



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

101 GAGAAAGTGGCGCGGGTAAACTGGAAAGTGATGTCGTGTAAGTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

**Psp1406I (203)** 201 GTGAACGTTCTTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTACACGCCGCCGCCCTACCTGAGGCC  
EcoNI (287) **Bsu36I (291)**

301 GCCATCCACGCCGGTTGAGTCGCGTTTCTGCCGCTCCCGCCTGTGGTGCCTCTGAAGTGCCTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

**NgoMI (441)**  
**NaeI (441)** 401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCAACTCTACGTCTTTGTTTCGTTT

**NcoI (560)**  
**BstEII (555)** 501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGCGCGCTACCTGAGATCACCGGTACCATTGGAGGAGGGTGGCAGCAGCGCGGCCGCGGG  
KasI (535) **AgeI (552)** KasI (589) **SacII (593)**  
1► M E E E G G S S G G A A G

601 GACCAGCGCGGACGGCGGACGGAGGAGCAGCTCCTCACTGTCAAGCAGAGCTGCGGACTGCTAATTTGACAGGACATGCTGAGAAGTGGGAATA  
13► T S A D G G D G G E Q L L T V K H E L R T A N L T G H A E K V G I

**AvrII (723)** 701 GAAAATTTGAGCTCCTGAAGTCTAGGAAGTGGAGCTTATGAAAAAGTATTTCTAGTTCGTAATAAGTGGCCATGATACTGAAAGCTGTATGCCA  
47► E N F E L L K V L G T G A Y G K V F L V R K I S G H D T G K L Y A

801 TGAAGTTTTGAAAAAGCAACAATCGTTCAAAAGGCCAAAACACAGAGCATAACAAGGACAGAACGACAAGTCTGGAACACATTAGGCAGTCGCCATT  
80► M K V L K K A T I V Q K A K T T E H T R T E R Q V L E H I R Q S P F

901 TTTGGTAACATTACATTATGCTTTCCAGACAGAAACCAAACTCATCTCATTATAGATATATAAATGGTGGTGAAGTCTTACTCATCTTTCTCAAAGA  
113► L V T L H Y A F Q T E T K L H L I L D Y I N G G E L F T H L S Q R

1001 GAGCGTTTACAGAGCATGAGGTGCAGATTTATGTTGGAGAGATTGTGCTTGCCTCGAACATCTCCACAAGTTGGGATTATATATCGTGATATTAAGC  
147► E R F T E H E V Q I Y V G E I V L A L E H L H K L G I I Y R D I K

1101 TTGAGAATATTCTACTTGATTCTAATGGCCATGTGGTGCAGAGATTTGGTCTGAGTAAGGAGTTTGTGGCTGATGAAACTGAAAGAGCATATTCCTT  
180► L E N I L L D S N G H V V L T D F G L S K E F V A D E T E R A Y S F

1201 TTGTGAACTATTGAATACATGGCACCAGATATTGTGAGAGGGGAGATTGAGACATGACAAGCAGTTGACTGGTGGAGTTTGGGTGTTCTAATGTAT  
213► C G T I E Y M A P D I V R G G D S G H D K A V D W W S L G V L M Y

**EcoRV (1359)**  
**Eco32I (1359)** 1301 GAATTACTAACTGGAGCATCTCCTTTCACTGTTGATGGAGAAAAAATCCCAAGCTGAGATATCTAGGAGAATATTAAGAGTGGAGCTCCATATCCCC  
247► E L L T G A S P F T V D G E K N S Q A E I S R R I L K S E P P Y P

**XcmI (1454)** 1401 AAGAAATGAGTGCTTTAGCGAAAGACCTAATTCAGCGTCTTTTGTGAAAGATCCCAAGAAGAGATTGGGATGTGGTCCACGTGATGCAGATGAAATCAA  
280► Q E M S A L A K D L I Q R L L M K D P K K R L G C G P R D A D E I K

**BbrPI (1478)** 1501 AGAACATCTCTTTTTCAGAAAAATAATTTGGGATGATTTAGCCGCAAAAAAGTGCCTGCACCATTTAAGCCAGTCATTGAGATGAATTAGATGTGAGT  
313► E H L F F Q K I N W D D L A A K K V P A P F K P V I R D E L D V S

