



**PvuI (7)**  
**SgfI (6)**  
1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGGCAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTCGGCAATTGAACGGTGCCTA  
101 GAGAAGGTGGCGGGGTAACGGAAAGTGATGTCGTGACTGGTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

**HindIII (245)**  
**Psp1406I (203)** **PvuII (239)** **Bsu36I (291)**  
201 GTGAACGTTCTTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGGCTCGCATCTCTCTTACAGCGCCCGCCGCCCTACCTGAGGCC  
301 GCCATCCACGCGGTTGAGTGCAGTCTGCCGCTCCCGCCTGTGGTGCCTCTGAAGTGCCTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

**NgoMIV (441)** **NaeI (441)**  
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCAACTCTACGTCTTTGTTTCGTTT

**KasI (535)** **AgeI (552)** **BspHI (561)**  
501 TCTGTTCTGCGCGGTTACAGATCCAAGCTGTGACCGCGGCTACCTGAGATCACCGGTCCATCATGATGTCCTGCCCTCGCCCTGGCTGGGACTCTGATCC  
1 M M S A S R L A G T L I

**NcoI (603)** **Ppu10I (679)** **NsiI (679)**  
601 CAGCCATGGCCTTCTCTCTGCGTGAGACCCGAAAGCTGGGAGCCCTGCGTGGAGGTGGTTCCATAATTACTTATCAATGCATGGAGCTGAATTTCTA  
13 P A M A F L S C V R P E S W E P C V E V V P N I T Y Q C M E L N F Y  
701 CAAAAATCCCGACAACCTCCCTTCTCAACCAAGAACCTGGACCTGAGCTTTAATCCCTGAGGCATTTAGGCAGCTATAGCTTCTTTCAGTTTCCCGAA  
46 K I P D N L P F S T K N L D L S F N P L R H L G S Y S F F S F P E  
801 CTGCGAGTGTGATTTTACAGGTGTGAAATCCAGACAATTAAGATGGGCATATCAGAGCCTAAGCCACCTCTACCTTAATATTGACAGGAAACC  
80 L Q V L D L S R C E I Q T I E D G A Y Q S L S H L S T L I L T G N  
901 CCATCCAGAGTTTACCCCTGGGAGCCTTTCTGGACTATCAAGTTTACAGAAGCTGGTGGCTGTGGAGACAAATCTAGCATCTTAGAGAAGTCCCAT  
113 P I Q S L A L G A F S G L S S L Q K L V A V E T N L A S L E N F P I  
1001 TGGACATCTCAAACTTTGAAAGAACTTAATGTGGCTCACAATCTTATCCAATCTTTCAAATACCTGAGTATTTTCTAATCTGACCAATCTAGAGCAC  
146 G H L K T L K E L N V A H N L I Q S F K L P E Y F S N L T N L E H  
1101 TTGACCTTCCAGCAACAAGATTCAAAGTATTTATTGCACAGACTTGGGGTCTACATCAAATGCCCTACTCAATCTCTTTAGACCTGTCCCTGA  
180 L D L S S N K I Q S I Y C T D L R V L H Q M P L L N L S L D L S L  
1201 ACCATGAACCTTATCCAACAGGTGCATTTAAAGAAATTAGGCTTCATAAGCTGACTTAAGAAATAATTTGATAGTTAAATGTAATGAAAACCTG  
213 N P M N F I Q P G A F K E I R L H K L T L R N N F D S L N V M K T C

