



**PvuI (7)**  
**SgfI (6)** 1 GGATCTGCGATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCCGAGAAGTTGGGGGAGGGGTGCGCAATTGAACGGGTGCCTA  
**MfeI (82)**  
101 GAGAAAGTGGCGCGGGTAAACTGGAAAAGTGTCTGTACTGGCTCCGCCTTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

---

**HindIII (245)**  
**Psp1406I (203)** 201 GTGAACGTTCTTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTACAGCGCCCGCCGCTACCTGAGGGC  
**PvuII (239)**  
**Bsu36I (291)** 301 GCCATCCACGCCGGTTGAGTCGGCTTCTGCCGCTCCCGCCTGTGGTGCCTCCTGAACTGCGTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

---

**NgoMIV (441)**  
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCTGCTTGTCTCAACTCTACGCTTTTGTTCGTTT

---

**AgeI (552)**  
501 TCTGTTCTGCGCGTTACAGATCCAAGCTGTGACCGCGCTACCTGAGATCACCGGTCAACATGTTGGATATTTGCTTGAAAAACGTGGGTACGAC  
1▶ M L D I C L E K R V G T T

---

**BstXI (668)**  
601 CTTGGCTGCCCAAGTGAACCTCAGCACTGTGAGGTTTCAGGGATTGGCAGAGGGACCAAGGGGACCATGAAAATGGACATGGAGGATGCGGATATG  
13▶ L A A P K C N S S T V R F Q G L A E G T K G T M K M D M E D A D M

---

**BsrGI (733)**  
701 ACTCTGTGGACAGAGGCTGAGTTTGAAGAGAAGTGTACATACATTGTGAACGACCACCCTGGGATTCTGGTGTGATGGCGTACTTCGGTTCAGGCGG  
47▶ T L W T E A E F E E K C T Y I V N D H P W D S G A D G G T S V Q A  
801 AGGCATCCTTACCAAGGAATCTGCTTTTCAAGTATGCCACCAACAGTGAAGAGTTATTGGAGTGTGAGTAAAGAATACATACCAAAGGCACACGTTT  
80▶ E A S L P R N L L F K Y A T N S E E V I G V M S K E Y I P K G T R F

---

**SspI (959)**  
901 TGGACCCCTAATAGGTGAAATCTACACCAATGACACAGTTCCTAAGAACGCCAACAGGAAATATTTTTGGAGGATCTATTCCAGAGGGGAGCTTACCAC  
113▶ G P L I G E I Y T N D T V P K N A N R K Y F W R I Y S R G E L H H

---

**XmaI (1064)** **BsaBI (1098)**  
1001 TTCATTGACGGCTTAATGAAGAGAAAAGCAACTGGATGCGCTATGTGAATCCAGCACACTCTCCCGGAGCAAAAACCTGGCTGCGTGTGAGAACGGGA  
147▶ F I D G F N E E K S N W M R Y V N P A H S P R E Q N L A A C Q N G

---

**XmnI (1177)**  
1101 TGAACATCTACTTCTACACCATTAAGCCATCCTGCCAACAGGAACCTCTGTGTGGTATTGTGCGGACTTTGCAGAAAAGGCTTACTACCCCTATCC  
180▶ M N I Y F Y T I K P I P A N Q E L L V W Y C R D F A E R L H Y P Y P  
1201 CGGAGAGCTGACAATGATGAATCTCACAAAACAGAGCTCTAAAGCAACGAGCAGTGAAGAAAATGAATCTGCCAAAAGAAATGTCCCAAAGAGA  
213▶ G E L T M M N L T Q T G S S L K Q P S T E K N E L C P K N V P K R  
1301 GAGTACAGCGTGAAMGAAATCCTAAAATTGGACTCCAACCCCTCCAAGGAAAAGGACCTTACCGTTCAACATTTACCCCTCAGATCAGAAAAGGACC  
247▶ E Y S V K E I L K L D S N P S K G K D L Y R S N I S P L T S E K D

---

**HindIII (1493)**  
1401 TCGATGACTTTAGAAGACGTGGGAGCCCGAAATGCCCTTCTACCCTCGGGTGGTTTACCCATCCGGGCCCTCTGCCAGAAGACTTTTTGAAAGCTTC  
280▶ L D D F R R R G S P E M P F Y P R V V Y P I R A P L P E D F L K A S  
1501 CCTGGCTACGGGATCGAGAGACCCAGTACATCACTCGCTCCCCATTCCATCCTCCACCACTCCAAGCCCTCTGCAAGAAGCAGCCCCGACCAAAGC  
313▶ L A Y G I E R P T Y I T R S P I P S S T T P S P S A R S S P D Q S

