



**PvuI (7)**  
**SgfI (6)** 1 GGATCTGCGATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCCGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA  
**MfeI (82)**  
101 GAGAAAGTGGCGCGGGTAAACTGGAAAAGTATGTCGTGACTGGCTCCGCCTTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

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**Psp1406I (203)**  
201 GTGAACGTTCTTTTTTCGAACGGGTTTCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCCTTCACGCGCCGCCCTACCTGAGGCC  
301 GCCATCCACGCCGGTTGAGTCGCGTTCTGCCGCTCCCGCTGTGGTGCTCCTGAACTGCGTCCGCGCTTAGGTAAGTTTAAAGCTCAGGTCGAGACC  
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCAACTCTACGCTTTTGTTCGTTT

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**AgeI (552)** 501 TCTGTTCTGCGCGGTTACAGATCCAAGCTGTGACCGGCGCTACCTGAGATCACCGGTGAGCATGCCGGCGGTACC GCCCCAGCCCGGGTGCACACT  
**XmaI (584)** 1▶ M P A R T A P A R V P T L

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**SfiI (600)**  
601 GGCCGTCGCCGCCATCTCGTGCACGATGTCCGACGGCGCTCAAAGATTTGAAAAGAGACAGCTTAACAGAAAAGGAATGTGTGAAGGAGAAATTTG  
13▶ A V P A I S L P D D V R R R L K D L E R D S L T E K E C V K E K L  
**SnaBI (764)**  
701 AATCTCTTGCAGAAATTTCTGAAAACAGAAATAAAGAAATCAGTTATGTGACTTGGAAACCAAATTACGTAAAGAAGAATTATCCGAGGAGGGCTACCTGG  
47▶ N L L H E F L Q T E I K N Q L C D L E T K L R K E E L S E E G Y L  
**XbaI (879)**  
801 CTAAGTCAAATCCCTTTTAAATAAAGATTTGTCTTGAGAAACGGTGCTCATGCTTACAACCGGAAAGTGAATGGACGTCTAGAAAAACGGAAACCAAGC  
80▶ A K V K S L L N K D L S L E N G A H A Y N R E V N G R L E N G N Q A  
901 AAGAAGTGAAGCCGTAGAGTGGGAATGGCAGATGCCAACAGCCCCCAAACCTTTTCAAACCTCGACGCCAGGAGGAGCAAGTCCGATGGAGAG  
113▶ R S E A R R V G M A D A N S P K P L S K P R T P R R S K S D G E  
**Bsp120I (1080)**  
1001 GCTAAGCCTGAACCTTACCTAGCCCCAGGATTACAAGGAAAAGCACCAGGCAAACCAACCATCACATCTCATTGCAAAGGGCCCTGCCAAACGGAAAC  
147▶ A K P E P S P S P R I T R K S T R Q T T I T S H F A K G P A K R K  
1101 CTCAGGAAGAGTCTGAAAGACCAAATCGATGAGTCCATCAAGGAAGAGCAAAAGACCAGGATGAGAAGAGACGTAGAGTTACATCCAGAGAACGAGT  
180▶ P Q E E S E R A K S D E S I K E E D K D Q D E K R R R V T T S R E R V  
1201 TGCTAGACCGTCTCTGCAGAAGAACCTGAAAGAGCAAATCAGGAACCGCCTGAAAGGAAAGAAGAAAGAGATGAAAAAGAAGAAAGAGACTCCGA  
213▶ A R P L P A E E P E R A K S G T R T E K E E E R D E K E E K R L R  
1301 AGTCAAACCAAAGAACCAACACCCAAACAGAACTGAAGGAGGAGCCGGACAGAGAAGCCAGGCAGGCGTGCAGGCTGACGAGGACGAAGATGGAGACG  
247▶ S Q T K E P T P K Q K L K E E P D R E A R A G V Q A D E D E D G D  
1401 AGAAAGATGAGAAGAAGCACAGAAGTCAACCAAAGATCTAGCTGCCAAACGGAGGCCGAAGAAAAAGAACTGAAAAAGTAAATCCACAGATTTCTGA  
280▶ E K D E K K H R S Q P K D L A A K R R P E E K E P E K V N P Q I S D  
**BspHI (1589)**  
1501 TGA AAAAGACGAGGATGAAAAGGAGGAGAAGAGACGAAAACGACCCCAAAGAACCAACGGAGAAAAAATGGCTCGCGCCAAAACAGTCACTGAACCTC  
313▶ E K D E D E K E E K R R K T T P K E P T E K K M A R A K T V M N S  
1601 AAGACCCACCTCCAAAGTGCATTGAGTGGGGCAGTACCTGGACGACCTGACCTCAAATATGGGCAGCACCCACCAGACGCGGTGGATGAGCCACAGA  
347▶ K T H P P K C I Q C G Q Y L D D P D L K Y G Q H P P D A V D E P Q  
1701 TGCTGACAAATGAGAAGCTGTCCATCTTTGATGCCAACGAGTCTGGCTTTGAGAGTTATGAGGCGCTTCCCCAGCACAAACTGACCTGCTTCACTGTGTA  
380▶ M L T N E K L S I F D A N E S G F E S Y E A L P Q H K L T C F S V Y

