



**PvuI (7)**  
**SgfI (6)** 1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA  
**MfeI (82)**  
101 GAGAAGTGGCGCGGGTAAACTGGAAAGTGTGTCGTGACTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

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**HindIII (245)**  
**Psp1406I (203)** 201 GTGAACGTTCTTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTACAGCGCCCGCCGCCCTACCTGAGGCC  
**PvuII (239)**  
301 GCCATCCACGCGGTTGAGTCGCGTTCTGCCGCTCCCGCCTGTGGTGCCTCCTGAAGTGCCTCCGCCGCTAGGTAAGTTTAAAGCTCAGGTCGAGACC  
**Bsu36I (291)**

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**NgoMIV (441)**  
401 GGGCCTTTGTCCGGCGCTCCCTTGGAGCCTACCTAGACTCAGCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCAACTCTACGCTTTTGTTCGTTT

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**BspLU11I (560)**  
**AgeI (552)** 501 TCTGTTCTGCGCGGTTACAGATCCAAGCTGTGACCGCGGCTACCTGAGATCACCGGTCAACATGTTGACGTTGCAGACTGGCTAGTGAAGCCTTGT  
1▶ M L T L Q T W L V Q A L F

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**XbaI (633)** 601 TATTTTCTCACCCTGAATCTACAGTGAACCTTAGATCCATGTGGTTATATCAGTCTGAATCTCCAGTTGTACAATTCATTCTAATTTACTGCA  
13▶ I F L T T E S T G E L L D P C G Y I S P E S P V V Q L H S N F T A  
**Bsu36I (784)**  
701 GTTTGTGTCTAAAGGAAAAATGTATGGATTATTTTCTGTAATGCTAATTACATTGTCTGAAAAACAAACATTTTACTATTCTTAAGGAGCAATATA  
47▶ V C V L K E K C M D Y F H V N A N Y I V W K T N H F T I P K E Q Y

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**SspI (853)** 801 CTATCATAAACAGAACAGCATCCAGTGTACCTTTACAGATATAGCTTCATTAATATTCAGCTCACTTGCAACATTCTTACATTCGGACAGCTTGAACA  
80▶ T I I N R T A S S V T F T D I A S L N I Q L T C N I L T F G Q L E Q  
901 GAATGTTTATGGAATCACAATAATTTAGGCTTGCCTCCAGAAAAACCTAAAAATTTAGTTCATTGTGAACGAGGGGAAAGAAAATGAGGTGTGAGTGG  
113▶ N V Y G I T I I S G L P P E K P K N L S C I V N E G K K M R C E W  
1001 GATGGTGAAGGAAACACACTTGGAGACAACTTCACTTTAAAATCTGAATGGCAACACACAAGTTTCTGATTGCAAGGAAAACCTGACACCCCA  
147▶ D G G R E T H L E T N F T L K S E W A T H K F A D C K A K R D T P

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**BstAPI (1159)** 1101 CCTCATGCACTGTTGATTATTCTACTGTGATTTTGTCAACATTGAAGTCTGGGTAGAAGCAGAGAATGCCCTTGGGAAGTTACATCAGATCATATCAA  
180▶ T S C T V D Y S T V Y F V N I E V W V E A E N A L G K V T S D H I N  
1201 TTTGATCCTGTATATAAAGTGAAGCCCAATCCGCCACATAATTTATCAGTGTCAACTCAGAGGAAGTGTCTAGTATCTTAAAATGACATGGACCAAC  
213▶ F D P V Y K V K P N P P H N L S V I N S E E L S S I L K L T W T N  
1301 CCAAGTATTAAGAGTGTATAATACTAAAATATAACATTCAATATAGGACCAAGATGCCTCACTTGGAGCCAGATTCTCCTGAAGACACAGCATCCA  
247▶ P S I K S V I I L K Y N I Q Y R T K D A S T W S Q I P P E D T A S  
1401 CCCGATCTTCACTGTCCAAGACCTTAAACCTTTACAGAAATGTGTTTAGGATTCTGATGAAGGAAGTGGTAAGGATACTGGAGTACTG  
280▶ T R S S S F T V Q D L K P F T E Y V F R I R C M K E D G G Y W S D W

