



**PvuI (7)**  
**SgfI (6)** 1 GGATCTGCATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA  
MfeI (82) EcoNI (96)

101 GAGAAGTGGCGCGGGTAAACTGGAAAGTATGTCGTGTACTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

**HindIII (245)**  
**Psp1406I (203)** 201 GTGAACGTTCTTTTTCGCAACGGGTTTGGCCGAGAACACAGCTGAAGCTTCAGAGGGCTCGCATCTCTCTTACAGCGCCCGCCGCTACCTGAGGCC  
PvuII (239) EcoNI (287) **Bsu36I (291)**

301 GCCATCCACGCGGTTGAGTGCAGTCTGCCGCTCCCGCTGTGGTGCCTCCTGAACTGCGTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC  
401 GGGCCTTTGTCCGGCGCTCCCTTGGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTCTCAACTCTACGTCTTTGTTTCGTTT

**NcoI (560)**  
**BstEII (555)**  
**KasI (535)** 501 TCTGTTCTGCGCGGTTACAGATCCAAGCTGTGACCGCGCGCTACCTGAGATCACCGGTACCATTGGGGTTTTGCTGTCCCTCCCTCAGCGCCGACAC  
**AgeI (552)** 1 M G V F A V P P L S A D T

**BamHI (605)** 601 CATGTGGATCCAGTTTCGGACCATGGATGGGAGGAGACCCACACGGTGGACTCCTGTCCAGGCTGACCAAGTGGAGGAGCTGAGGCGGAAGATCCAG  
**NcoI (620)** 13 M W I Q V R T M D G R Q T H T V D S L S R L T K V E E L R R K I Q

**StuI (720)** 701 GAGCTGTTCCACGTGGAGCCAGGCTGCAGAGGCTGTTCTACAGGGGCAACAGATGGAGGACGGCCATACCCTCTTCGACTACGAGGTCGCCCTGAATG  
47 E L F H V E P G L Q R L F Y R G K Q M E D G H T L F D Y E V R L N  
801 ACACCATCCAGCTCTGGTCCGCCAGAGCCTGTGCTCCCCACAGCACCAAGGAGCGGACTCCGAGCTCTCCGACCCGACTCCGGCTGTGCTCGG  
80 D T I Q L L V R Q S L V L P H S T K E R D S E L S D T D S G C C L G

**NotI (937)** 901 CCAGAGTGAATCAGACAAGTCTCCACCCACGGTGAAGCGGCCCGGAGACTGACAGCAGGCCAGCCGATGAGGACATGTGGGATGAGACGGAATTGGGG  
**BspLU11I (974)** 113 Q S E S D K S S T H G E A A A E T D S R P A D E D M W D E T E L G

**BsrGI (1001)** 1001 CTGTACAAGTCAATGAGTACGTCGATGCTCGGGACACGAACATGGGGCGTGGTTTGGGGCGAGGTGGTCAGGGTACGCGGAAGGCCCTCCCGGG  
**XmaI (1094)** 147 L Y K V N E Y V D A R D T N M G A W F E A Q V V R V T R K A P S R  
1101 ACGAGCCCTGCAGCTCCAGCTCCAGGCCGGCGTGGAGGAGGAGCTATTACACGTAAGTACGACGACTACCCGGAGAACGGCGTGGTCCAGATGAA  
180 D E P C S S T S R P A L E E D V I Y H V K Y D D Y P E N G V V Q M N

**BssHII (1218)** 1201 CTCCAGGGACGTCCGAGCGCGCCCGCACCATCATCAAGTGGCAGGACCTGGAGTGGGCCAGGTGGTCACTCAACTACAACCCCGACAACCCCAAG  
**BssHII (1216)** 213 S R D V R A R A R T I K W Q D L E V G Q V V M L N Y N P D N P K

**BglII (1325)** 1301 GAGCGGGCTTCTGGTACGACGCGGAGATCTCCAGGAAGCGGAGACCAGGACGGCGGGAAGTCTACGCAACGTGGTGTGGGGATGATTCTCTGA  
247 E R G F W Y D A E I S R K R E T R T A R E L Y A N V V L G D D S L

**BbsI (1429)** 1401 ACGACTGTCGGATCATCTTCTGGACGAAGTCTTCAAGATTGAGCGGCCGGTGAAGGGAGCCCATGGTTGACAACCCATGAGACGGAAGAGCGGGCC  
**Tth111I (1423)** 280 N D C R I I F V D E V F K I E R P G E G S P M V D N P M R R K S G P

