



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

1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGCAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA  
 101 GAGAAGTGGCGCGGGTAAACTGGAAAGTGATGTCGTGTAAGTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

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**Bsu36I (291)**

**Psp1406I (203)** **HindIII (245)** **EcoNI (287)**

201 GTGAACGTTCTTTTTTCGCAACGGGTTTGGCCGAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTACAGCGCCCGCCGCTACCTGAGGCC  
 301 GCCATCCACGCGGTTGAGTGCAGTCTGCCGCTCCCGCTGTGGTGCCTCTGAAGTGCCTCCGCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

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**NgoMIV (441)**  
**NgoMI (441)**  
**NaeI (441)**

401 GGGCCTTTGTCCGGCGCTCCCTTGGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGGCTCAACTCTACGCTTTTGTTCGTTT

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**NcoI (560)**

**KasI (535)** **BstEII (555)** **AgeI (552)** **ScaI (574)**

501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGGCCCTAAGCTGATCACCGGTACCTAGGATACCGAGAGTACTCCCTCAGAGATCATAGAAAG  
 601 AGAAGAAAAAAGTTGCTTGAATCCTTCAACATGATCCTGATTCTATCTTAGACACGTTAACTTCTCGGAGGCTGATTTCTGAGGAAGAGTATGAGACT  
 13> E R K K L L E I L Q H D P D S I L D T L T S R R L I S E E E Y E T  
 701 CTGGAGAATGTTACAGATCTCCTGAAGAAAAGTGGAAAGCTGTTAATTTTGGTACAGAAAAAGGGAGAGGCGACCTGTGAGCATTCTCAAGTGTTTAT  
 47> L E N V T D L L K K S R K L L I L V Q K K G E A T C Q H F L K C L  
**BglIII (714)**  
 801 TTAGTACTTTTCCACAGTCAGTGCCTATTTGCGGCTTAAGGCATGAAGTTTTAAACATGAGAATACAGTACCTCCTCAATCTATGGGGCAAGCAGTAA  
 80> F S T F P Q S A A I C G L R H E V L K H E N T V P P Q S M G A S S N  
 901 TTCAGAAGATGCTTTTTCTCCTGGAATAAAACAGCCTGAAGCCCTGAGATCACAGTGTCTTTCAGTGAAGGAACACTTGGATTTGAAACCTCTGAG  
 113> S E D A F S P G I K Q P E A P E I T V F F S E K E H L D L E T S E  
**SpeI (1018)**  
 1001 TTTTTCAGGGACAAGAAAAGTATAGGAAAACAGCTTTGCTGCCAGGAAGAATGAGAAGGAATATGACACACCAGAAGTACATTATCATATTCAG  
 147> F F R D K K T S Y R E T A L S A R K N E K E Y D T P E V T L S Y S  
 1101 TTGAGAAAAGTTGGATGTGAAGTTCCAGCAACTATTACATATATAAAAGATGGACAGAGATATGAGGAGCTAGATGATTCTTTATACTTAGGAAAAGAGGA  
 180> V E K V G C E V P A T I T Y I K D G Q R Y E E L D D S L Y L G K E E  
