I I A S S D I E E F L R E A A C M K E F D H P H

**MseI (2300)** **BspEI (2324)** **NcoI (2357)** **SphI (2394)**  
2301 TGGCCAAACTTTGGGGTAAGCCTCCGGAGCAGGGCTAAAGGCCGTCTCCCATGCCATGGTCACTTGGCCCTTATGAAGCATGGGGACCTGCATGC  
580▶ V A K L V G V S L R S R A K G R L P I P M V I L P F M K H G D L H A  
2401 CTTCTGCTGCCTCCCGATTGGGGAGAACCCCTTAACTACCCCTCCAGACCTGATCCGGTTCATGGTGGACATTGCCTGCGGCATGGAGTACCTG  
613▶ F L L A S R I G E N P F N L P L Q T L I R F M V D I A C G M E Y L

SphI (2543)  
2501 AGCTCTCGGAACTTCATCCACCGAGACCTGGCTGCTCGGAATTGCATGCTGGCAGAGGACATGACAGTGTGTGGCTGACTTCGGACTCTCCCGGAAGA  
647▶ S S R N F I H R D L A A R N C M L A E D M T V C V A D F G L S R K

Bst1107I (2685)  
2601 TCTACAGTGGGACTACTATCGTCAAGGCTGTGCCTCCAAACTGCCTGTCAAGTGGCTGGCCCTGGAGAGCCTGGCCGACAACCTGTATACTGTGCAGAG  
680▶ I Y S G D Y Y R Q G C A S K L P V K W L A L E S L A D N L Y T V Q S

BbrPI (2741) NdeI (2756)  
2701 TGACGTGTGGGCTTCGGGGTGACCATGTGGGAGATCATGACACGTGGGCGAGCGCCATATGCTGGCATCGAAAAACGCTGAGATTTACAACCTACCTCATT  
713▶ D V W A F G V T M W E I M T R G Q T P Y A G I E N A E I Y N Y L I

BspEI (2823)  
2801 GCGGGAACCGCCTGAAACAGCCTCCGGAGTGTATGGAGGACGTGTATGATCTCATGTACCAAGTGTGGAGTGTGACCCCAAGCAGCGCCCGAGCTTTA  
747▶ G G N R L K Q P P E C M E D V Y D L M Y Q C W S A D P K Q R P S F

2901 CTTGTCTGCGAATGGAACGGAGAACATCTTGGGCGAGCTGTCTGTGCTATCTGCCAGCCAGGACCCCTTATACATCAACATCGAGAGAGTGGAGGCC  
780▶ T C L R M E L E N I L G Q L S V L S A S Q D P L Y I N I E R A E E P

3001 CACTGCGGGAGGCAGCCTGGAGTACCTGGCAGGGATCAGCCCTACAGTGGGGCTGGGGATGGCAGTGGCATGGGGGAGTGGGTGGCACTCCAGTGC  
813▶ T A G G S L E L P G R D Q P Y S G A G D G S G M G A V G G T P S D

3101 TGTCGGTACATACTACCCCCGGAGGGCTGGCTGAGCAGCCAGGGCAGGCAGAGCACCAGCCAGAGAGTCCCCCTAATGAGACACAGAGGCTTTTGTGC  
847▶ C R Y I L T P G G L A E Q P G Q A E H Q P E S P L N E T Q R L L L

MseI (3260)  
NheI (3254)  
3201 TGCAGCAAGGGCTACTGCCACACAGTAGCTGTTAGCCACAGGCAGAGGGCATCGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAAA  
880▶ L Q Q G L L P H S S C •

HpaI (3392)  
3301 CCACAAC TAGAATGCAGTGA AAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGTTAACAA

MfeI (3403) EcoRI (3488)  
3401 CAACAATTGCATTCATTTATGTTTCAGGTTCCAGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAAACCTCTACAAATGTGGTATGGGAATCTAAAAT

