



**PvuI (11)**  
**SgfI (11)**  
1 GGATCTGCATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCCGAGAAGTTGGGGGAGGGGTCGGCAATTGAACGGGTGCCTA

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101 GAGAAGGTGGCGCGGGTAAACTGGAAAGTGATGTCGTACTGGCTCCGCTTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

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**Psp1406I (205)** **HindIII (246)** **Bsu36I (293)**  
201 GTGAACGTTCTTTTTTCGAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTCACGCGCCCGCCCTACCTGAGGCC

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301 GCCATCCACGCCGGTTGAGTCGCGTTCTGCCGCTCCCGCTGTGGTGCTCCTGAACTGCGTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

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**NgoMIV (442)**  
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGCTCAACTCTACGCTTTTGTTCGTTT

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**KasI (536)**  
501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGCGCCTACCTGAGATCACCGGACACCATGGAGCTCCTGCGGGACTAGGTGTCTGTTCCTGTT

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**NdeI (603)** **ApaLI (678)** **Bsp120I (688)**  
601 GCATATGTGTGGAAGCAACCGCATTCCAGAGTCTGGGGAGATAACGGTGTGTTTGACATCTTTGAACTCATTGGAGGTGCACGAAGGGGCCCGGTGCGC  
13▶ H M C G S N R I P E S G G D N G V F D I F E L I G G A R R G P G R  
701 CGACTGGTGAAGGCCAAGATCTATCCAGCCCCGCTTCCGCATTGAGAATGCCAACCTGATCCCCGCTGTGCCGGATGACAAGTTCCAAGACCTACTGG  
47▶ R L V K G Q D L S S P A F R I E N A N L I P A V P D D K F Q D L L

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**XmaI (861)**  
801 ACGCTGTGTGGCCGACAAAGGCTTCATCTTCTGGCTCCTTGAGGCAGATGAAGAAGACCCGGGCACACTCCTGGCTGTGGAACGAAAGACAACAC  
80▶ D A V W A D K G F I F L A S L R Q M K K T R G T L L A V E R K D N T  
901 TGGCCAGATCTTCAGTGTGGTCTCCAACGGCAAAGCTGGCACCTGGACTGAGCCTGAGCCTGCCAGGGAAGCAACAAGTGGTGTGAGTGGAGGAAGCT  
113▶ G Q I F S V V S N G K A G T L D L S L S L P G K Q Q V V S V E E A  
1001 CTCCTGGCCACTGGCCAGTGAAGAGCATCACGCTGTTGTTCAAGAGACCGGGCTCAACTTACATAGACTGTGATAAGATGGAGAGCGCGGAGCTGG  
147▶ L L A T G Q W K S I T L F V Q E D R A Q L Y I D C D K M E S A E L  
1101 ATGTACCCATCCAGAGCATCTTACCAGGGATCTGGCCAGCGTTGCCAGGCTCCGAGTTGCAAAGGGAGATGTCAATGACAATTTTCAGGGGGTGTGCA  
180▶ D V P I Q S I F T R D L A S V A R L R V A K G D V N D N F Q G V L Q  
1201 GAATGTGAGGTTTGTCTTTGFAACCCAGAACATTCTCAGGAACAAGGCTGTCCAGCTCAGCTACCAACGCTCTTACCCTTGACAACAAC  
213▶ N V R F V F G T T P E D I L R N K G C S S S A T N V L L T L D N N  
1301 GTGGTGAACGGTTCAGCCCTGTATCCGCACCAACTACATCGGCCACAAAACAAAGGACCTCAAGCTATCTGTGGCCTCTCCTGTGATGAACTATCCA  
247▶ V V N G S S P A I R T N Y I G H K T K D L Q A I C G L S C D E L S

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**FspI (1427)**  
1401 GCATGGTCTGGAAGTGAAGGGCCTGCGCACCATCGTGACCACTCTGCAGGACAGCATCCGAAAAGTACGGAAGAGAGAGAGCTGGTCAAGTGAAGCT  
280▶ S M V L E L K G L R T I V T T L Q D S I R K V T E E N R E L V S E L

