



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

101 GAGAAGTGGCGCGGGTAAACTGGAAAGTGATGCTGTACTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

**Psp1406I (203)** 201 GTGAACGTTCTTTTTTCGCAACGGGTTTGGCCGACAGTGAAGCTTCGAGGGCTCGCATCTCTCTTACCGCGCCCGCCCTACCTGAGGCC  
**HindIII (245)** EcoNI (287) **Bsu36I (291)**

301 GCCATCCACGCGGTTGAGTGCCTTCTGCCGCTCCCGCTGTGGTGCCTCTGAAGTGCCTCCGCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

401 GGGCCTTTGTCCGGCGCTCCCTTGGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTCTCAACTCTACGTCTTTGTTTCGTTT  
NgoMI (441)  
NaeI (441)

501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGGGCGCTACCTGAGATCACCGGTCCACCTAGCCATCTCAACTGTTTTGTTCTGCTGCTGGGGCT  
**KasI (535)** **AgeI (552)** **NcoI (560)**  
1▶ M A I S T G L F L L L G L

601 CCTTGGCCAGCCCTGGGAGGGGCTGCTGATTACAGGCTGTGGTGTGCGAGGGGACTGCCTGCTATACAGCCATTGGGGCAAGCTGAGTGGCGCT  
**BstAPI (616)** 13▶ L G Q P W A G A A A D S Q A V V C E G T A C Y T A H W G K L S A A  
701 GAAGCCAGCATCGCTGCAATGAGAATGGAGGCAATCTTGCCACCGTGAAGAGTGAAGGAGGGCCCGCATGTTTCAGCAAGCCCTGACTCAGCTCCTGA  
47▶ E A Q H R C N E N G G N L A T V K S E E E A R H V Q Q A L T Q L L

801 AGACCAAGGCACCCTTGAAGCAAAGATGGGCAAATCTGGATCGGGCTCCAGCGAGAGAAGGGCAACTGTACGTACCATGATTTGCCAATGAGGGGCTT  
**XcmI (803)** **SnaBI (870)** **Eco105I (870)**  
80▶ K T K A P L E A K M G K F W I G L Q R E K G N C T Y H D L P M R G G F  
901 CAGCTGGGTGGTGGAGAGGACACAGCTTATTCAAAGCTGTTACAAAGCCAGCAAGAGCTCCTGTATCTTTAAACGCTGTGTGTCCTCATACTGGAC  
113▶ S W V G G G E D T A Y S N W Y K A S K S S C I F K R C V S L I L D

1001 CTGTCCTTGACACCTCACCCAGCCATCTGCCAAGTGGCATGAGAGTCCCTGTGGGACCCCGAAGCTCCAGGTAACAGCATTGAAGGTTTCTGTGCA  
**SandI (1054)** **EcoO109I (1054)**  
147▶ L S L T P H P S H L P K W H E S P C G G T P E A P G N S I E G F L C  
1101 AGTTCAACTTCAAAGGCATGTGTAGGCCACTGGCGCTGGTGGTCCAGGGCGGGTACCTATAACCACCCCTTTCCAGGCCACTACCTCCTCTGAGGC  
180▶ K F N F K G M C R P L A L G G P G R V T Y T T P F Q A T T S S L E A

1201 TGTGCCTTTTGCCTCTGTAGCCAATGTAGCTTGTGGGATGAAGTAAGAGTAAACCCACTATTTCCATGCAATGAAAAGACTCCAGGAATATTTTCC  
**SspI (1290)**  
213▶ V P F A S V A N V A C G D E A K S E T H Y F L C N E K T P G I F H

1301 TGGGCGAGCTCAGGCCACTCTGTGTCAGCCCCAAGTTTGGTTCAGTTTCAACAACGGGGGCTGCCAGCAGGATTGCTTCAAGGTGGCGATGGCTCCT  
**BstBI (1378)** **AsuII (1378)**  
247▶ W G S S G P L C V S P K F G C S F N N G G C Q Q D C F E G G D G S