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**BstEII (1810)**  
1801 CTGTAAGCACGGTACCTGTGTCCATCGACACCGGCCTCATCGAGAAGAATATCGAACTCTTCTTTCTGGTTCAGCAAAACCAATCTATGATGATGAC  
413▶ C K H G H L C P I D T G L I E K N I E L F F S G S A K P I Y D D D  
1901 CCGTCTCTTGAAGTGGTGTAAATGGCAAAAATCTTGGCCCAATAAATGAATGGTGGATCACTGGCTTTGATGGAGGTGAAAAGGCCCTCATCGGCTTCA  
447▶ P S L E G G V N G K N L G P I N E W I T G F D G G E K A L I G F  
**BamHI (2028)** 2001 GCACCTCATTGCGGAATACATTCTGATGCCAGTCCCGAGTATGCGCCATATTTGGGCTGATGCAGGAGAAGTCTACATCAGCAAGATTGTGGT  
480▶ S T S F A E Y I L M D P S P E Y A P I F G L M Q E K I Y I S K I V V  
2101 GGAGTTCCTGCAGAGCAATTCGACTCGACCTATGAGGACCTGATCAACAAGATCGAGACCACGGTTCCTCCTTCTGGCCTCAACTTGAACCGCTTACA  
513▶ E F L Q S N S D S T Y E D L I N K I E T T V P P S G L N L N R F T  
2201 GAGGACTCCCTCCTGCGACACGCGCAGTTTGTGGTGGAGCAGTGGAGAGTTATGACGAGGCCGGGACAGTATGAGCAGCCATCTTCTGACGCCCT  
547▶ E D S L L R H A Q F V V E Q V E S Y D E A G D S D E Q P I F L T P  
2301 GCATGCGGGACCTGATCAAGCTGGCTGGGGTACGCTGGGACAGAGGCCAGGCCAGGCCGAGGCCGAGACCATCAGGCATTCTACCAGGGAGAAGGACAG  
580▶ C M R D L I K L A G V T L G Q R R A Q A R R Q T I R H S T R E K D R  
**SanI (2400)** 2401 GGGACCCACGAAAGCCACCACCAAGCTGGTCTACCAGATCTTCGATACTTTCTTTCGAGAGCAAATGAAAAGGATGACAGAGAAGACAAGGAGAAC  
613▶ G P T K A T T T K L V Y Q I F D T F F A E Q I E K D D R E D K E N  
**XcmI (2417)**  
**SgrAI (2509)** 2501 GCCTTTAAGCGCCGGCGATGTGGCGTCTGTGAGGTGTGTCAGCAGCCTGAGTGTGGGAAATGTAAGCCTGCAAGGACATGGTTAAATTTGGTGGCAGTG  
647▶ A F K R R R C G V C E V C Q Q P E C G K C K A C K D M V K F G G S  
**BsrBI (2623)** 2601 GACGGAGCAAGCAGGCTTGCCAAAGAGCGAGGTGTCCAAATATGGCCATGAAGGAGGAGATGACGATGAGGAAGTGCATGATAACATCCCAGAGATGCC  
680▶ G R S K Q A C Q E R R C P N M A M K E A D D D E E V D D N I P E M P

