



150

**PvuI (7)**  
**SgfI (6)** 1 GGATCTGCGATCGCTCCGGTGCCCGTCAGTGGGCAGAGCGCACATCGCCACAGTCCCCGAGAAGTTGGGGGAGGGGTCGGCAATTGAACGGGTGCCTA  
**MfeI (82)**  
101 GAGAAGGTGGCGGGGTAAGTGGGAAAGTGATGTCGTGACTGGCTCCGCCCTTTTCCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

**Psp1406I (203)** 201 GTGAACGTTCTTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTCACGGCCCGCCGCTACCTGAGGCC  
**HindIII (245)**  
**Bsu36I (291)**  
301 GCCATCCACGGCGTTGAGTCGGCTTCTGCGCCCTCCCGCTGTGGTGCCTCCTGAAGTCCGCTCCGCCCTAGGTAAGTTAAAGCTCAGGTCGAGACC

**NgoMI (441)**  
**NaeI (441)**  
401 GGGCCTTTGTCGGCGCTCCCTTGAGGCTACCTAGACTCAGCCGGCTCTCCACGCTTGGCTGACCCTGCTTGTCAACTCTAGCTCTTTGTTTCGTTT

**BstEII (555)**  
**AgeI (552)**  
501 TCTGTTCTGCGCGTTACAGATCCAAGCTGTGACCGCGCTACCTGAGATCAcgggtcaCCATGGGTTTCTGCCGAGGCCCTGCACCCGCTGTCTT  
1 M G F C R S A L H P L S L

**Asp718 (640)**  
**Acc65I (640)**  
601 CCTGGTGCAGGCCATCATGCTGGCCATGACCCTGGCCCTGGTACCTTGCCTGCCTTCTACCCTGTGAGCTCCAGCCCCAGCGCTGGTGAAGTGCAC  
13 L V Q A I M L A M T L A L G T L P A F L P C E L Q P H G L V N C N

**DraIII (740)**  
701 TGGCTGTTCTGAAGTGTGCCCACTTCTCCATGGCAGCACCCCGTGGCAATGTACCAGCCTTTCCTTGTCTCAACCGCATCCACCACCTCCATG  
47 W L F L K S V P H F S M A A P R G N V T S L S L S S N R I H H L H  
801 ATTCTGACTTTGCCACCTGCCAGCTCGGCATCTCAACTCAAGTGAAGTCCCGCGGTTGGCTCAGCCCCATGCACTTCCCTGCCACATGAC  
80 D S D F A H L P S L R H L N L K W N C P P V G L S P M H F P C H M T

**BspHI (965)**  
901 CATCGAGCCAGCACCTTCTTGGCTGTGCCACCCCTGGAAGAGCTAAACCTGAGCTACAACAACATCATGACTGTGCCTGCGCTGCCAAATCCCTCATA  
113 I E P S T F L A V P T L E E L N L S Y N N I M T V P A L P K S L I

**SphI (1059)**  
**NgoMI (1051)**  
**NaeI (1051)**  
1001 TCCTGTCCCTCAGCCATACCAACATCCTGATGCTAGACTCTGCCAGCCTCGCCGGCTGCATGCCCTGCGCTTCTATTATGAGCGGCAACTGTTATT  
147 S L S L S H T N I L M L D S A S L A G L H A L R F L F M D G N C Y

**SdaI (1109)**  
**SbfI (1109)**  
**SmaI (1134)**  
1101 ACAAGAACCCTGACAGGAGGACTGGAGTGGCCCGGGTGCCTCCTTGGCTGGGCAACCTCACCCACCTGTCACTCAAGTACAACAACCTCACTGT  
180 Y K N P C R Q A L E V A P G A L L G L G N L T H L S L K Y N N L T V

**Bsu36I (1270)**  
1201 GGTGCCCCGCAACCTGCCTCCAGCCTGGAGTATCTGCTGTTGTCTACAACCGCATCGTCAAACTGGCGCTGAGGACCTGGCCAATCTGACCGCCCTG  
213 V P R N L P S S L E Y L L L S Y N R I V K L A P E D L A N L T A L  
1301 CGTGTGCTCGATGTGGCGGAAATGCGCCGCTGCGACCAGCTCCCAACCCCTGCATGGAGTGCCTCGTCACTTCCCGAGCTACATCCCGATACCT  
247 R V L D V G G N C R R C D H A P N P C M E C P R H F P Q L H P D T  
1401 TCAGCCACTGAGCGCTTGAAGGCTGGTGTGAAGGACAGTTCTCTCTCTGGTGAATGCCAGTGGTCCGTTGGGCTGGGAAACCTCCGAGTGT  
280 F S H L S R L E G L V L K D S S L S W L N A S W F R G L G N L R V L