 1201 ATATCTAGGATCTGTTGACCCCTGAAGATGCAGAAGCCACTGTGGAAGAGGAGGTTTATGATGACCCAGAGCACGTTGGATATGATGGTGAAGAGGAC  
 213> Y L G S V D T P E D A E A T V E E E V Y D D P E H V G Y D G E E D  
**XcmI (1361)**  
 1301 TTCGAGAATTCAGAAACACAGAGTTCTCTGGTGAAGAACCAAGTTATGAGGGATCAGAAACAGCCTTTCATTGGAGGAGGAACAGGAGAAAAGTATAG  
 247> F E N S E T T E F S G E E P S Y E G S E T S L S L E E E Q E K S I  
 1401 AAGAAAGAAAAGGTTTAAAGATGTCTGTTATGTTTGAACATGATAGAGCAGAAAGTTCTGCCAGATTTGTTTAAACAATTCTCCTTAGATCG  
 280> E E R K K V F K D V L L C L N M D R S R K V L P D F V K Q F S L Q D R  
 1501 AGGATGTAAGTGGACCCCTGAGAGTCCAGGAGACTTAGCCTGGAATTTCTGATGAAAGTTCAAGCACGAGATGTGACGGCTAGGGATTCAATCCTCAGT  
 313> G C K W T P E S P G D L A W N F L M K V Q A R D V T A R D S I L S  
**VspI (1678)**  
**AseI (1678)**  
 1601 CACAAGTTCTGGATGAAGATAGCAAGGAGATTGCTGGCTGGAGTGGAGAATTTGAAATTCGAGACATAAAACCTAATCCCTTGACGTGCTTT  
 347> H K V L D E D S K E D L L A G V E N L E I R D I Q T I N P L D V L  
**BspLU1I1 (1751)**  
 1701 GTGCCACCATGCTGTGTTACAGATAGCTCTTTGCAACGCCAAGTCATGTCAACATGATCAGTCCAGTTTGGCTCTTCCCCTGCTACTGCCAGATGCAGA  
 380> C A T M L C S D S S L Q R Q V M S N M Y Q C Q F A L P L L L P D A E  
 1801 AAACAACAAAAGCATCTTAATGCTGGGGCCATGAAAGACATTGTGAAGAAGCAGTCAACAGTTTTTCAGGGGGCTACAGAGGATACAGAAAAGTTT  
 413> N N K S I L M L G A M K D I V K K Q S T Q F S G G P T E D T E K F  
 1901 CTGACTCTCATGAAGATGCCTGTCTCTTTTGTGCTCTAGGATACTGTAGCTTCTCTAAGTCCAGAACTCCTCAACACACTTCTCAGCCCTGCCAGT  
 447> L T L M K M P V I S F V R L G Y C S F S K S R I L N T L L S P A Q  
 2001 TGAATACACAAAATCTTTCTCATCAAGATTTGCCTCTTTTGGTCTTCCCGGCAAACTCTGATGGCCTGGTTGAGATAACATGGTGTTCCTGA  
 480> L K L H K I F L H Q D L P L L V L P R Q I S D G L V E I T W C F P D  
**XbaI (2166)**  
 2101 TAGCGATGATAGAAAGGAAAACCCCTTTTTCCAAAAGCCTGTTGCTCTGGCTAATCTCCGTGGAAATCTAGAAAAGTTTTGGACTCAGTTTTGGTTTTTTG  
 513> S D D R K E N P F F Q K P V A L A N L R G N L E S F W T Q F G F L  
 2201 ATGGAAGTTTCTCAGCTGTGTTTTTCTACTGACTGTTTAGGTGAGAAGGAATGGGACTTGTCTAATGTTTTTAGGAGAGGCTGCCATTGAAAGATGCT  
 547> M E V S S A V F F F T D C L G E K E W D L L M F L G E A A I E R C  
 2301 ACTTTGTTCTCAGTCCCAAGCCAGGAGAGTGAAGAGCTCAAATTTTTTCAGAGGATACTGAAGTGAAGCCAGCACAGCTACTGTTTTGGGAGAGGGG  
 580> Y F V L S S Q A R E S E E A Q I F Q R I L N L K P A Q L L F W E R G