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**BstXI (1549)** 1501 GAGTGAAGAAGCAAGTGGGATCACCATGAAGATAGACCATCTAAAGCACCAAGTTTCTGGTATAAAAATAGATCCATCCATACTCAAGGCTACAGA  
313▶ S E E A S G I T Y E D R P S K A P S F W Y K I D P S H T Q G Y R T

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**BsaBI (1676)** 1601 GTACAACCTGTTGGAAGACATTGCCTCCTTTTGAAGCAATGGAAAAATCTTGGATTATGAAGTACTCACAAGATGGAATCAGATTTACAAAAT  
347▶ V Q L V W K T L P P F E A N G K I L D Y E V T L T R W K S H L Q N

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**BsaBI (1741)** 1701 ACACAGTTAATGCCAAAACTGACAGTAAATCTCACAATGATCGTATCTAGCAACCTAACAGTAAGAAATCTTGTGGCAATCAGATGCAGCTGT  
380▶ Y T V N A T K L T V N L T N D R Y L A T L T V R N L V G K S D A A V  
1801 TTTAACTATCCCTGCCTGTGACTTTCAAGTACTACCCTGTAATGGATCTTAAAGCATTCCCAAAGATAACATGCTTTGGGTGGAATGGACTACTCCA  
413▶ L T I P A C D F Q A T H P V M D L K A F P K D N M L W V E W T T P

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**Acc65I (1984)** 1901 AGGGAATCTGTAAGAAATATACTTGAAGTGGTGTGTTATCAGATAAAGCACCTGTATCACAGACTGGCAACAAGAAGATGGTACCCTGCATCGCA  
447▶ R E S V K K Y I L E W C V L S D K A P C I T D W Q Q E D G T V H R  
2001 CCTATTTAAGAGGAACTTAGCAGAGAGCAAATGCTATTTGATAACAGTACTCCAGTATATGCTGATGGACCAGGAAGCCCTGAATCCATAAAGGCATA  
480▶ T Y L R G N L A E S K C Y L I T V T P V Y A D G P G S P E S I K A Y

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**EcoO109I (2124)** 2101 CCTTAAACAAGCTCCACCTTCCAAGGACCTACTGTTCCGACAAAAAAGTAGGGAAAAACGAAGCTGTCTTAGAGTGGGACCAACTCCTGTTGATGTT  
513▶ L K Q A P P S K G P T V R T K K V G K N E A V L E W D Q L P V D V  
2201 CAGAATGGATTTATCAGAAATATACTATATTTATAGAACCATCATTGGAAATGAAACTGCTGTGAATGTGGACTCTTCCCA CACAGAATATACATTG  
547▶ Q N G F I R N Y T I F Y R T I I G N E T A V N V D S S H T E Y T L

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**EcoRI (2374)** 2300 TCCTCTTTGACTAGTGACACATTGTACATGGTACGAATGGCAGCATAACAGATGAAGGTGGGAAGGATGGTCCAGAATTCACCTTTTACTACCCCAAAGT  
580▶ S S L T S D T L Y M V R M A A Y T D E G G K D G P E F T F T T P K  
2400 TTGCTCAAGGAGAAATTAAGCCATAGTCGTGCCTGTTTGTAGCATTCTATTGACAACTCTCTGGGAGTCTGTTCTGCTTTAATTAAGCGAGACCT  
613▶ F A Q G E I E A I V V P V C L A F L L T T L L G V L F C F N K R D L