**Ppu10I (1527)**  
**NsiI (1527)**  
**HindIII (1573)**  
1501 GGACCTGAGTGAAGACTTCTCTACAAATGCATCACTAAAACCAAGGCCTTCCAGGGCTAACACAGCTGCAGCAAGCTTAACCTGTCTTCAATTACCAA  
313 D L S E N F L Y K C I T K T K A F Q G L T Q L R K L N L S F N Y Q  
1601 AAGAGGGTGTCTTTGCCACCTGTCTTGGCCCTTCTCGGAGCTGGTGCCTGAAGGAGCTGGACATGCACGGCATCTTCTCCGCTCACTCG  
347 K R V S F A H L S L A P S F G S L V A L K E L D M H G I F F R S L  
1701 ATGAGACCAGCTCCGGCCACTGGCCGCTGCCATGCTCCAGACTCTGGCTGCGAGTGAAGTTCATCAACAGGCCAGCTCGGCATCTTCCAGGGC  
380 D E T T L R P L A R L P M L Q T L R L Q M N F I N Q A Q L G I F R A  
1801 CTTCCCTGGCTGCGTACGTGGACCTGTCCGACAACCCGATCAGCGAGCTTCCGAGCTGACAGCCACCATGGGGAGGAGATGGAGGGGAGAAGTCT  
413 F P G L R Y V D L S D N R I S G A S E L T A T M G E A D G E K V  
1901 TGGCTGACGCTGGGACCTTGTCCGCCAGTGGACACTCCAGCTCTGAAGACTTCCAGCCCAACTGCAGCACCTCAACTCACCTTGGATCTGT  
447 W L Q P G D L A P A P V D T P S S E D F R P N C S T L N F T L D L

**BstEII (2013)**  
**SexAI (2009)**  
2001 CACGGAACAACCTGGTGACCTGACGCGGAGATGTTTCCAGCTCTCGACCTGCAGTGCCTGCGCTGAGCCACAACCTGCATCTCGAGGCACTCAA  
480 S R N N L V T V Q P E M F A Q L S H L Q C L R L S H N C I S Q A V N

**AgeI (2122)**  
2101 TGGCTCCAGTCTGCGCTGACCGGTCTGACGGTGTAGACTGTCCACAATAAGCTGGACCTTACCACGAGCACTATTACGGAGCTACCACGA  
513 G S Q F L P L T G L Q V L D L S H N K L D L Y H E H S F T E L P R

**SphI (2240)**  
2201 CTGAGGGCCCTGACCTCAGCTACAACAGCCAGCCCTTTGGCATGAGGGCGTGGGCCACAACCTCAGCTTCTGCTGCTCACCTGCGACCCCTGCGCCAC  
547 L E A L D L S Y N S Q P F G M Q G V G H N F S F V A H L R T L R H

**NdeI (2395)**  
2301 TCAGCTGGCCACAACAACATCCACAGCAAGTGTCCAGCAGCTCTGCAGTACGTGCTGCGGGCCCTGGACTTCCAGCGCAATGCACTGGCCATAT  
580 L S L A H N N I H S Q V S Q Q L C S T S L R A L D F S G N A L G H M  
2401 GTGGCCGAGGGAGACCTTATCTGCACTTCTTCAAGCCCTGAGCGGTTGATCTGGCTGGACTTGTCCAGAACCCCTGCACACCTTCTGCCCAA  
613 W A E G D L Y L H F F Q G L S G L I W L D L S Q N R L H T L L P Q  
2501 ACCCTGGCAACCTCCCAAGAGCTACAGGCTGCTGCTCCGTGACAATTACCTGGCCTTTTAAAGTGGTGGAGCTCCACTTCTGCCCAAACCTGG  
647 T L R N L P K S L Q V L R L R D N Y L A F F K W W S L H F L P K L