**NcoI (1463)** 1501 GTCCTGCAAGCACTGCAAGGACGACGTGAACAGACTCTGCCGGTCTGCGCCTGCCACCTGTGCGGGGCGCGCAGGACCCGACAAGCAGCTCATGTGC  
313 S C K H C K D D V N R L C R V C A C H L C G G R Q D P D K Q L M C  
1601 GATGAGTGCACATGGCCTTCCACATCTACTGCCTGGACCCGCCCTCAGCAGTGTCCAGCAGGACGAGTGGTACTGCCCTGAGTCCGGAATGAT  
347 D E C D M A F H I Y C L D P P L S S V P S E D E W Y C P E C R N D  
1701 CCAGCGAGTGGTACTGGCGGGAGAGCGGCTGAGAGAGAGCAAGAAGAAGGCGAAGATGGCCTCGCCACATCGTCTCACAGCGGGACTGGGGCAAGGG  
380 A S E V V L A G E R L R E S K K K A K M A S A T S S Q R D W G K G

**BamHI (1868)** 1801 CATGGCCTGTGTGGGCCGACCAAGGAATGTACCATCGTCCCGTCCAACCACTACGGACCCATCCCGGGATCCCGTGGGCACCATGTGGCGGTTCCGA  
**XmaI (1863)** 413 M A C V G R T K E C T I V P S N H Y G P I P G I P V G T M W R F R  
1901 GTCCAGGTGAGCGAGTCCGGTGTCCATCGGCCCCACGTGGCTGGCATAACGCGCGGAGCAACGACGGAGCTACTCCCTAGTCTGGCGGGGGCTATG  
447 V Q V S E S G V H R P H V A G I H G R S N D G A Y S L V L A G G Y

**XmnI (2019)** 2001 AGGATGACGTGGACCATGGGAATTTTTACATACACGGTGTGGTGGTGTGAGATCTTTCCGGCAACAAGAGGACCGGGAACAGTCTGTGATCAGAA  
**BglII (2052)** 480 E D D V D H G N F F T Y T G S G G R D L S G N K R T A E Q S C D Q K  
**SacII (2075)** 2101 ACTACCAACACCAACAGGGCGTGGCTCAACTGCTTTGCTCCATCAATGACCAAGAAGGGCCGAGGCAAGGACTGGCGGTGGGGAAGCCGGTC  
513 L T N T N R A L A L N C F A P I N D Q E G A E A K D W R S G K P V

**FspI (2207)** 2201 AGGGTGGTGCACATGTCAAGGGTGGCAAGAATAGCAAGTACGCCCGCTGAGGGCAACCGCTATGATGGCATCTACAAGTTGTGAAATACTGGCCCC  
547 R V V R N V K G G K N S K Y A P A E G N R Y D G I Y K V V K Y W P  
2301 AGAAGGGGAAGTCCGGTTTTCTGTGTGGCGCTACCTTCTGCGGAGGACGATGATGAGCCTGGCCCTTGACGAAGGAGGGGAAGGACCGGATCAAGAA  
580 E K G K S G F L V W R Y L L R R D D D E P G P W T K E G K D R I K K

**MscI (2444)** 2401 GCTGGGGTACCATGCAGTATCCAGAAGGCTACCTGGAAGCCCTGGCCAACCGAGAGCGAGAGAAGGAGAACAGCAAGAGGGAGGAGGAGCAGCAG  
613 L G L T M Q Y P E G Y L E A L A N R E R E K E N S K R E E E E Q Q

2501 GAGGGGGCTTCGCGTCCCCAGGACGGGCAAGGCAAGTGAAGCGGAAGTCGGCAGGAGGTGGCCCGAGCAGGGCCGGTCCCCGCGCCGGACATCCA  
647▶ E G G F A S P R T G K G K W K R K S A G G G P S R A G S P R R T S  
2601 AGAAAACCAAGGTGGAGCCCTACAGTCTCAGCGCCAGCAGAGCAGCCTCATCAGAGAGGACAAGAGCAACGCCAAGCTGTGGAATGAGGTCTGGCGTC  
680▶ K K T K V E P Y S L T A Q Q S S L I R E D K S N A K L W N E V L A S  
2701 ACTCAAGGACCGCCGGCAGCGGAGCCCGTTCAGTTGTTCTGAGTAAAGTGAGGAGAGCATTCCAGTGTATCTGCTGTCAGGAGCTGGTGTCCGG  
713▶ L K D R P A S G S P F Q L F L S K V E E T F Q C I C C Q E L V F R

BstAPI (2831) PvuII (2871)  
2801 CCCATCACGACCGTGTGCCAGCACAACGTGTGCAAGGACTGCCTGGACAGATCCTTTCCGGCAGAGGTTCAGCTGCCCTGCCCTACGACCTGG  
747▶ P I T T V C Q H N V C K D C L D R S F R A Q V F S C P A C R Y D L  
2901 GCCGAGCTATGCCATGCAGGTGAACAGCCTCTGCAGACCGTCTCAACAGCTCTTCCCCGGCTACGGCAATGGCCGGTGATCTCCAAGCACTTCTCG  
780▶ G R S Y A M Q V N Q P L Q T V L N Q L F P G Y G N G R •

MscI (3010) NheI (3004)  
3001 ACAGGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTAAAAAATGCTTTATTTGTGAAATTTGTGAT