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**BstEII (2558)** 2500 AATTAATAAACACATCTGGCCTAATGTTCCAGATCCTTCAAAGAGTCAATTTGCCAGTGGTCACTCACACTCCTCAAAGGCACAATTTAATTCAAAA  
646▶ I K K H I W P N V P D P S K S H I A Q W S P H T P P R H N F N S K

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**BglII (2679)** 2600 GATCAATGTATTAGATGGCAATTTCACTGATGTAAGTGTGTTGGAATAGAAGCAATGACAAAAAGCCTTTTCCAGAAGATCTGAAATCATTGGACC  
680▶ D Q M Y S D G N F T D V S V V E I E A N D K K P F P E D L K S L D

2700 TGTTCAAAAAGGAAAAAATTAATACTGAAGGACACAGCAGTGGTATTGGGGGCTTTCATGCATGTCATCTTCTAGGCCAAGCATTCTAGCAGTGATGA  
713▶ L F K K E K I N T E G H S S G I G G S S C M S S S R P S I S S S D E  
2800 AAATGAATCTTCAAAAACACTTCGAGCACTGTCAGTATTCTACCGTGGTACACAGTGGCTACAGACACCAAGTTCCGTCAGTCCAAGTCTTCTCAAGA  
746▶ N E S S Q N T S S T V Q Y S T V V H S G Y R H Q V P S V Q V F S R  
BsrBI (2932) BglII (2943)  
2900 TCCGAGTCTACCCAGCCCTTGTAGATTGAGAGGAGCGGCCAGAAGATCTACAATTAGTAGATCATGTAGATGGCGGTGATGGTATTTTGGCCAGGCAAC  
780▶ S E S T Q P L L D S E E R P E D L Q L V D H V D G G D G I L P R Q  
ScaI (2999)  
3000 AGTACTTCAAACAGAAGTGCAGTCAGCATGAATCCAGTCCAGATATTTACATTTTGAAGGTCAAAGCAAGTTTCATCAGTCAATGAGGAAGATTTTGT  
813▶ Q Y F K Q N C S Q H E S S P D I S H F E R S K Q V S S V N E E D F V  
BstAPI (3178)  
3100 TAGACTTAAACAGCAGATTTGAGATCATATTTCAAACTCTGTGGATCTGGGCAAATGAAAATGTTTCAGGAAGTTTCTGACAGATGCTTTTGGTCCA  
846▶ R L K Q Q I S D H I S Q S C G S G Q M K M F Q E V S A A D A F G P  
SphI (3260)  
3200 GGTACTGAGGGACAAGTAGAAAGATTTGAAACAGTTGGCATGGAGGCTGCGACTGATGAAGGCATGCCTAAAAGTTACTTACCACAGACTGTACGGCAAG  
880▶ G T E G Q V E R F E T V G M E A A T D E G M P K S Y L P Q T V R Q  
MscI (3360)  
NheI (3354)  
3300 GCGGCTACATGCCTCAGTGAAGGACTAGTAGTTCCTGCTACAACCTCAGCAGTACGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAA  
913▶ G G Y M P Q •  
HpaI (3492)  
3400 ACCACAAC TAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAAACAGTTAAAC  
MfeI (3503) EcoRI (3588)  
3500 ACAACAATTGCATTCATTTTATGTTTCAGGTTTCAGGGGAGGTGTGGGAGTTTTTTAAAGCAAGTAAAACCTCTACAAATGTGGTATGGAAATCTAAAA  
3600 TACAGCATAGCAAACTTTAACCTCAAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGC  
SapI (3770)  
3700 ATTAGCTGTTTGCAGCCTCACCTCTTTTCATGGAGTTTAAAGATATAGTGTATTTTCCCAAGTGTGAACTAGCTCTTCATTTCTTTATGTTTTAAATGCA  
SspI (3827) SwaI (3841)  
3800 CTGACCTCCACATTCCCTTTTTAGTAAATATTGAGAAATAATTTAAATACATCATTGCAATGAAAAATAATGTTTTTTATTAGGCAGAATCCAGATGC  
EcoO109I (3902)  
3900 TCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGGAACCTTTAATAGAATTTGGACAGCAAGAAAGCGAGCTTCTAGCTTT  
4000 AGTTCCTGGTGTACTTGAGGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCCATTCTCAATGAGCACAAAGCAGTCAGGAGCATAGTCAGA  