**BamHI (1626)** 1601 AACTTTGAGAAGAGTTCACAGAAATGGATCCCACTTATTCTCCCGCAGCCCTGCCCCAGAGTCTGAGAAGCTGTTTACAGGCTATTCTTTGTTGCTC  
347► N F A E E F T E M D P T Y S P A A L P Q S S E K L F Q G Y S F V A

1701 CTTCCATCCTATTCAAGCGTAATGCAGCTGTATAGACCTCTTCACTTTTACATGGGAGTTGAAAGTCTGGAGTGACAAAATGTTGCCAGGAGTGAAT  
380► P S I L F K R N A A V I D P L Q F H M G V E R P G V T N V A R S A M

1801 GATGAAGGACTCTCCATTCTATCAACATATGACCTAGATTTGAAAGGACAAAACCCCTGGGAGAAGGTAGTTTTCAATTTGTCGAAAGTGTGTCATAAA  
413► M K D S P F Y Q H Y D L D L K D K P L G E G S F S I C R K C V H K

1901 AAAAGTAAACCAAGCTTTTGCAGTCAAAAATACAGAAAAGGATGGAAGCCAACTACTAAAAGGAAATACAGCTCTGAAACTCTGTGAAGGACACCCCA  
447► K S N Q A F A V K I I S K R M E A N T Q K E I T A L K L C E G H P

2001 ATATTGTGAAGTTGCATGAAGTTTTTCATGATCAGCTTACACGTTTCTAGTGTGAACTTCTGAATGGAGGAGAAGTGTGAGCGCATTAAGAAAA  
480► N I V K L H E V F H D Q L H T F L V M E L L N G G E L F E R I K K K

**Ppu10I (2164)** 2101 GAAGCACTCAGTGAGACGGAAGCCAGCTACATCATGAGGAAGCTTGTTCAGCTGTAAGCCACATGCATGATGTTGGAGTGGTGCACAGGGATCTGAAA  
513► K H F S E T E A S Y I M R K L V S A V S H M H D V G V V H R D L K

**NsiI (2164)** **ApaLI (2182)** 2201 CCTGAGAATTTATTGTTCCACCGATGAAAATGACAATTTGGAATTTAAATAATTGATTTTGGATTTGCACGGCTAAAGCCACCGGATAATCAGCCCCTGA  
547► P E N L L F T D E N D N L E I K I I D F G F A R L K P P D N Q P L

**BsrGI (2396)** 2301 AGACTCCATGCTTACCCTTCATTATGCCGCCAGAGCTCTTGAATCAGAACGGCTACGATGAGTCTGTGACTGTGGAGCTTGGCGTCATTTTGTGTA  
580► K T P C F T L H Y A A P E L L N Q N G Y D E S C D L W S L G V I L Y

2401 CACAATGTTGTCAGGACAGGTTCCCTTCCAATCTACGACGAAGTTTACGCTGACCAGCGCGGTGGAATCAGAAATTAAGAAAAATTAAGGGAGATTT  
613► T M L S G Q V P F Q S H D R S L T C T S A V E I M K K I K G G D F

2501 TCCTTTGAAGGAGAAGCCTGGAAGAATGTATCCCAAGAGGCTAAAGATTTGATCCTCAAGGACTTCTCACAGTAGATCCAAACAAAAGGCTTAAATGTCTG  
647► S F E G E A W K N V S Q E A K D L I Q G L L T V D P N K R L K M S

**BspEI (2661)** **BspEI (2680)** 2601 GCTTGAGGTACAATGAATGGCTACAAGATGGAAGTCAAGTGTCTCCTCAATCCTCTGATGACTCCGGATATTCTAGGATCTCCGGAGTCCCGTGCATAC  
680► G L R Y N E W L Q D G S Q L S S N P L M T P D I L G S S G A A V H T

2701 CTGTGTGAAAGCAACCTTCCACGCCTTTAAACAATAACAAGAGAGAGGGGTTTTGCCTTCAAGATGTTGATAAGCCCTTTGGCTAAGAGAAGAAAAATG  
713► C V K A T F H A F N K Y K R E G F C L Q N V D K A P L A K R R K M

2801 AAAAAGACTAGCACCAGTACCGAGACGCGCAGCAGTTCCAGTGAGAGTCCCATTTCTTCTCCTCATTCTCACGGTAAAACACCCACCAAGACAC  
747▶ K K T S T S T E T R S S S S E S S H S S S S H S H G K T T P T K T

NheI (2984)