**BspEI (2669)**  
2601 AAGTCTCAGCTGGCAGGAACCAAGCTGAAGGCCCTGACCAATGGCAGCCTGCCTGCTGGCACCCGGCTCCGGAGGCTGGATGTCAAGTCAACAGCAT  
680 E V L D L A G N Q L K A L T N G S L P A G T R L R L D V S C N S I  
2701 CAGCTTCTGCCCCCGGCTTCTTTTCAAGGCCAAGGAGCTGCGAGAGCTCAACCTTAGCGCAACGCCCTCAAGACAGTGGACCACTCGGTTTGGG  
713 S F V A P G F F S K A K E L R E L N L S A N A L K T V D H S W F G

2801 CCCCTGGCGAGTGCCTGCAAACTAGATGTAAGCGCAACCCTCTGCACTGCGCCTGTGGGCGGCCTTTATGGACTTCTGCTGGAGGTGCAGGCTG  
747▶ P L A S A L Q I L D V S A N P L H C A C G A A F M D F L L E V Q A  
2901 CCGTGCCCGGTCTGCCAGCCGGGTGAAGTGTGGCAGTCCGGGCCAGCTCAGGCCTCAGCATCTTTGCACAGGACCTGCGCCTCTGCCTGGATGAGGC  
780▶ A V P G L P S R V K C G S P G Q L Q G L S I F A Q D L R L C L D E A  
3001 CCTCTCCTGGGACTGTTTCGCCCTCTCGTGTGGTGTGGCTGTGGCCTGGGTGTGCCATGCTGCATCACCTCTGTGGCTGGGACCTCTGGTACTGC  
813▶ L S W D C F A L S L L A V A L G L G V P M L H H L C G W D L W Y C  
3101 TTCCACCTGTGCTGGCTGGCTTCCCTGGCGGGGCGCAAAGTGGCGAGATGAGGATGCCTGCCCTACGATGCCTTCGTGGTCTTCGACAAAACGC  
847▶ F H L C L A W L P W R G R Q S G R D E D A L P Y D A F V V F D K T

**BsrGI (3221)**

3201 AGAGCGCAGTGGCAGACTGGGTGTACAACGAGCTTCGGGGGCGAGTGGAGGAGTGCCTGGGCGCTGGGCACTCCGCCTGTGCCTGGAGAACGCGACTG  
880▶ Q S A V A D W V Y N E L R G Q L E E C R G R W A L R L C L E E R D W

**Tth1111 (3382)**

**RsrII (3380)**

3301 GCTGCCTGGCAAAACCTCTTTGAGAACCTGTGGGCTCGGTCTATGGCAGCCGCAAGACGCTGTTTGTGCTGGCCACACGGACCGGTCAGTGGTCTC  
913▶ L P G K T L F E N L W A S V Y G S R K T L F V L A H T D R V S G L

**BssHII (3402)**

3401 TTGCGCGCAGCTTCTGCTGGCCAGCAGCGCTGCTGGAGACCGCAAGACGCTGTTGCTGGTGTGGTGTCTGAGCCTGACGGCCGCCCTCCCGCT  
947▶ L R A S F L L A Q Q R L L E D R K D V V V L V I L S P D G R R S R

3501 ACGTGCGGCTGCGCAGCGCTCTGCCGCGAGAGTCTCTCTGCCCCACCAGCCAGTGGTGCAGCGAGCTTCTGGCCAGCTGGGCATGGCCCT  
980▶ Y V R L R Q R L C R Q S V L L W P H Q P S G Q R S F W A Q L G M A L

**SmaI (3642)**

**BamHI (3658)**

**NheI (3695)**

3601 GACCAGGACAACCACTTCTATAACCGAAGTCTGCCAGGACCCAGCCGCGCAAGGATCCTACCCCTATGATGTGCCAGACTACGCCCTAAGCTAG  
1013▶ T R D N H H F Y N R N F C Q G P T A E G S Y P Y D V P D Y A •  
3701 CTGGCCAGACATGATAAGATACATTGATGAGTTGGACAAACCACTAGAATGCAGTGAATAAATGCTTTATTTGTGAAATTTGTGATGCTATTGTC

**HpaI (3833)** **MfeI (3844)**

3801 TTATTTGTAACCATTATAAGCTGCAATAAACCAACCAATTGCATCTTTATGTTTCAGGTTTCAGGGGAGGTGTGGGAGTTTTTTAAA

**EcoRI (3929)**

3901 GCAAGTAAACCTCTACAAATGTGGTATGGAAATCTAAATACAGCATAGCAAACTTTAACCTCCAAATCAAGCCTCTACTTGAATCCTTTTCTGAGGG

4001 ATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTTCTTTCATGGAGTTAAGATATAGTATTTCCTCAA

**SspI (4168)**

**SwaI (4182)**

4101 GGTTTGAAGTACTCTTCATTTCTTTATGTTTTAAATGCACTGACCTCCACATTCCTTTTTAGTAAAATATTAGAAAATAATTTAAATACATCATTGC

4201 AATGAAAATAAATGTTTTTATTAGGCAGAAATCAGATGCTCAAGGCCCTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAGAACCTT

4301 TAATAGAAATTTGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCCTGGTGTACTTGGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGGCAT

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• N R T Y K L P I L E E I T T K V L K G N

4401 TCATCTCAATGAGCACAAGCAGTCAAGGATAGTCAAGATGAGCTCTCTGCACATGCCACAGGGGCTGACCCCTGATGGATCTGTCCACCTCATC

120 M E I L V F 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

4501 AGAGTAGGGGTGCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCGTTGCTCACAGCAGCCCAATGGCAATGGCTTCAAGCAGACAGTGCACCTG

87 S Y P H R V 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

4601 CCAATGTAGGCCTCAATGTGGCAGCAGAGATGATCTCCAGCTTGGTCTGATGGCCCGCCGACATGGTGTGTTGCTCCTATAGAGCATGGTGA

53 G I Y A E I H V A S I E G T K T R I A A G V H H K N D E Y L M T I

**BspHI (4757)**

**XmnI (4749)**

4701 TCTTCTCAGTGGCGACCTCCACCAGCTCCAGATCTGCTGAGAGATGTTGAAGGCTTCTCATGATGGCCCTCTATAGTGTGATTATACTATGCCGA

20 K E T A V E V L E L D Q Q S I N F T K M

**AseI (4815)**

4801 TATACTATGCCGATGATTAATTTGCAAAACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTCACTAAACGAGCTCTGTTATATAGACTCCACCG

**SpeI (4970)**

4901 TACACGCTACCGCCATTTGCGTCAATGGGCGGAGTTGTTACGACATTTGGAAAGTCCCGTTGATTTACTAGTCAAAACAACTCCCATGACGTCA

**SnaBI (5098)**

5001 ATGGGGTGGAGACTTGGAAATCCCGTGTGATCAAACCGCTATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATGTAATAGCGATGACTAATA

5101 CGTAGATGACTGCCAAGTAGGAAAGTCCATAAGGTGATGACTGGGCATAATGCCAGGCGGCCATTACCGTCAATGAGGGGCGTACT

**NdeI (5203)**

5201 TGGCATATGATACACTTGTACTGCAAGTGGGCGTTCACGTAATACTCCACCATTGACGTCAATGGAAAGTCCCTATTGGCGTTACTATGGGA

**PacI (5389)**

**SdaI (5381)**

**SbfI (5381)**

**PciI (5399)**

**BspLUIII (5399)**

5301 ACATACGTCATTATTGACGTCAATGGGCGGGGTCGTTGGGCGGTCAGCCAGGCGGCCATTTACCGTAAGTTATGTAACGCTGCAGGTTAATTAAGAA

5401 CATGTGAGCAAAAGGCCAGAAAAGCCGAAACCGTAAAAAGGCCGCTGCTGGCGTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAATAA

5501 CGACGCTCAAGTCAAGGTGGCGAAACCCGACAGGACTATAAGATACCAGCGTTTTCCCTGGAAGCTCCCTCGTGCCTCTCTGTTCCGACCTGC

5601 CGCTTACCGGATACCTGTCCGCTTCTCCCTTCGGGAAGCGTGGCGTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTGTTGCTC

**ApaLI (5713)**

5701 CAAGCTGGGCTGTGTGACGAACCCCGTTACGCCGACCGCTGCGCTTATCCGGTAACTATCGTCTTGTAGTCCAACCCGGTAAAGACGACTTATCG

5801 CCACTGGCAGCAGCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTCTTGAAGTGGTGCCTAACTACGGCTACTAGAA

5901 GAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAACCACCGCTGGTAGCGGTGG

6001 TTTTTTGTGGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAAAC

PacI (6129) Swal (6138) NotI (6148)

6101 TCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATCAGCGGCCCAATAAAATATCTTTATTTTCATTACATCTGTGTGTTGTTTTTTT

6201 GTGTGAATCGTAACTAACATACGCTCTCCATCAAAACAAAACGAAACAAAACAACTAGCAAATAGGCTGTCCCAGTGCAAGTGCAGGTGCCAGAACA

6301 TTTCTCTATCGAA