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**DraIII (1578)**  
1501 GAAGCGCCTCCCTCTGCTTTCACAATGGAGTCCAGTACAAGAACAACGAGGAGTGGACTGTAGACAGTTGCACAGAGTGTCACTGCCAGAAGTCCGGTT  
313▶ K R P P L C F H N G V Q Y K N N E E W T V D S C T E C H C Q N S V  
1601 ACCATCTGCAAAAAGGTGCTGCTCCATCATGCCCTGCTCCAACGCCACAGTTCCTGATGGTGAATGCTGCCACGGTGTGCCACGAGCTGTGCTG  
347▶ T I C K K V S C P I M P C S N A T V P D G E C C P R C W P S D S A

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**BspLU11I (1745)** **EcoRI (1758)**  
1701 ACGATGGCTGGTCTCCCTGGTCTGAGTGGACCTCCTGCTGTCACATGTGGCAATGGAATTACGCAACGTTGGTCTGTTCTGTGACAGCCTCAACAACAG  
380▶ D D G W S P W S E W T S C S A T C G N G I Q Q R G R S C D S L N N R  
1801 ATGCGAGGGCTCTTCGGTACAGACGAGGACCTGCCACATTCAGGAGTGTGACAAAAGATTTAAACAGGATGGTGGCTGGAGTCACTGGTCTCCATGGTGC  
413▶ C E G S S V Q T R T C H I Q E C D K R F K Q D G G W S H W S P W S

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**BamHI (1938)** **XmaI (1998)**  
1901 TCCTGTTCTGTGACCTGTGGTACGGTGTGATCACAAGGATCCGGCTCTGCAACTCCCCAGCCCCAGATGAACGGGAAGCCCTGTGAAGGTGAAGCCC  
447▶ S C S V T C G D G V I T R I R L C N S P S P Q M N G K P C E G E A

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**AseI (2037)**  
2001 GGGAGACCAAAGCCTGCAAGAAAGACGCTGCCAATTAATGGAGGCTGGGGTCCCTGGTACCATGGGACATCTGCTCTGTACCTGTGGAGGAGGAGT  
480▶ R E T K A C K K D A C P I N G G W G P W S P W D I C S V T C G G G V  
2101 GCAGAGACGACCGGACTCTGTAACAACCCACACCCAGTTTGGAGGCAAAGACTGTGTTGGCGATGTGACAGAAAATCAAGTTTGAACAAGCAGGAC  
513▶ Q R R S R L C N N P T P Q F G G K D C V G D V T E N Q V C N K Q D  
2201 TGCCCAATTGATGGATGCTGCAATCCCTGCTTGTGGTCCAAAGTGTACTAGCTACCCTGATGGTAGCTGGAATGTGGTGCCTGCTCCTGGCT  
547▶ C P I D G C L S N P C F A G A K C T S Y P D G S W K C G A C P P G

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**BstAPI (2319)**  
2301 ACAGTGGAAATGGCATCCAGTGCAAAGACGCTGATGAGTGCAAGAAGTGCCTGATGCTTCAATCACAACGGAGAACATCGGTGCAAGAACACAGA  
580▶ Y S G N G I Q C K D V D E C K E V P D A C F N H N G E H R C K N T D

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**EagI (2455)**  
2401 TCCTGGCTACAAGTGCCTGCCCTGCCACCACGATTACTGGCTCACAGCCCTTCGGCCGAGGTGTGCAACATGCCATGGCCAACAACAGGTGTGCAAAA  
613▶ P G Y N C L P C P P R F T G S Q P F G R G V E H A M A N K Q V C K  
2501 CCGCAAAACCCCTGCACGGACGGGACGATGACTGCAACAAGAAGCTAAGTGAACCTACCTGGTCACTACAGCAGCCCATGTACCGCTGTGAGTGCA  
647▶ P R N P C T D G T H D C N K N A K C N Y L G H Y S D P M Y R C E C

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**BstAPI (2628)**  
2601 AGCCCGGCTATGCAGGCAATGGCATCATCTGCGGAGAGGACACAGACCTGGACGGCTGGCCTAATGAAAACCTGGTGTGTGGCCAACGCAACCTACCA  
680▶ K P G Y A G N G I I C G E D T D L D G W P N E N L V C V A N A T Y H

2701 CTGCAAAAAGGACAACCTGCCCAACCTTCCCAACTCGGGGCAGGAAGACTATGACAAGGACGGGATTGGCGATGCCTGCGATGATGACGATGACAACGAC  
713▶ C K K D N C P N L P N S G Q E D Y D K D G I G D A C D D D D D N D  
2801 AAGATCCCTGATGACAGGGACAACCTGTCCATTCATTACAACCCAGCCAGTATGACTATGACAGAGATGATGTGGGAGACCCTGTGACAACCTGCCCT  
747▶ K I P D D R D N C P F H Y N P A Q Y D Y D R D D V G D R C D N C P