1401 TCCGCTGCGGCTGCCGCGCTGGATTTGACTGCTGGATGATCTAGTAAGTTGTGCTCCAGGAACCCCTGCAGCTCAAACCCATGCACAGGAGGTGGCAT  
**NgoMI (1412)** **NaeI (1412)** **PstI (1467)**  
280▶ F R C G C R P G F R L L D D L V T C A S R N P C S S N P C T G G G M

1501 GTGCCATTCTGTACCACTCAGTGAATACTACACTTGGCGTTGTCCAGCGGCTACCACTGGACTCTAGCCAAGTGCCTGTGTGGATATAGATGAGTGC  
**ApaI (1573)**  
313▶ C H S V P L S E N Y T C R C P S G Y Q L D S S Q V H C V D I D E C

1601 CAGGACTCCCCCTGTGCCAGGATTGTGTAACACTCTAGGGAGCTTCCACTGTGAATGTTGGGTTGGTTACCAACCCAGTGGCCCCAAGGAAGAGGCT  
**BstXI (1671)**  
347▶ Q D S P C A Q D C V N T L G S F H C E C W V G Y Q P S G P K E E A  
1701 GTGAAGATGTGGATGAGTGTGCAGCTGCCAAGTCCGCTGTGCCAAGGCTGCATCAACTGATGGCTCTTTCTACTGCTCCTGTAAGAGGGCTATAT  
380▶ C E D V D E C A A A N S P C A Q G C I N T D G S F Y C S C K E G Y I  
1801 TGTGCTGGGGAAGACAGTACCCAGTGTGAGGATAGATGAGTGTTCGAGCGCAAGGGGCAATCCATGTGATTGCTTCAACACAGATGGTTCC  
413▶ V S G E D S T Q C E D I D E C S D A R G N P C D S L C F N T D G S  
1901 TTCAGGTGTGGCTGCCCGCAGGCTGGGAGCTGGCTCCAATGGGCTTTTTGTAGCAGGGGCTGTGTTTTCTGAACTACCAGCCAGGCTCCCCAAA  
447▶ F R C G C P P G W E L A P N G V F C S R G T V F S E L P A R P P Q

2001 AGGAAGACAACGATGACAGAAAGGAGAGTACTATGCTCCTACTGAAATGCCAGTTCTCCTAGTGGCTTAAGGATGCTCCAACAGAGCACAGACAAC  
**ScaI (2026)**  
480▶ K E D N D D R K E S T M P P T E M P S S P S G S K D V S N R A Q T T  
2101 AGGTCTCTTCTGCAATCAGATATTTCCACTGCCTCTGTTCCACTAGAATAGAAATCCCTAGTGAAGTATCTGATGCTGGTTCGAGTTGGGCACATAC  
513▶ G L F V Q S D I P T A S V P L E I E I P S E V S D V W F E L G T Y

2201 CTCCCCAGACCTCCGGCCACAGCAAGCCGACACATGAAGATTCTGTGCTGCACACAGTGCACCCGATGGGCAAGACTGCTTCTGTTTTACATCCTGG  
**BstAPI (2271)**  
547▶ L P T T S G H S K P T H E D S V S A H S D T D G Q N L L L F Y I L

2301 GGACGGTGGTGGCCATCTCACTCTTGTGGTGGCTAGGGATTCTCATTATCATAAACGGAGAGCCAAGAAGGAGGAGATAAAAGAGAAGAAGCC  
**AvrII (2337)**  
580▶ G T V V A I S L L L V L A L G I L I Y H K R R A K K E E I K E K K P  
2401 TCAGAATGCAGCCGACAGCTATTTCTGGGTTCCAGAGCGAGCAGAGAGCAAGCCCGGAGAATCAGTACAGCCCAACACCAGGGACAGACTGCTGAAGA  
613▶ Q N A A D S Y S W V P E R A E S Q A P E N Q Y S P T P G T D C •

2501 CTATGTGGCCTTAGAGACAGCTGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATGCTTT

**NheI (2522)**

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2601 ATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAAGTTAAACAACAACATTGCATTCATTTTATGTTTCAGGTTCC

**HpaI (2660) MfeI (2671)**

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2701 AGGGGGAGGTGTGGGAGGTTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGAATCTAAAATACAGCATAGCAAACTTTAACCTCCAAATCAA

**EcoRI (2756)**

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2801 GCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTGCAGCCTCACCTTCTTTCATGG