3501 ACAGCATAGCAAAACTTTAACCTCAAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCA

3601 TTAGCTGTTTGCAGCCTCACCTTCTTTCATGGAGTTAAGATATAGTGTATTTTCCAAGGTTTGAAGTACTGCTTTCATTTCTTTATGTTTTAAATGCAC

SspI (3727) SmaI (3741)  
3701 TGACCTCCCACATTCCTTTTTAGTAAAATATTCAGAAAATAATTTAAATACATCATTGCAATGAAAATAAATGTTTTTTATTAGGCAGAAATCCAGATGCT

3801 CAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGACTTAGGGAACAAAGGAACCTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTTA  
141▶ •

3901 GTTCCTGGTGTACTTGAGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCCATTCATCTCAATGAGCACAAAGCAGTCAGGAGCATAGTCAGAG  
140▶ 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 C D P A Y D S

4001 ATGAGCTCTGCACATGCCACAGGGGCTGACCACCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCCTGACAGCCACAATGGTGTCAAAGTCTC  
106▶ 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 A V I T D F D K

4101 TCTGCCCGTTGCTCACAGCAGACCAATGGCAATGGCTTCAGCACAGACAGTACCCTGCCAATGTAGGCCTCAATGTGGACAGCAGAGATGATCTCCCC  
73▶ 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 H V A S I I E G

4201 AGTCTGGTCTGATGGCCGCCCGACATGGTGTCTGTTGTCCTCATAGAGCATGGTGTCTTCTCAGTGGCGACCTCCACCAGCTCCAGATCCTGCTGA  
40▶ 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 V L E L D Q Q

XmnI (4308) VspI (4374) AseI (4374)  
4301 GAGATGTTGAAGTCTTTCATGATGGCCCTCTATAGTGAAGTATTATACTATGCGGATATACTATGCGGATGATTAATTGTCAAAACAGCGTGGATGG  
6▶ S I N F T K M

4401 CGTCTCCAGCTTATCTGACGGTTCACTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCCTACCGCCATTTGCGTCAATGGGGCGGAGTTGT

SpeI (4529)  
4501 TACGACATTTTGGAAAGTCCCGTTGATTTACTAGTCAAAACAAACTCCATTGACGTCAATGGGGTGGAGACTTGGAAATCCCCGTGAGTCAAACCGCT

SnaBI (4657) Eco105I (4657)  
4600 ATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGACTGCCAAGTAGGAAAGTCCCATAGGTCAT

NdeI (4762)  
4700 G TACTGGGCATAATGCCAGGCGGGCATTACCCTGATTGACGTCAATAGGGGGCTACTTGGCATATGATACACTTGTACTGCCAAGTGGGCGATT

4800 TACCGTAAATACTCCACCATTGACGTCAATGAAAGTCCCTATTGGCGTTACTATGGGAACATACGTCAATATTGACGTCAATGGGGCGGGGTCTGGG

SdaI (4940) PacI (4948) BspLU11I (4958)  
4900 GCGGTGAGCCAGGCGGGCATTACCCTAAGTTATGTAACGCTTGCAGTTAA TTAAGAACATGTGAGCAAAAGGCCAGAAAAGGCCAGGAACCGTA  
4998 AAAAGGCCGCTTGTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCAAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACT

5098 A TAAAGATACCAGCGTTTCCCCCTGGAAGCTCCCTCGTGCCTCTCCTGTTCCGACCCTGCCGTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGA

ApaI (5272)  
5198 AGCGTGGCGCTTTCATAGCTCAGCTGATAGGTATCTCAGTTCGGTGTAGGTCGTTCCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCGTTCCAGCCC  
5298 ACCGCTGGCCTTATCCGGTAACTATCGTCTTGTAGTCCAAACCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGC

5398 GAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTT

5498 ACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTGTTTGAAGCAGCAGATTACGCGCAGAAAAA

PacI (5688)

5598 AAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAAACGAAAACACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAAC

SwaI (5697) NotI (5707)

5698 ATTTAAATC AGCGGCCGCAATAAAATATCTTTATTTTCATTACATCTGTGTGGTTTTTTTGTGTAATCGTAACTAACATACGCTCTCCATCAAACA

5798 AAACGAAACAAAACAAACTAGCAAATAGGCTGTCCCAGTGCAAGTGCAGGTGCCAGAACATTTCTCTATCGAA