



PvuI (7) SgfI (6) MfeI (82)  
1 GGATCTGCGATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCCGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA  
101 GAGAAAGTGGCGCGGGTAAACTGGAAAGTGATGTCGTGTAAGTGGTCCGCCTTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

Psp1406I (203) HindIII (245)  
201 GTGAACGTTCTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTTCACGCGCCCGCCCTACCTGAGGCC  
301 GCCATCCACGCGGGTTGAGTCGCGTTTCTGCCGCCTCCCGCCTGTGGTGCCTCCTGAAGTGCCTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

NgoMIV (441) NaeI (441)  
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCAACTCTACGCTTTTGTTCGTTT

NcoI (560) BstEII (555) KasI (535) AgeI (552)  
501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGGGCGCTACCTGAGATCACCGGTCCACATGGAGCTGGACTCTGAGGAGAAGGCCATCGCACACG  
601 GTCCAAAGGGTTTCGAGTTCCTGTGGAGCCAGCCATACAAGAGCTGTTTTCAGCTGTCCCACTCCAGGCTGCGACGGCAGTGGTACAGTGGCAAAATAT  
13> S K G V R V P V E P A I Q E L F S C P T P G C D G S G H V S G K Y  
701 GCACGACACAGAAGTGTATATGGTTGTCCTTGGCTAAAAAAGAAAAACGCAAGATAAACAGCCCCAAGAACCTGCTCCCAAGCAAAACCTTTGCAG  
47> A R H R S V Y G C P L A K K R K T Q D K Q P Q E P A P K R K P F A  
801 TAAAGCAGATAGTTCCTCAGTAGACGAATGTTATGAGAGTGTGACTGAAGACATGGATGATAAGGAGGAAGATGATGATGAGGAGTTCCTGAAGA  
80> V K A D S S S V D E C Y E S D G T E D M D D K E E D D D E E F S E D  
901 CAATGATGAGCAAGGGATGATGACGACGAAGTGAAGTGGATCGGGAAGACGAGGAGGAGATCGAGGAGGAAGATGATGAAGAAGATGATGATGATGAA  
113> N D E Q G D D D D E D E V D R E D E E E I E E E D D E E D D D D E  
1001 GATGGTGACGATGTAGAAGGGAAGAAGAGGATGATGATGAAGAGGAGGAAGAAGAGGAAGAGGAAGAAGAAAATGAAGACCATCAAATGAGTTGTACTC  
147> D G D D V E E E E D D D E E E E E E E E E E E N E D H Q M S C T  
1101 GAATAATGCAGGACACAGACAAGGATGATAACAACAATGATGAGTATGATAAATGATGAAGTGGTAGCTAAGTCGCTATTAATCTTGGCAAAATTCG  
180> R I M Q D T D K D D N N N D E Y D N Y D E L V A K S L L N L G K I A  
1201 TGAGGATGCAGCATAACGAGCCAGGACTGAATCAGAGATGAACAGCAATACCTCCAATAGTCTGGAGGACGATAGTGACAAAAACGAAAACCTCGGTCCG  
213> E D A A Y R A R T E S E M N S N T S N S L E D D S D K N E N L G R  
1301 AAAAGCAGTGTAGCTAGACTTACAGTGTGTTGTTAGAGAAACAGTGGACTCCCTTAAGCTGTTAGCACAAGGACATGGTGTGTGCTATCAGAGA  
247> K S E L S L D L D S D V V R E T V D S L K L L A Q G H G V V L S E  
1401 ATATCAGTGACAGAAGTTATGCTGAGGGGATGTACAGCAGGACAGTAGAAAATGAAGTATGTCATGCTAGGGAAGCCCATGAACAATGGACTCATGGA  
280> N I S D R S Y A E G M S Q Q D S R N M N Y V M L G K P M N N G L M E  
1501 GAAGATGGTGGAGGAGATGATGAGGAAGTGTGCTAAGTAGTCTAGAGTGCCTGAGGAACAGTGTCTTACCTGGCCAGGAAACTCAGCGAGACCAAC  
313> K M V E E S D E E V C L S S L E C L R N Q C F D L A R K L S E T N

PshAI (1606) BspLU11I (1641)  
1601 CCACAGGACAGGAGTCCAGCCACCAACATGAGTGTGCGCAACATGTCCGGCAAGAGGACGACTTCCCTGGGAGGACGCCAGACAGGAGCTACTCGGATA  
347> P Q D R S Q P P N M S V R Q H V R Q E D D F P G R T P D R S Y S D