2901 TGCAGCCCAGCAATCCTGCCACAGCAATAACCCGGAGACCCTCTCCAGTTCGGACTCAGTAGCTTAGGCATGGTAGGAGTGCTAGCTGGCCAGACA  
780▶ L Q P S N P A D S N N P E T L F Q F S D S V A •

3001 TGATAAGATACATTGATGAGTTTGGACAAACCACAAGTGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAAC

HpaI (3122) MfeI (3133)

3101 CATTATAAGCTGCAATAAACAAGTTAACACAACAATTGCATTCAATTTATGTTTCAGGTTTCAGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAAC

EcoRI (3218)

3201 CTCTACAAATGTGGTATGGAATCTAAAATACAGCATAGCAAACTTTAACCTCAAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGC

3301 ATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTTCTTTCATGGAGTTTAAGATATAGTGATTTTCCCAAGGTTTGAAC

SwaI (3471)

3401 GCTCTTCATTTCTTTATGTTTTAAATGCACTGACCTCCACATTCCTTTTTAGTAAATATTAGAAATAATTTAAATACATCATTGCAATGAAATAA

3501 ATGTTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGGAACCTTTAATAGAAAT

3601 GGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCCTGGTGTACTTGAGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGTTGCCATTCTCATCTCAATG

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

3701 AGCACAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTGCACATGCCACAGGGGCTGACCACCTGATGGATCTGCCACCTCATCAGAGTAGGGGT

116▶ 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 S Y P H

StuI (3896)

3801 GCCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCGTTGCTCACAGCAGACCCAATGGCAATGGCTTCAGCACAGACAGTACCCTGCCAATGTAGGC

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

3901 CTCATGTGGACAGCAGAGATGATCTCCCAGTCTGGTCTGATGGCCGCCGACATGGTGTCTGTGTCCTCATAGAGCATGGTGTCTTCTCAGTG

50▶ 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

4001 GCGACCTCCACCAGTCCAGATCTGAGAGATGTTGAAGGCTTTCATGATGGCCCTCTATAGTGAGTCGATTATACTATGCCGATATACTATGCC

16▶ A V E V L E L D Q Q S I N F T K M

VspI (4104)

AseI (4104)

4101 GATGATTAATTGTCAAACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTTCACTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCCTAC

SpeI (4259)

4201 CGCCCATTTGCGTCAATGGGCGGAGTTGTTACGACATTTTGGAAAGTCCCGTTGATTTACTAGTCAAACAAACTCCATTGACGTCAATGGGGTGA

SnaBI (4387)

Eco105I (4387)

4300 GACTTGAAATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGTA

NdeI (4492)

4400 CTGCCAAGTAGGAAAGTCCATAAGGTCATGTACTGGGCATAATGCCAGGCGGGCATTACCCTGATTGACGTCAATAGGGGGCTACTTGGCATATGA

4500 TACACTTGATGTACTGCCAAGTGGGAGTTTACCGTAAATACTCCACCCATTGACGTCAATGAAAGTCCCTATTGGCGTTACTATGGGAACATACGTCA

PstI (4671)

SdaI (4670)PaeI (4678)

BspLU11I (4688)

4600 TTATTGACGTCAATGGGCGGGGTCGTTGGGCGGTCAGCCAGGCGGGCATTACCCTAAGTTATGTAACGCTGCAGGTTAA TTAAGAACATGTGAG

4698 CAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCTTGTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCAAAAAATCGACGCTC

4798 AAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCTGGAAGCTCCCTCGTGCCTCTCTGTTCCGACCCTGCCGTTACC

4898 GGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCCGCTCCAAGCTGG

ApaLI (5002)

4998 GCTGTGTGCACGAACCCCGTTCAGCCCAGCCGCTGCGCTTATCCGGTAACTATCGTCTTGTAGTCCAAACCCGTAAGACACGACTTATCGCCACTGGC

5098 AGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCCGGTGTACAGAGTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTA

5198 TTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTG

5298 TTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACTCACGTTA

EagI (5438)

PaeI (5418) SwaI (5427)

NotI (5437)

5398 AGGGATTTTGGTTCATGGCTAGTTAATTAACATTTAAATCAGCGGCCCAATAAAAATATCTTTATTTTTCATTACATCTGTGTGTTGTTTTTGTGTGAAT

5498 CGTAACTAACATACGCTCTCCATCAAAACAAAACGAAACAAAACAACTAGCAAAATAGGCTGTCCCGAGTGCAAGTGCAAGTGCCAGAACATTTCTCTA

5598 TCGAA