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**SfiI (2499)**

**BstXI (2510)**

2401 AGATGCTGGGGATAGAAGGAAGAACATGGAGGGCTTCAAGCTGCCCTCCAGGAAGTATGTTCTCTTCTTGCCTCAGATGTGTGCTGTGGAGGATATG  
 613> D A G D R R K N M E G L Q A A L Q E V M F S S C L R C V S V E D M  
**MscI (2507)**  
 2501 GCCGCCCTGGCCAGGAGCTGGGGATTACAGGTAGATGAAGACTTTGAAAACTCAGAGAATTCAGTTTCTCTGGAGAAAACATGGCTGGGACAGCTG  
 647> A A L A R E L G I Q V D E D F E N T Q R I Q V S S G E N M A G T A

**Tth111I (2618)**  
 2601 AAGGTGAGGGTCAGCAAAGACACAGTCAGCTAAAAAGCTCATCTAAAAAGCCAGGCTCTAATGCCAATTCAAGAGCCTGGGACTCAATGTGAGCTCAGCCA  
 680▶ E G E G Q Q R H S Q L K S S S K S Q A L M P I Q E P G T Q C E L S Q

**Asp718I (2719)**  
**Acc65I (2719)** **XbaI (2742)**  
 2701 GAATCTTCAGAATCTCTATGGTACCCAGTATTAGGCCTGTTCTAGAGAACTCTGGCTCTTCCAACCAGAATTGGAGGTAACCTTTAACCATGTTTCC  
 713▶ N L Q N L Y G T P V F R P V L E N S W L F P T R I G G N F N H V S

**Bsp120I (2885)**  
 2801 TTGAAAGCCTCCTGGTTATGGGCCGCCCTTTGGGTGAGAGCAGAGGCTAAGTGGTCCATCCTTTGCCTTTTTCAGAATGCAGGGGCCAGGGCCGAG  
 747▶ L K A S W V M G R P F G S E Q R P K W F H P L P F Q N A G A Q G R

**BsrGI (3036)**  
 2901 GTAAAAGTTTTGGTATTCAATCCTTCCATCCCCAGATATTTTATTTCAGGTGAAAGATTCATGAAATTTTCCAGAGTTGCTCGGGGATGCTACTCGAATGG  
 780▶ G K S F G I Q S F H P Q I F Y S G E R F M K F S R V A R G C H S N G

**NotI (3157)** **HindIII (3170)**  
 3101 TCCAAGATAGGTCCTCTATTCCCTGGATTACAGCCAGCAAGAGCAGTAGGGAAGCCATGGCCTCAGCAAGCTTGCCACAGGTAACAGAGTTAACTG  
 847▶ S K I G H S Y S L D S Q P A R A V G K P W P Q Q A C T R V T E L T

**DraIII (3320)** **SmaI (3355)**  
 3201 AAGCAACTGGAAAAGTATAAGAACATCCCATATTGGAAAGCCTCACCTCAGTCTTTCAACCAGCAGCAGCACACAAAACTAAGACCTGCTTCTCA  
 880▶ E A T G K L I R T S H I G K P H P Q S F Q P A A A T Q K L R P A S Q

**XbaI (3541)**  
 3301 GCAAGGAGTCCAGATGAAGACACAAAGTGGGGCTTCAAATCCAGCTCTCCAAATAGGGTCCATCCCATGTGCAAGAGCTCTCAGTTCAAATCCGATCAG  
 913▶ Q G V Q M K T Q G G A S N P A L Q I G S H P M C K S S Q F K S D Q

**XemI (3541)**  
 3401 TCCAACCCATCCACAGTCAAACACTCCCAGCCTAAACCTTCCATTCTGTGCCCTCTCAACCTAAATCCTCTCAGACAAAATCCTGTCAGTCCCAGCCCT  
 947▶ S N P S T V K H S Q P K P F H S V P S Q P K S S Q T K S C Q S Q P

**MscI (3683)**  
 3501 CCCAACTAAACCTTCTCCATGCAAATCTACTAGCCTAAGCCAGCCCTGGCCTCCCCAGTCTAAGCCTTCTCAGCCCAGACCCCTCAACCTAA  
 980▶ S Q T K P S P C K S T Q P K P S Q P W P P Q S K P S Q P R P P Q P K

**NheI (3677)**  
 3601 GTCATCCTCAACCAATCCTTCAAGCTAAGGCACACCACTCAAAAGCAGGGCAGAAGAGGGGAGGGAAGCATTAAAGCTAGCTGGCCAGACATGATAAG  
 1013▶ S S S T N P S Q A K A H H S K A G Q K R G G K H •

3701 ATACATTGATGAGTTGGACAAACCACAACCTAGAATGCAGTGAAGAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATA

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**MfeI (3826)**  
 3801 AGCTGCAATAAACAAGTTAAACAACAATTGCATTCTTTTATGTTTCAGGTTCCAGGGGAGGTGTGGGAGGTTTTTTAAAGCAAGTAAACCTCTACA

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3901 AATGTGGTATGGAATTCTAAAATACAGCATAGCAAACCTTAACTCCAAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCA

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4001 TCAGGGGCTGTGCCAATGTGCATTAGCTGTTGCAGCCTCACCTTCTTCATGGAGTTAAGATATAGTGTATTTTCCAAGTTTGAAGTACTAGCTCTTC