Psp1406I (1746) BspHI (1779)  
1701 TGATGAACCTTATGCGGCTGGAGGAGCAGCTCAGTCCCAGGTCTAGAAGCTTCCAGCTGTGCCAAGGAGGATGGGTGTCATGAGAGGGATGATGACAC  
380> M M N L M R L E E Q L S P R S R T F S S C A K E D G C H E R D D D T  
1801 CACCTCAGTGAACCTCAGACAGGTCTGAGGAAGTGTGACATGACCAAGGGCAACCTGACTCTGCTAGAGAAAGCCATTGCTTGGAGACAGAGAGGCC  
413> T S V N S D R S E E V F D M T K G N L T L L E K A I A L E T E R A

NcoI (1922)  
1901 AAGCCATGCGGGAGAAGATGGCCATGGATGCTGGGAGAAGGGATAACCTGAGATCCTATGAGGACCAGTCTCCAAGACAGCTGGCTGGGGAAGACAGAA  
447> K A M R E K M A M D A G R R D N L R S Y E D Q S P R Q L A G E D R

XmaI (2083)  
2001 AATCAAATCCAGTGACAGCCATGTCAAAAAGCCATACTATGATCCCTCAAGAACAGAAAAGAGAGAGCAAGTGTCCAACCCCGGGTGTGATGGAAC  
480> K S K S S D S H V K K P Y Y D P S R T E K R E S K C P T P G C D G T

Ppu10I (2185) NsiI (2185)  
2101 CGGCCACGTAAGTGGGCTTACC CGCATCACCGCAGTCTGTCTGGATGCCCGCACAAAGATAGGGTCCCTCCAGAAATCTTGGCATGCATGAAAATGTT  
513> G H V T G L Y P H H R S L S G C P H K D R V P P E I L A M H E N V

PstI (2291)  
2201 CTCAAGTGTCCCACTCCAGGCTGCACAGGGCGAGGGCATGTGAATAGCAACAGGAAGTGCACAGAAGCCTCTCTGGATGCCCAATTGCTGCTGCAGAAA  
547> L K C P T P G C T G R G H V N S N R N S H R S L S G C P I A A A E

Tth111I (2362)  
2301 AACTGGCAAAGGCCAAGAGAAACACCAGAGCTGTGATGTGTCAAAATCCAACAGGCTCAGACCGAGTCCCTCAGGCCAATGTCTTTGTCAAACAGCT  
580> K L A K A Q E K H Q S C D V S K S N Q A S D R V L R P M C F V K Q L  
2401 TGAGATTCCTCAGTATGGCTACAGAAAATGTTCCACAAACACACCAGCTCCAACCTGGCCAAGGAGCTTGAAGAATACTCCAAGACTTCGTTTGTGAG  
613> E I P Q Y G Y R N N V P T T T P R S N L A K E L E K Y S K T S F E  
2501 TACAACAGTTACGACAACATACTTATGGCAAAGAGCCATAGCTCCAAGGTGCAAACAGGACATATCCCCAAAGGATATGACGATGCCAAGCGGT  
647> Y N S Y D N H T Y G K R A I A P K V Q T R D I S P K G Y D D A K R

BbrPI (2697)  
2601 ACTGCAAGATGCCAGCCCCAGCAGCAGCACCACCAGCAGCTATGCACCTAGCAGCAGCAGCAACCTCAGCTGTGGTGGTGGCAGCAGCGCCAGTAGCAC  
680> Y C K N A S P S S S T T S S Y A P S S S S N L S C G G G S S A S S T  
2701 GTGTAGCAAGAGCAGCTTTGACTACACACATGACATGGAGGGCCGACACATGCGCAGCCACAGCCATTCTCAACCTGTCCACAGCTTGTGCTGAAATGCCA  
713> C S K S S F D Y T H D M E A A H M A A T A I L N L S T R C R E M P  
2801 CAGAACCTGTCCACCAAGCCACAGGACCTGTGTAAGTGCCTGGAAACCCAGACATGGAGGTGGATGAGAATGGCACCTGGACCTGAGCATGAACAAGCAGA  
747> Q N L S T K P Q D L C T A R N P D M E V D E N G T L D L S M N K Q