**BstXI (729)** **Bsu36I (757)**  
1301 TATTCAAGGTCTGGCTGGTTTAGAAGTCCATCGTTTGGTCTGGGAGAATTTAGAAATGAAGGAACTTGGAAAAATTTGACAAATCTGCTCTAGAGGGC  
246 I Q G L A G L E V H R L V L G E F R N E G N L E K F D K S A L E G  
1401 CTGTGCAATTTGACCATTGAAGAATCCGATTAGCATACTTAGACTACTACCTCGATGATATTATTGACTTATTTAATGTTTGACAAATGTTTCTTCAT  
280 L C N L T I E E F R L A Y L D Y Y L D D I I D L F N C L T N V S S  
1501 TTTCCCTGGTGAGTGTGACTATTGAAAGGGTAAAAGACTTTTCTTATAATTTTCGGATGGCAACATTTAGAATTAAGTAACTGTAATTTGGACAGTTTCC  
313 F S L V S V T I E R V K D F S Y N F G W Q H L E L V N C K F G Q F P  
1601 CACATTGAAACTCAAATCTCAAAAAGGCTTACTTTCACTTCCAACAAAAGGTGGGAATGCTTTTTCAGAAGTTGATCTACCAAGCCTTGAGTTTCTAGAT  
346 T L K L K S L K R L T F T S N K G G N A F S E V D L P S L E F L D  
1701 CTCAGTAGAAATGGCTTGAGTTTCAAAGTTGCTGTTCTCAAAGTGATTTTGGGACAACCAGCCTAAAGTATTTAGATCTGAGCTTCAATGGTGTATTATTA  
380 L S R N G L S F K G C C S Q S D F G T T S L K Y L D L S F N G V I  
1801 CCATGAGTTCAAACCTTCTGGGCTTAGAACAAC TAGAACATCTGGATTCCAGCATTCCAATTTGAAACAAATGAGTGAGTTTTCAGTATTCCTATCACT  
413 T M S S N F L G L E Q L E H L D F Q H S N L K Q M S E F S V F L S L  
1901 CAGAAACCTATTACCTTGACLETTCTCATACTCACACAGAGTTGCTTTCAATGGCATCTTCAATGGCTTGTCCAGTTCGAAAGTCTGAAATGGCT  
446 R N L I Y L D I S H T H T R V A F N G I F N G L S S L E V L K M A  
2001 GGCAATCTTTCCAGGAAAACCTTCCAGATATCTTCAAGAGCTGAGAACTTGACCTTCTGGACCTCTCTCAGTGTCAACTGGAGCAGTTGTCTC  
480 G N S F Q E N F L P D I F T E L R N L T F L D L S Q C Q L E Q L S  
2101 CAACAGCATTTAACTCACTCTCCAGTCTCAGGTAATAATGAGCCACAACAACTTCTTTTTCATTGATAGCTTTCTTATAAGTGTCTGAACTCCCT  
513 P T A F N S L S S L Q V L N M S H N N F F S L D T F P Y K C L N S L  
2201 CCAGGTTCTTGATTACAGTCTCAATCACATAATGACTTCCAAAAACAGGAACACAGCATTTCCTCAAGTAGTCTAGCTTTCTTAAATCTTACTCAGAAT  
546 Q V L D Y S L N H I M T S K K Q E L Q H F P S S L A F L N L T Q N  
2301 GACTTTGCTGTACTTGTGAACACCAGAGTTTCTGCAATGGATCAAGGACCAGAGCCAGCTCTTGGTGAAGTTGAACGAATGGAATGTGCGACACCTT  
580 D F A C T C E H Q S F L Q W I K D Q R Q L L V E V E R M E C A T P  
2401 CAGATAAGCAGGGCATGCCTGTGCTGAGTTTGAATATCACCTGTGAGTGAATAAGACCATCATTGGTGTGTCGGTCCCTCAGTGTGCTTGTAGTATCTGT  
613 S D K Q G M P V L S L N I T C Q M N K T I I G V S V L S V L V V S V  
2501 TGTAGCAGTTCTGGTCTATAAGTTCTATTTTCACTGATGCTTCTGCTGGCTGCATAAAGTATGGTAGAGGTGAAAACATCTATGATGCCTTTGTTTATC  
646 V A V L V Y K F Y F H L M L L A G C I K Y G R G E N I Y D A C F V I  
2601 TACTCAAGCCAGGATGAGGACTGGGTAAGGAATGAGCTAGTAAAGAAATTTAGAAGAAGGGGTGCCCTCATTTCAGCTCTGCTTCACTACAGAGACTTTA  
680 Y S S Q D E D W V R N E L V K N L E E G V P P F Q L C L H Y R D F  
2701 TTCCCGGTGGCCATTGCTGCCAACATCATCCATGAAGGTTTCCATAAAAGCCGAAAGGTGATTGTTGTTGTTGCCAGCACTTTCATCCAGAGCCGCTG  
713 I P G V A I A A N I I H E G F H K S R K V I V V V S Q H F I Q S R W

2801 GTGTATCTTTGAATATGAGATTGCTCAGACCTGGCAGTTTCTGAGCAGTCGTGCTGGTATCATCTTCATTGCTCCTGCAGAAGGTGGAGAAGACCTGCTC  
746▶ C I F E Y E I A Q T W Q F L S S R A G I I F I V L Q K V E K T L L  
Tth111I (2957)

2901 AGGCAGCAGGTGGAGCTGTACCCGCTTCTCAGCAGGAACACTTACCTGGAGTGGGAGGACAGTGTCTGGGGCGGCACATCTTCTGGAGACGACTCAGAA  
780▶ R Q Q V E L Y R L L S R N T Y L E W E D S V L G R H I F W R R L R  
MscI (3089)  
NheI (3083)

3001 AAGCCTGCTGGATGGTAAATCATGGAATCCAGAAGGAACAGTGGGTACAGGATGCAATTGGCAGGAAGCAACATCTATCTGAGCTAGCTGGCCAGACAT  
813▶ K A L L D G K S W N P E G T V G T G C N W Q E A T S I •  
3101 GATAAGATACATTGATGAGTTTGGACAAACCACAACACTAGAATGCAGTGAACAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACC