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**SspI (4150)** **SwaI (4164)**  
 4101 ATTTCTTTATGTTTTAAATGCACCTGACCTCCACATTCCCTTTTTAGTAAAATATTGAGAAAATATTTAAATACATCATTGCAATGAAAAATAATGTTTT

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4201 TTATTAGGCAGAATCCAGATGCTCAAGGCCCTTATAATATCCCCAGTTTAGTAGTTGACTTAGGGAACAAAGGAACCTTTAATAGAAATTGGACAGC

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4301 AAGAAAGCGAGCTTCTAGCTTTAGTTCTGGTGTACTTGAGGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCATTATCTCAATGAGCACAA  
 1414 • N 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

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**BstXI (4454)**  
 4401 AGCAGTCAGGAGCATAGTCAGAGATGAGCTCTCTGCACATGCCACAGGGGCTGACCACCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCCTGAC  
 1144 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 R V

4501 AGCCACAATGGTGTCAAAGTCTTCTGCCGTTGCTCACAGCAGACCAATGGCAATGGCTTCCAGCACAGACAGTACCCTGCCAATGTAGGCCCTCAATG  
 814 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 E I

4601 TGGACAGCAGAGATGATCTCCCCAGTCTGGTCTGATGGCCGCCCGACATGGTCTGTTGTCTCATAGAGCATGGTGTCTTCTCAGTGGCGACCT  
 474 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 A V E

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**VspI (4797)**  
**AseI (4797)**  
 4701 CCACCAGCTCCAGATCCTGCTGAGAGATGTTGAAGTCTTCATGATGGCCCTCTATAGTGAGTCGTATTATACTATGCCGATATACTATGCCGATGATT  
 144 V L E L D Q Q S I N F T K M

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4801 AATTGTCAAACACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTCACTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCCTACCGCCAT

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**SpeI (4952)**  
 4901 TTGCGTCAATGGGGCGGAGTTGTTACGACATTTTGGAAAGTCCCCTGATTACTAGTCAAAAACAACTCCCATTGACGTCAATGGGGTGGAGACTTGG

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**SnaBI (5080)**  
**Eco105I (5080)**  
 5000 AAATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGACTGCCAA

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**NdeI (5185)**  
 5100 GTAGGAAAGTCCCATAGGTCATGTACTGGCATAATGCCAGCGGGCCATTTACCGTATTGACGTCAATAGGGGGCTACTTGGCATATGATACACTT

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5200 GATGTACTGCCAAGTGGGCGATTTACCGTAAATACTCCACCCATTGACGTCAATGAAAGTCCCTATTGGCGTACTATGGGAACATACGTCAATTATTGA

**PstI (5364)**  
**SdaI (5363)** **PacI (5371)** **BspLU11I (5381)**

5300 CGTCAATGGGCGGGGTCGTTGGGCGGTCAGCCAGGCGGGCCATTTACCGTAAGTTATGTAACGCCTGCGAGGTTAA TTAAGAACATGTGAGCAAAAGG  
 5398 CCAGCAAAGGCCAGGAACCGTAAAAAGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAG  
 5498 AGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTTCCCTGGAAGCTCCCTCGTGCCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACC  
**ApaI (5695)**

5598 TGTCCGCCTTTCCTTCGGGAAGCGTGGCGCTTTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTGCTCCAAGCTGGGCTGTGT  
 5698 GCACGAACCCCGTTTCCAGCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCC  
 5798 ACTGGTAAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTA  
 5898 TCTGCGCTCTGCTGAAGCCAGTTACCTTCGAAAAAGAGTTGGTAGCTTTGATCCGGCAAACAACCCGCTGGTAGCGGTGGTTTTTTTGTGTTGCAA  
 5998 GCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTCTACGGGGTCTGACGCTCAGTGAACGAAAACCTCACGTTAAGGGATT

**EagI (6131)**  
**PacI (6111)** **SwaI (6120)** **NotI (6130)**

6098 TTGGTCATGGCTAGTTAATTAACATTTAAATCAGCGGCCGAATAAAATATCTTTATTTTCATTACATCTGTGTGTTGGTTTTTTGTGTGAATCGTAACT  
 6198 AACATACGCTCTCCATCAAACAAAACGAAACAAAACAACTAGCAAATAGGCTGTCCCCAGTGCAAGTGCAGGTGCCAGAACATTTCTCTATCGAA