**XhoI (2903)**  
2901 GGCCTCGAGACAGTCTGCCAGTCTGACACCCCTGGAACCCATGTCTCCGACGAGCAGGCCGTGATGAGCAGCCGATGCTTCCAGCTGAGCGAGGG  
780▶R P R D S C C P V L T P L E P M S P Q Q Q A V M S S R C F Q L S E G  
3001 GGATTGCTGGGACTTGCCTGTAGACTACACAAAATGAAGCCTCGAGGGTAGATGAGGATGAGCCAAAGAGATTACCCAGAAAGACTTGGACCCATTC  
813▶ D C W D L P V D Y T K M K P R R V D E D E P K E I T P E D L D P F

**BstEII (3135)**  
3101 CAGGAGGCTCTGGAAGAAAGACGGTATCCAGGGGAGGTGACCATCCCAAGCCCCAAACCAAGTACCCTCAGTGAAGGAAAGCAAAAAGGACTTAATAA  
847▶ Q E A L E E R R Y P G E V T I P S P K P K Y P Q C K E S K K D L I

**BstBI (3233)**  
3201 CTCTGTCTGGCTGCCCCCTGGCGGACAAAAGCATTGCAAGTATGCTGGCCACCAAGTTCCTCAAGAGCTCAAGTGGCCACCCCTGGCTGTGACGGTTCTGG  
880▶ T L S G C P L A D K S I R S M L A T S S Q E L K C P T P G C D G S G

**BspEI (3368)**  
3301 ACACATCACTGGCAATTACGCTTTCATCGAAGCCTTTCTGGGTGCCGAGAGCAAAGAAGAGTGGCATCCGGATAGCACAGACAAAGAGGACAAAGGAA  
913▶ H I T G N Y A S H R S L S G C P R A K K S G I R I A Q S K E D K E

**Acc65I (3423)**  
**Ppu10I (3464)**  
**NsiI (3464)**  
3401 GACCAGGAGCCAATCAGGTGTCCGGTACCTGGCTGTGACGGTCAGGGACACATCACTGGGAAGTATGCATCCCAAGCAGCGCCTCCGGGTGTCCCTTGG  
947▶ D Q E P I R C P V P G C D G Q G H I T G K Y A S H R S A S G C P L

**Acc65I (3521)**  
**XmaI (3586)**  
3501 CAGCCAAGAGGCAGAAAGATGGGTACCTTAATGGCTCCAGTTCTCTGGAAGTCCGGTCAAGACGGAGGGCATGCTCTGCCCTACCCCGGGTGTGATGG  
980▶ A A K R Q K D G Y L N G S Q F S W K S V K T E G M S C P T P G C D G  
3601 GTCAGGACACGTCACTGGCAGCTTCTCACACACCGCAGCTTGTCAAGAGCCACATCAGCAATGAAGAAAAGCAAAGCTGTCTGGAGAACAG  
1013▶ S G H V S G S F L T H R S L S G C P R A T S A M K K A K L S G E Q

**XcmI (3791)**  
3701 ATGTTGACTATCAAGCAGCGAGCCAGCAACGGTATAGAAAATGATGAAGAAATCAAGCAGTTAGATGAAGAGATCAAGGAGCTTAATGAGTCCAATTCCC  
1047▶ M L T I K Q R A S N G I E N D E E I K Q L D E E I K E L N E S N S

3801 AGATGGAGGCTGACATGATCAAACCTCAGAACTCAGATCACACAAATGGAGAGCAACCTGAAGACGATTGAGGAGGAGAAACAAAGTCAATTGAACAGCAGAA  
1080▶ Q M E A D M I K L R T Q I T T M E S N L K T I E E E N K V I E Q Q N

**BamHI (3978)**  
3901 TGAGTCGCTCTTGACGAGTTGGCCAACTGAGCCAGTCCCTGATCCACAGCCTCGCCAACATCCAGCTGCCTCACATGGATCCAATCAATGAACAAAAT  
1113▶ E S L L H E L A N L S Q S L I H S L A N I Q L P H M D P I N E Q N

**BsaBI (4045)**  
**Bst1107I (4032)**  
4001 TTTGATGCTTACGTGACTACTTTGACGGAAATGTATACAAATCAAGATCGTTATCAGAGTCCAGAAAATAAAGCCCTACTGGAAAATATAAAGCAGGCTG  
1147▶ F D A Y V T T L T E M Y T N Q D R Y Q S P E N K A L L E N I K Q A

**EcoRI (4106)**  
**NheI (4126)**  
4101 TGAGAGGAATTCAGTCTGAACAGCTGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTGGACAACCACAACCTAGAATGCAGTGAAAAAATG  
1180▶ V R G I Q V •