141▶ 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 C D P A Y D S  
SacI (4102) BstXI (4131)  
4100 GATGAGCTCTCTGCATGCCACAGGGGCTGACCACCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCCTGACAGCCACAATGGTGTCAAAGTCC  
107▶ 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 A V I T D F D  
StuI (4266)  
4200 TTCTGCCGTTGCTCACAGCAGACCCAATGGCAATGGCTTCAGCACAGACAGTACCCTGCCAATGTAGGCCTCAATGTGGACAGCAGAGATGATCTCCC  
73▶ 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 H V A S I I E G  
4300 CAGTCTTGGTCTGATGGCCGCCGACATGGTGTGTTGTCCTCATAGAGCATGGTGTCTTCTCAGTGGCGACCTCCACCAGCTCCAGATCTGCTG  
40▶ 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 V L E L D Q Q  
XmnI (4408) AseI (4474)  
4400 AGAGATGTTGAAGGTCTTCATGTTGGCCCTCTATAGTGAGTCTATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACAGCGTGGATG  
74▶ S I N F T K M  
SacI (4531)  
4500 GCGTCTCCAGCTTATCTGACGGTCACTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCCTACCGCCATTTGCGTCAATGGGGCGGAGTTG  
4600 TTACGACATTTTGGAAAGTCCCGTTGATTTACTAGTCAAACAAACTCCATTGACGTCAATGGGGTGGAGACTTGGAAATCCCCTGAGTCAAACCGCT  
SnaBI (4757)  
4700 ATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGTACTGCCAAGTAGGAAAGTCCCATAAGGTCAT  
NdeI (4862)  
4800 GTACTGGGCATAATGCCAGGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCTACTTGGCATATGATACTTGTACTGCAAGTGGGCAGTT  
4900 TACCATAAATACTCCACCATTGACGTCAATGGAAAGTCCCTATTGGCGTTACTATGGGAACATACGTCAATTATTGACGTCAATGGGCGGGGGTCTGTTGG  
PacI (5048) SdaI (5040) BspLU11I (5058)  
5000 GCGGTGAGCCAGGCGGGCCATTTACCGTAAGTTATGTAACGCTGCAGGTTAAATAAGAACATGTGAGCAAAGGCCAGCAAAGGCCAGGAACCGTAAA  
5100 AAGGCCGCTTGTGGCGTTTTTCCATAGGCTCCGCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAGAGGTGGCAAACCCGACAGGACTAT  
5200 AAAGATACCAGGCGTTTTCCCCTGGAAGCTCCCTCGTGCCTCTCTGTTCCGACCCTGCCGTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGAAG  
PpaI (5372)  
5300 CGTGGCGCTTCTCATAGCTCACGCTGAGGTATCTCAGTTCGGTGTAGGTCTGCTCCAAGCTGGGCTGTGTGCACGAACCCCGTTCCAGCCGAC

5400 CGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGA

5500 GGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTAC

5600 CTTCGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAACCACCGCTGGTAGCGGTGGTTTTTTTGGTTGCAAGCAGCAGATTACGCGCAGAAAAAA

5700 GGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGAACGAAAACCTCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACAT

PacI (5788) SwaI (5797)

EagI (5808)

NotI (5807)

5800 TTAAATC AGCGGCCGCAATAAAATATCTTTATTTTCATTACATCTGTGTGTTGGTTTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAAACAA

5900 ACGAAACAAAACAACTAGCAAATAGGCTGTCCCCAGTGCAAGTGCAAGTGCCAGAACATTTCTCTATCGAA