---

**MluI (1694)**  
1601 CTCAAGAGCTCCAGCCCTCACAGCAGCCTGGGAATACGGTGTCCCCTGTGGGCCCGGCTCTCAAGAGCACCAGGACTCTACGCTTACTTGAACGCGT  
347▶ L K S S S P H S S P G N T V S P V G P G S Q E H R D S Y A Y L N A  
1701 CCTACGGCACGGAAGTTTGGGCTCCTACCCTGGCTACGACCCCTGCCACCTCCCGCAGCTTTCATCCCTCGTACAACGCTCACTACCCCAAGTT  
380▶ S Y G T E G L G S Y P G Y A P L P H L P P A F I P S Y N A H Y P K F

---

**Eco47III (1837)**  
1801 CCTCTTGGCCCCCTACGGCATGAATTGTAATGGCCTGAGCGTGTGAGCAGCATGAATGGCATCAACAACCTTTGGCCTTCTCCGAGGCTGTGCCCTGTC  
413▶ L L P P Y G M N C N G L S A V T S S M N G I N N F G L F P R L C P V  
1901 TACAGCAATCTCCTGGTGGGGCAGCCTGCCACCCCATGCTCAACCCACTTCTCTCCGAGCTCGTGCCTCAGATGGAGCCCGAGGTTGTCTC  
447▶ Y S N L L G G G S L P H P M L N P T S L P S S L P S D G A R R L L

---

**StuI (2084)**  
2001 AGCCGGAGCATCCAGGGAGGTGCTTGTCCCGGCGCCACAGTGCCTTCTCCTTACCAGGGCCGCCAGCATGAAGGACAAGGCTGTAGCCCCAC  
480▶ Q P E H P R E V L V P A P H S A F S F T G A A A S M K D K A C S P T  
2101 AAGCGGTCTCCACGGCGGAACAGCCGCCACGGCAGAACATGTGGTGCAGCCCAAAGCTACCTCAGCAGGATGGCAGCCCCAGCAGCGAAGCC  
513▶ S G S P T A G T A A T A E H V V Q P K A T S A A M A A P S S D E A

---

**Psp1406I (2293)**  
2201 ATGAATCTCATAAAAAACAAAAGAAACATGACCGGCTACAAGACCTTCCCTACCCGCTGAAGAAGCAGAACGGCAAGATCAAGTACGAATGCAACGTTT  
547▶ M N L I K N K R N M T G Y K T L P Y P L K K Q N G K I K Y E C N V  
2301 GCGCAAGACTTTCGGCCAGCTCTCAATCTGAAGGTCACCTGAGAGTGCACAGTGGAGAACGGCCTTTCAAATGTCAGACTTGAACAAGGGCTTTAC  
580▶ C A K T F G Q L S N L K V H L R V H S G E R P F K C Q T C N K G F T

---

**PstI (2413)**  
2401 TCAGCTCGCCACCTGCAGAAACACTACCTGGTACACACGGGAGAAAAGCCACATGAATGCCAGTCTGCCACAAGAGATTTAGCAGCACCAGCAATCTC  
613▶ Q L A H L Q K H Y L V H T G E K P H E C Q V C H K R F S S T S N L  
2501 AAGACCCACTGCGACTCATTCTGGAGAGAAACCATACCAATGCAAGGTGTGCCCTGCAAGTTCACCCAGTTTGTGCACCTGAAACTGCACAAGCGTC  
647▶ K T H L R L H S G E K P Y Q C K V C P A K F T Q F V H L K L H K R

**BsrBI (2611)**  
XmaI (2606)  
2601 TGCACACCCGGGAGCGGCCCAAGTCTCCAGTGCCACAAGAAGTACATCCATCTCTGTAGCCTCAAGTTACCTGAAAGGAACTGCGCTGCGGC  
680▶ L H T R E R P H K C S Q C H K N Y I H L C S L K V H L K G N C A A A

**XhoI (2785)**  
2701 CCCGGCGCTGGGCTGCCCTTGAAGATCTGACCCGAATCAATGAAGAAATCGAGAAGTTTGACATCAGTGACAATGCTGACCGGCTCGAGGACGTGGAG  
713▶ P A P G L P L E D L T R I N E E I E K F D I S D N A D R L E D V E  
2801 GATGACATCAGTGTATCTCTGTAGTGGAGAAGAAATCTGGCCGTGGTCAAAAAGAGAAAGAACTGGCCTGAAAGTGTCTTTGCAAAGAAACA  
747▶ D D I S V I S V V E K E I L A V V R K E K E E T G L K V S L Q R N

**Bsu36I (2918)** **BspHI (2957)** **Acc65I (2991)**  
2901 TGGGAATGGACTCCTCTCCTCAGGGTGCAGCCTTTATGAGTCATCAGATCTACCCTCATGAAGTTGCCTCCAGCAACCCACTACCTCTGGTACCTGT  
780▶ M G N G L L S S G C S L Y E S S D L P L M K L P P S N P L P L V P V