Clal (2967)

2901 ACAACCACAACCTGACCAAGCAGACACAGACAAAAACGGGGAGGGCGATGCCTGTGTGTGGACATCGATGGAGATGGAATCCTCAATGAACGAGACAA  
780▶ Y N H N P D Q A D T D K N G E G D A C A V D I D G D G I L N E R D N  
3001 CTGCCAGTACGTTTACAACGTGGACCAGAGGGACACGGACATGGATGGGGTTGGAGATCAGTGTGACAACCTGCCCCCTGGAACACAATCCAGACCAGCTG  
813▶ C Q Y V Y N V D Q R D T D M D G V G D Q C D N C P L E H N P D Q L

Clal (3150) BsaBI (3157)

3101 GACTCTGACTCAGACCTCATAGGGACACTTGTGACAACAATCAGGACATCGATGAGGATGGCCATCAGAACAATCTGGACAACCTGTCCCTATGTGCCTA  
847▶ D S D S D L I G D T C D N N Q D I D E D G H Q N N L D N C P Y V P  
3201 ACGCCAACCCAGGCCGACCATGATAAAGATGGCAAAGGAGATGCCTGTGACCATGACGATGACAATGACGGCATCCCTGATGACAGAGACAACCTGCAGGCT  
880▶ N A N Q A D H D K D G K G D A C D H D D D N D G I P D D R D N C R L  
3301 GGTGCCAATCCTGACCAGAAGGACTCTGATGGTGTGGCCGAGGTGACGCTGCAAAGACGACTTTGACCATGACAATGTGCCAGATATTGATGACATC  
913▶ V P N P D Q K D S D G D G R G D A C K D D F D H D N V P D I D D I

XbaI (3457)

3401 TGTCTGAGAATTTTGCATCAGTGAACCGATTTCCGACGATTCAGATGATTCCTCTAGATCCCAAAGGAACCTCCCAAATGACCCTAAGTGGGTTG  
947▶ C P E N F D I S E T D F R R F Q M I P L D P K G T S Q N D P N W V

Acc65I (3593)

3501 TCCGCCATCAGGGCAAAGAACTCGTCCAGACTGTAACCTGTGACCCTGGACTTGTGTAGGTTATGATGAGTTTAAATGCTGTGGACTCAGCGGTACCTT  
980▶ V R H Q G K E L V Q T V N C D P G L A V G Y D E F N A V D F S G T F  
3601 CTTTCATCAACACCAGAGAGATGATGACTACGCTGGCTTTGTATTTCGCTACCACTCCAGCAGCCGCTTCTACGTTGTGATGTGAAACAAGTCAACCCAG  
1013▶ F I N T E R D D D Y A G F V F G Y Q S S S R F Y V V M W K Q V T Q  
3701 TCCTACTGGGACCAACCCACAAGGGCTCAGGGATACTCAGGCCTGTCTGTAAAGTTGTGAATCCACCACCGCCCTGGCGAGCACCTGCGGAATG  
1047▶ S Y W D T N P T R A Q G Y S G L S V K V V N S T T G P G E H L R N

DraIII (3843)

FspI (3836)

3801 CACTGTGGCACACAGAAACACCCTGGCCAGTGGCCACCCTGTGGCATGACCTCGCCACATCGGCTGAAAGATTTCACTGCGTACAGATGGCGTCT  
1080▶ A L W H T G N T P G Q V R T L W H D P R H I G W K D F T A Y R W R L

NgoMIV (3995)

AgeI (3917)

SgrAI (3995)

3901 CAGCCACAGGCCAAAGACCGTTATATCAGAGTGGTGTATGAAGGAAAGAAAATCATGGCTGACTCGGGACCCATCTATGACAAAACCTACGCCGGC  
1113▶ S H R P K T G Y I R V V M Y E G K K I M A D S G P I Y D K T Y A G

NheI (4092)

4001 GGTAGACTAGGCCTGTTCTCTCTCAGGAAATGGTGTCTCTCAGACATGAAATACGAGTGTGAGATTCTAATCATCAGCTGCCAGCTAGCTGG  
1147▶ G R L G L F V F S Q E M V F F S D M K Y E C R D S •  
4101 CCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTAT

HpaI (4232)

4201 TTGTAACCATTATAAGCTGCAATAAACAAAGTTAAACAACAATTGCATTCATTTTATGTTTCAGGTTGAGGGGAGGTGGGGAGGTTTTTAAAGCAA

EcoRI (4326)

4301 GTAAAACCTCTACAAATGTGGTATGGAATCTAAAATACAGCATAGCAAACCTTAACTCCAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGA

4401 ATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTTCTTTCATGGAGTTAAGATATAGTATTTTCCAAGGTT

SspI (4567)

SwaI (4582)

4501 TGAAGTACTCTTCATTTCTTTATGTTTTAAATGCACTGACCTCCACATTCCTTTTTAGTAAAATATTGAGAAATAATTTAAATACATCATTGCAATG

4601 AAAATAAATGTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGAACCTTTAAT

4701 AGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCCTGGTGTACTTGAGGGGATGAGTTCTCAATGGTGGTTTTGACCAGCTTGCCATTCAT

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

4801 CTCAATGAGCACAAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTCTGCACATGCCACAGGGGCTGACCACCCTGATGGATCTGTCCACCTCATCAGAG

119◀ E I 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

4901 TAGGGGTGCCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCGTTGCTCACAGCAGACCAATGGCAATGGCTTACGACAGACAGTGACCTGCCAA

85◀ Y P H 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

5001 TGTAGGCTCAATGTGGACAGCAGAGATGATCTCCCGCTTGGTCTGATGGCCGCCCCGACATGGTGTCTGTTGCTCATAGAGCATGGTGTCTT

52◀ Y A 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

BspHI (5154)

5101 CTCAGTGGCGACCTCCACCAGCTCCAGATCCTGCTGAGAGATGTTGAAGTCTTCATGATGGCCCTCTATAGTGAGTCGTATTATACTATGCCGATATA

19◀ E T A V E V L E L D Q Q S I N F T K M

AseI (5213)

5201 CTATGCCGATGATTAATTGTCAAACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTTCATAAACGAGCTCTGCTTATATAGACCTCCACCCTACA

SpeI (5367)

5301 CGCCTACCGCCCATTTGCGTCAATGGGGCGGAGTTGTTACGACATTTTGGAAAGTCCCCTGATTTACTAGTCAAACAAACTCCCATGACGTCAATGG

5401 GGTGGAGACTTGAAATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTA **SnaBI (5497)**

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5501 GATGTACTGCCAAGTAGGAAAGTCCCATAAGGTCATGTACTGGGCATAATGCCAGGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCGTACTTGGC **NdeI (5601)**

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5601 ATATGATACACTTGATGTACTGCCAAGTGGGCAGTTTACCCTAAATACTCCACCCATTGACGTCAATGGAAAGTCCCTATTGGCGTTACTATGGGAACAT

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5701 ACGTCATTATTGACGTCAATGGGCGGGGTCGTTGGGCGGTACGCCAGGCGGGCCATTTACCGTAAGTTATGTAACGCCTGCAGGTTAATTAAGAACATG **SdaI (5783)** **PacI (5790)** **BspLU11I (5796)**

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5801 TGAGCAAAGGCCAGCAAAGGCCAGGAACCGTAAAAAGGCCGCTTCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGAC 

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5901 GCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCTGGAAGCTCCCTCGTGCGCTCTCTGTTCCGACCTGCCGCT

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6001 TACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCCGCTCCAAG

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6101 CTGGGCTGTGTGCACGAACCCCGTTAGCCCGACCGCTGCGCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCAC **ApaLI (6110)**

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6201 TGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGTACACTAGAAGAAC

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6301 AGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAACCACCGCTGGTAGCGGTGGTTTT

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6401 TTTGTTTGAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGTCTGACGCTCAGTGGAACGAAAACTCAC

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6501 GTTAAGGGATTTGGTCATGGCTAGTTAATTAACATTTAAATCAGCGGCCGCAATAAAATATCTTTATTTTCATTACATCTGTGTGTTGGTTTTTTGTGT **EagI (6546)** **PacI (6530)** **SwaI (6538)** **NotI (6546)**

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6601 GAATCGTAACTAACATACGCTCTCCATCAAACAAAACGAAACAAAACAACTAGCAAATAGGCTGTCCCCAGTGAAGTGCAGGTGCCAGAACATTTCC

6701 TCTATCGAA