**HpaI (4264)** **MfeI (4275)**  
4201 CTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGTTAACAACAACAAATTGCATTTTATGTTTCAG

**EcoRI (4360)**  
4301 GTTCAGGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGAATTTCAAATACAGCATAGCAAACTTTAACCTCCAAA  
4401 TCAAGCCTCTACTGAACTCTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTCTTTC

4501 ATGGAGTTTAAGATATAGTGATTTTTCCAAGGTTTGAAGTACTCTTCAATTTCTTTATGTTTTAAATGCACTGACCTCCACATTCCCTTTTTAGTAAA

**SspI (4599)**  
4601 ATATTCAGAAATAATTTAAATACATCATTGCAATGAAAATAAATGTTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTT

4701 AGTAGTTGGACTTAGGGAACAAAGAACCTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCTGGTGACTTGGAGGGGATGAGT  
1414 • N R T Y K L P I L

4801 TCCTCAATGGTGGTTTTGACCAGCTTGCCATTCTCAATGAGCACAAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTCTGCACATGCCACAGGGGC  
1304 E E I T T K V L 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

4901 TGACCACCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCGTTGCTCACAGCAGACCCAAT  
974 V V R I S R D 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  
5001 GGCATGGCTTCAGCACAGACAGTACCCTGCCAATGAGGCCTCAATGTGGACAGCAGAGATGATCTCCCAAGTCTTGGTCTGATGGCCGCCCGCCGACA  
644 A I A E A C V 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

**BspHI (5188)**  
5101 TGGTGTGTTGCTCTCATAGAGCATGGTATCTTCTCAGTGGCGACCTCCACAGCTCCAGATCCTGCTGAGAGATGTTGAAGGTTCTCATGATGGCCC  
304 H H K N D E Y L M T I K E T A V E V L E L D Q Q S I N F T K M

**AseI (5246)**  
5201 TCCTATAGTGAGTCGATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACACAGCTGGATGGCGTCTCCAGCTATCTGACGGTTCACT

5300 AAACGAGCTCTGCTTATATAGACCTCCACCGTACACGGCTACCGCCATTTGCGTCAATGGGGCGGAGTTGTTACGACATTTTGAAGTCCCGTTGAT

**SpeI (5401)**  
5400 TTACTAGTCAAAAACAACTCCATTGACGTCAATGGGGTGGAGACTTGAAAATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTAAGTCCAAA

**SnaBI (5529)**  
5499 ACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGACTGCCAAGTAGGAAAGTCCCATAAAGTCACTGACTGGGCATAATGCCAGGGGCCA

**NdeI (5634)**

5599 TTTACCGTCATTGACGTCAATAGGGGGCGTACTTGGCATATGATACACTTGATGTACTGCCAAGTGGGCAGTTTACCGTAAATACTCCACCCATTGACGT

5699 CAATGGAAAGTCCCTATTGGCGTACTATGGGAACATACGTCATTATTGACGTCAATGGGCGGGGTCGTTGGGCGGTGAGCCAGCGGGCCATTACCG

**PstI (5813)**

**SdaI (5812)**

**BspLU11I (5830)**

5799 TAAGTTATGTAACGCCTG**CAGGTTAA**TTAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGCCGCGTTGCTGGCGTTTTTCC

5897 ATAGGCTCCGCCCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGCGTTTTCCCTGG

5997 AAGCTCCCTCGTGCCTCTCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTCACGC

**ApaLI (6144)**

6097 TGTAGGTATCTCAGTTCGGTGTAGGTGCTTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCGTTTCAGCCCGACCGCTGCGCCTTATCCGGTAACTATC

6197 GTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTT

6297 CTTGAAGTGGTGGCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGAAAAAGAGTTGGTAGCTCT

6397 TGATCCGGCAAACAACCCGCTGGTAGCGGTGGTTTTTTTTGTTTGAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCT

**EagI (6580)**

**PacI (6560)**

**SwaI (6569)**

**NotI (6579)**

6497 TTTCTACGGGGTCTGACGCTCAGTGAACGAAAACCTCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATCAGCGGCCGCAATAAAATA

6597 TCTTTATTTTATTACATCTGTGTGTTGGTTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAAACAAAACGAAACAAAACAACTAGCAAAT

6697 AGGCTGTCCCAGTGCAAGTGCAGGTGCCAGAACATTTCTCTATCGAA