**MscI (3056)**  
**BamHI (3030)** **NheI (3050)**  
3001 AAAGGTCAAACAAGAAACAGTTGAACCAATGGATCCTTAAGATTTTCAGAGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCAC  
813▶ K V K Q E T V E P M D P •

**HpaI (3188)** **MfeI (3199)**  
3101 AACTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAACAAGTTAACAAACAAC

**EcoRI (3284)**  
3201 AATTGCATTCATTTTATGTTTCAGGTTCAAGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGAATTCTAAATACAG  
3301 CATAGCAAACTTAACCTCAAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAG

**SapI (3466)**  
3401 CTGTTTGCAGCCTCACCTTCTTTCATGGAGTTAAGATATAGTGATTTTTCCAAAGTTTGAAGTACTCTTTCATTTCTTTATGTTTTAAATGCAGTGCAC

**SspI (3523)** **Swal (3537)**  
3501 CTCCCACATTCCTTTTTAGTAAAATATTCAGAAAATAATTTAAATACATCATTGCAATGAAAATAAATGTTTTTTATTAGGCAGAATCCAGATGCTCAAG  
3601 GCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGGAACCTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTC  
141 • N

**BstXI (3827)**  
3701 CTGGTGTACTTGAGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCCATTCTCAATGAGCACAAAGCAGTCAAGGAGCATAGTCAAGATGA  
138▶ R T Y K L P I L 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

**StuI (3962)**  
3801 GCTCTCTGCACATGCCACAGGGGCTGACCACCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCCTGACAGCCACAATGGTGTCAAAGTCTTCTG  
105▶ E R C M G C P S 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

**XmnI (4104)** **AseI (4170)**  
3901 CCCGTTGCTCACAGCAGACCCAATGGCAATGGCTTCAGCACAGACAGTGACCCTGCAATGTAGGCCCTCAATGTGGACAGCAGAGATGATCTCCCGAGTC  
72▶ G N S V A S G I 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  
4001 TTGGTCTGATGGCCGCCGACATGGTCTTGTGTCTCATAGAGCATGGTATCTTCTCAGTGGCGACCTCCACCAGCTCCAGATCCTGCTGAGAGA  
38▶ K T R I A A G V 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

**XmnI (4104)** **AseI (4170)**  
4101 TGTTGAAGTCTTCATGGTGGCCCTCTATAGTGAGTCGATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACAGCGTGGATGGCGTC  
5▶ N F T K M  
4201 TCCAGCTTATCTGACGGTCACTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCCTACCGCCATTTGCGTCAATGGGGCGGAGTTGTTACG

**SpeI (4325)**  
4301 ACATTTTGGAAAGTCCCGTTGATTTACTAGTCAAAAACAACTCCATTGACGTCAATGGGGTGGAGACTTGGAAATCCCGTGAGTCAAACCGCTATCCA

**SnaBI (4453)**  
4401 CGCCCATGATGTAAGTCCGCAACCGCATCATCATGTAATAGCGATGACTAATACGTAGATGTAAGTCCGCAAGTAGGAAAGTCCCATAGGTCATGTAAGT

**NdeI (4558)**  
4501 GGCATAATGCCAGGCGGCCATTTACCGTCATTGACGTCAATAGGGGGCGTACTTGGCATATGATACACTTGTACTGCAAGTGGGCAGTTTACCG  
4601 TAAATACTCCACCCATTGACGTCAATGGAAAGTCCCTATTGGCGTTACTATGGGAACATACGTCAATTATTGACGTCAATGGGGGGGGTGGTGGCGGT

**PacI (4744)**  
**PstI (4737)** **SdaI (4736)**  
4701 CAGCCAGGCGGGCCATTTACCGTAAGTTATGTAACCGCTGCAGGTTAATAAGAACATGTGAGCAAAGGCCAGCAAAGGCCAGGAACCGTAAAAAGGC  
4801 CGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGA  
4901 TACCAGCGTTTTCCCGTGAAGCTCCCTCGTGCCTCTCTGTTCCGACCCTGCCGTTACCGGATACCTGTCCGCTTTCTCCCTCGGGAAGCGTGG  
5001 CGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTGCTTCCGTTCAAGCTGGGCTGTGTGCACGAACCCCGGTTACGCCGACCGCTG

5101 CGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTAT

5201 GTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCG

5301 GAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGGTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATC

5401 TCAAGAAGATCCTTTGATCTTTTCTACGGGTCTGACGCTCAGTGAACGAAAACACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAA

PacI (5484) SwaI (5493)

**EagI (5504)**

**NotI (5503)**

5501 TCAGCGGCCGAATAAAATATCTTTATTTTCATTACATCTGTGTGTTGGTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAAACAAAACGAA

5601 ACAAACAAACTAGCAAATAGGCTGTCCCAGTGCAAGTGCAAGTGCCAGAGTCCAGAACATTTCTCTATCGAA