HpaI (3221)

3201 ATTATAAGCTGCAATAAAACAAGTTAAACAACAACAATTGCATTCAATTTATGTTTCAGGTTTCAGGGGAGGTGTGGGAGGTTTTTTAAAGCAAGTAAAACC

EcoRI (3317)

3301 TCTACAAATGTGGTATGGAATTCATAAATACAGCATAGCAAACTTTAACCTCCAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCA  
3401 TAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGACGCCTCACCTTCTTTCATGGAGTTAAGATATAGTGTATTTTCCAAGGTTTGAAGTAG

SwaI (3570)

3501 CTCTTCATTTCTTTATGTTTTAAATGCACTGACCTCCACATTCCTTTTTAGTAAAATATTCAGAAAATAATTTAAATACATCATTGCAATGAAAATAAA

EcoO109I (3631)

3601 TGTTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAGAACCTTTAATAGAAATTG  
3701 GACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCCTGGTACTTGAGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCCATTATCTCAATGA  
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

SacI (3831) BstXI (3860)

3801 GCACAAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTGCACATGCCACAGGGGCTGACCACCCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTG  
116▶ 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 S Y P H  
StuI (3995)

3901 CCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCCCGTTGCTCACAGCAGACCCAATGGCAATGGCTTCAGCACAGACAGTGACCCTGCCAATGTAGGCC  
83▶ 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 G I Y A  
4001 TCAATGTGGACAGCAGAGATGATCTCCCAAGTCTGGTCTGTAGGGCCCGGACATGGTGTCTTGTCTCATAGAGCATGGTATCTTCTCAGTGG  
49▶ E I 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  
BspHI (4145)

4101 CGACCTCCACCAGCTCCAGATCCTGCTGAGAGATGTTGAAGTCTTCATGATGGCCCTCTATAGTGAGTCGTATTATACTATGCCGATATACTATGCCG  
16▶ V E V L E L D Q Q S I N F T K M  
AseI (4203) SacI (4260)

4201 ATGATTAATTGTCAAACACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTTCACATAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCCTAC

SpeI (4358)

4300 CGCCCATTTGCGTCAATGGGGCGGAGTTGTTACGACATTTTGGAAAGTCCCGTTGATTTACTAGTCAAACAAACTCCCATTGACGTCAATGGGGTGGAA

SnaBI (4486)

4399 GACTTGAAAATCCCCTGAGTCAAACCGCTATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGTA

NdeI (4591)

4499 CTGCCAAGTAGGAAAAGTCCATAAGGTCATGTAAGTGGGCATAATGCCAGGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCGTACTTGGCATATGA  
4599 TACACTTGATGTAAGTGGCAGTTTACCGTAAATACTCCACCCATTGACGTCAATGGAAAGTCCCTATTGGCGTTACTATGGGAACATACGTCA

SdaI (4769) PacI (4777) BspLU11I (4787)

4699 TTATTGACGTCAATGGGGCGGGTCTGTTGGCGGTGAGCCAGGCGGGCCATTTACCGTAAAGTTATGTAACGCCCTGCAGGTTAA TTAAGAACATGTGAG  
4797 CAAAAGGCCAGCAAAAAGGCCAGGAACCGTAAAAAGGCCGCTTGTGCGCTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAATAATCGACGCTC  
4897 AAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCTTTCCCCCTGGAAGTCCCTCGTGCCTCTCCTGTTCCGACCCTGCCGTTACC  
4997 GGATACCTGTCCGCTTTCTCCCTTCGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTGTTCCGCTCCAAGCTGG

ApaLI (5101)

5097 GCTGTGTGCACGAACCCCCGTTTCCAGCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGTAGTCCAAACCCGGTAAGACACGACTTATCGCCACTGGC  
5197 AGCAGCCACTGGTAAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTA  
5297 TTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAGAGGTTGGTAGCTCTTGATCCGGCAACAAACACCCTGGTAGCGGTGGTTTTTTTG  
5397 TTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAAACGAAAACTCACGTTA

EagI (5537)  
PacI (5517) SwaI (5526) NotI (5536)

5497 AGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATC AGCGGCCGCAATAAAAATATCTTTATTTTCATTACATCTGTGTGTTGGTTTTTTGTGTGAAT  
5597 CGTAACTAACATACGCTCTCCATCAAAAACAAACGAAACAAACAACTAGCAAAATAGGCTGTCCCCAGTGCAAGTGCAAGTGCAGGTGCCAGAACATTTCTCTA  
5697 TCGAA