HpaI (3142) MfeI (3153)  
3101 GCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGTTAACAACAACAATTGCATTCATTTATGTTTCAGGTTCCAGGGGAGGTGTGGGAGG

EcoRI (3238)  
3201 TTTTTAAAGCAAGTAAACCTCTACAATGTGGTATGGAATTTCAAAATACAGCATAGCAAACTTTAACCTCAAATCAAGCCTCTACTTGAATCCTT  
3301 TTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTTCTTCATGGAGTTTAAGATATAGTGTA

SspI (3477) SmaI (3491)  
3401 TTTCCCAAGGTTTGAAC TAGCTCTTCATTTCTTTATGTTTTAAATGCACTGACCTCCACATTCCTTTTTAGTAAAATATTCAGAAATAATTTAAATA  
3501 CATCATTGCAATGAAAATAAATGTTTTTTATTAGGCAGAAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAA  
3601 AGGAACCTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTCTCTGGTGTACTTGAGGGGGATGAGTTCCTCAATGGTGGTTTTGACCA  
3701 GCTTGCCATTCTCAATGAGCACAAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTGCACATGCCACAGGGGGCTGACCCCTGATGGATCTGTC  
123▶ K G N 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  
3801 CACCTCATCAGAGTAGGGGTGCCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCCGTGTCTCAGCAGACCCAATGGCAATGGCTTCAGCACAGACA  
90▶ V E D 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

StuI (3916)  
3901 GTGACCCTGCAAATGTAGGCTCAATGTGGACAGCAGAGATGATCTCCCCAGTCTTGGTCTGATGGCCGCCCGACATGGTCTTGTGTCTCATAGA  
56▶ T V R G I Y A 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

BspHI (4066) BbsI (4062) XmnI (4058)  
4001 GCATGGTGTCTTCTCAGTGGCGACCTCCACCAGCTCCAGATCCTGCTGAGAGATGTTGAAGTCTTCATGATGGCCCTCTATAGTGAGTCGTATTATA  
23▶ M T I K E T A V E V L E L D Q Q S I N F T K M

AseI (4124)  
4101 CTATGCCGATATACTATGCCGATGATTAATTGTCAAACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTTCACTAAACGAGCTCTGCTTATATAGA

SpeI (4279)  
4200 CCTCCCACGTACACGCCTACCGCCATTTGCGTCAATGGGGCGGAGTTGTTACGACATTTTGAAAAGTCCCCTTGATTTACTAGTCAAAAACAACTCC  
4299 CATTGACGTCAATGGGGTGGAGACTTGAAATCCCCGTGAGTCAAACCGTATCCACGCCATTGATGTACTGCCAAAACCGCATCATGTTGTAATAGC

SnaBI (4407)  
4399 GATGACTAATACGTAGATGTACTGCCAAGTAGGAAAGTCCATAAGGTGATGTACTGGCATAATGCCAGGCGGGCCATTTACCGTCATTGACGTCAATA

NdeI (4512)  
4499 GGGGGCTACTTGGCATATGATACTTGTACTGCCAAGTGGGCGAGTTTACCCTAAATACTCCACCCATTGACGTCAATGAAAAGTCCCTATTGGCG

SdaI (4690)  
4599 TTA CTATGGGAACATACGTCATTATTGACGTCAATGGGCGGGGTCGTTGGGCGT CAGCCAGCGGGCCATTTACCCTAAGTTATGTAACGCCCTG CAG

PacI (4698) BspLU11I (4708)  
4698 G TT AA TTAAGAACATGTGAGCAAAAAGGCCAGCAAAAAGGCCAGGAACCGTAAAAAGGCCGCTTGTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGA  
4797 GCATCACAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGCGTTTTCCCTGGAAGCTCCCTCGTGCGCTCTCTCT  
4897 GTTCCGACCTGCCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCCGGGAAGCGTGGCGCTTTCTCATAGCTCAGCTGTAGGTATCTCAGTTCCGGTGT

ApaLI (5022)  
4997 AGGTCGTTGCTCCAAGCTGGGCTGTGTGCACGAACCCCGTTCAGCCGACCGCTGCGCTTATCCGGTAACTATCGTCTTGAAGTGGTGGCCTAACTAC  
5097 ACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGTACAGAGTCTTGAAGTGGTGGCCTAACTAC  
5197 GGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAACAAACCACCG  
5297 CTGGTAGCGGTGTTTTTTTTGTTTGAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGTCTGACGCTCA

PacI (5438) SwaI (5447) NotI (5457)

5397 GTGGAACGAAAACACGTTAAGGGATTTGGTCATGGCTAGTTAATTAACATTTAAATC AGCGGCCGCAATAAAATATCTTTATTTTCATTACATCTG

5496 TGTGTTGGTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAAACAAAACGAAACAAAACAACTAGCAAATAGGCTGTCCCCAGTGCAAGTG

5596 CAGGTGCCAGAACATTTCTCTATCGAA