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2901 AGTTTAAGATATAGTGTATTTTCCAAGGTTTGAAGTACTGCTCTTCATTCTTTATGTTTTAAATGCACCTGACCTCCACATTCCCTTTTTAGTAAAATAT

**SspI (2995)**

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3001 TCAGAAATAATTTAAATACATCATTGCAATGAAAATAAATGTTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTA

**SwaI (3009) EcoO109I (3070)**

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3101 GTTGGACTTAGGGAACAAAGAACCTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCCTGGTGTACTTGAGGGGGATGAGTTCCT

**BstXI (3299)**

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3201 CAATGGTGGTTTTGACCAGCTTGCCATTCACTCAATGAGCACAAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTCTGCACATGCCACAGGGGCTGAC

129 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 V

3301 CACCCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCCGTTGCTCACAGCAGACCAATGGCA

96 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 A

3401 ATGGCTTCAGCACAGACAGTGCCTGCAATGTAGGCCTCAATGTGGACAGCAGAGATGATCTCCCCAGTCTTGGTCTGATGGCCGCCCGACATGGT

62 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 H H

**BspHI (3584)**

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3501 GCTTGTGCTCATAGAGCATGGTGTCTTCTCAGTGGCGACCTCCACCAGCTCCAGATCCTGCTGAGAGATGTTGAAGGTCTTCATGATGGCCCTCCT

29 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

**XmnI (3576)**

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3601 ATAGTGAGTCGTATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTTCATAAACC

**VspI (3642)**  
**AseI (3642)**

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3701 AGCTCTGTTATATAGACCTCCCACCGTACACGCTACCGCCATTTCGCTCAATGGGGCGGAGTTGTACGACATTTTGAAAGTCCCGTTGATTTACT

**SpeI (3797)**

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3801 AGTCAAACAAACTCCATTGACGTCATGGGGTGGAGACTTGAAATCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTACTGCCAAAACCGCA

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3901 TCATCATGGTAATAGCGATGACTAATACGTAGATGTACTGCCAAGTAGGAAAGTCCATAAGGTCATGTACTGGGCATAATGCCAGGCGGGCCATTTACC

**SnaBI (3925)**  
**Eco105I (3925)**

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4001 GTCATTGACGTCAATAGGGGGCTACTTGGCATATGATACACTTGATGTACTGCCAAGTGGGCGAGTTTACCCTAAATACTCCACCCATTGACGTCAATGG

**NdeI (4030)**

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4101 AAAGTCCCTATTGGCGTTACTATGGGAACATACGTCAATTATTGACGTCAATGGGCGGGGTCTGTTGGGCGGTACGCCAGGCGGGCCATTTACCCTAAGTT

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4201 ATGTAACGCCCTG C A G G T T A A T T A A G A A C A T G T G A G C A A A A G C C A G A A A A G C C A G G A A C C G T A A A A A G C C G C T T G C T G G C G T T T T C C A T A G C C

**PstI (4209)**      **PciI (4226)**  
**SdaI (4208)** **PacI (4216)**      **BspLU11I (4226)**

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4299 TCCGCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCTGGAAGCTC

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4399 CCTCGTGCCTCTCTGTTCGACCCTGCCGTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTACGCTGTAGG

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4499 TATCTCAGTTCGGTGTAGGTCGTTTCGCTCAAGCTGGGCTGTGTGCACGAACCCCGTTTCAGCCGACCCTGCGCCTTATCCGGTAACTATCGTCTTG

**ApaLI (4540)**

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4599 AGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTCTTGAA

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4699 GTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCC

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4799 GGCAAACAAACCACCGCTGGTAGCGGTGTTTTTTTGTGTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTA

---

4899 CGGGTCTGACGCTCAGTGAACGAAAACCTCACGTTAAGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATCAGCGGCCGAATAAAATATCTTTA

**PacI (4956) SwaI (4965) EagI (4976) NotI (4975)**

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4999 TTTTCATTACATCTGTGTGTTGTTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAACAAAACGAAACAAAACAACTAGCAAAATAGGCTG

5099 TCCCCAGTCAAGTGCAGGTGCCAGAACATTTCTCTATCGAA