2701 GTCACCCAAAAAATGCACCAGGGGAAGAAGAAGAAACAGAACAAGAATCGCATCTCTTGGGTCGGAGAAGCCGTCAGACTGATGGGAAGAAGATTAC  
713▶ S P K K M H Q G K K K K Q N K N R I S W V G E A V K T D G K K S Y  
2801 TATAAGAAGGTGTGCATTGATGCGGAAACCCTGGAAGTGGGGGACTGTGTCTCTGTTATTCCAGATGATTCCTCAAACCCTGTATCTAGCAAGGGTCA  
747▶ Y K K V C I D A E T L E V G D C V S V I P D D S S K P L Y L A R V  
2901 CGGCGCTGTGGGAGGACAGCAGCAACGGGCAGATGTTTACGCCCATGGTTCGCGTGGGACAGACAGTCTCGGGCCACGTCGGACCCTTGGA  
780▶ T A L W E D S S N G Q M F H A H W F C A G T D T V L G A T S D P L E  
3001 GCTGTTCTTGGTGGATGAATGTGAGGACATGCAGTTCATATATCCACAGCAAAGTGAAGTCATCTACAAAGCCCTCCGAAAACCTGGGCCATGGAG  
813▶ L F L V D E C E D M Q L S Y I H S K V K V I Y K A P S E N W A M E

**BamHI (3108)**

3101 GGAGGCATGGATCCCAGTCCCTGCTGGAGGGGACGACGCGGAAGACCTACTTCTACCAGCTGTGGTATGATCAAGACTACGCGAGATTCGAGTCCCCTC  
847▶ G G M D P E S L L E G D D G K T Y F Y Q L W Y D Q D Y A R F E S P  
3201 CAAAACCCAGCAACAGAGGACAACAAGTTCAAAATTCGTGTGAGCTGTGCCCGTGTGGCTGAGATGAGGCAAAAAGAAATCCCAGGGTCTGGAGCA  
880▶ P K T Q P T E D N K F K F C V S C A R L A E M R Q K E I P R V L E Q  
3301 GCTCGAGGACCTGGATAGCCGGTCTCTACTACTCAGCCACCAAGAACGGCATCCTGTACCAGTGGTGTGTGTACCTGCCCTGAGGCCTTC  
913▶ L E D L D S R V L Y Y S A T K N G I L Y R V G D G V Y L P P E A F  
3401 ACGTTCAACATCAAGCTGTCCAGTCCCCTGAAACGCCACGGAAGGAGCCCGTGGATGAGGACCTGTACCAGAGCACTACCGGAAATACTCCGACTACA  
947▶ T F N I K L S S P V K R P R K E P V D E D L Y P E H Y R K Y S D Y  
3501 TCAAAGGCAGCAACCTGGATGCCCTGAGCCCTACCGAATTGGCCGGATCAAAGAGATCTTCTGTCCCAAGAAGAGCAACGGCAGGCCAATGAGACTGA  
980▶ I K G S N L D A P E P Y R I G R I K E I F C P K K S N G R P N E T D  
3601 CATCAAAATCCGGTCAACAAGTTCTACAGCCCTGAGAACACCCACAAGTCCACTCCAGCAGACTACCACGCAGACATCAACCTGCTACTGTGAGCGAC  
1013▶ I K I R V N K F Y R P E N T H K S T P A S Y H A D I N L L Y W S D  
3701 GAGGAGCCGTGGTGGACTTCAAGGCTGTGCAGGGCCCTGCACCGTGGAGTATGGGAGGACCTGCCGAGTGCCTCAGGTGTACTCCATGGGCGGCC  
1047▶ E E A V V D F K A V Q G R C T V E Y G E D L P E C V Q V Y S M G G  
3801 CCAACCGTCTACTTCTCAGGCCTATAATGCAAAGAGCAAAGCTTTGAAGATCCTCCAACCATGCCGAGTCCCTGAAAACAAAGGGAAGGGCAA  
1080▶ P N R F Y F L E A Y N A K S K S F E D P P N H A R S P G N K G K G K

**BsaBI (3954)**

3901 GGGAAAAGGAAGGGCAAGCCCAAGTCCAAGCCTGTGAGCCGAGCGAGCCAGAGATAGAGATCAAGTCCCAAGCTGCGGACCCTGGATGTGTTTTCT  
1113▶ G K G K G K P K S Q A C E P S E P E I E I K L P K L R T L D V F S

**SmaI (4070)**

4001 GGCTCGGGGGTGTGCGGAGGATTCCACCAAGCAGGCATCTGTACACGCTGTGGGCCATCGAGATGTGGGACCCTGCGGCCAGGCGTTCGGCTGA  
1147▶ G C G G L S E G F H Q A G I S D T L W A I E M W D P A A Q A F R L  
4101 ACAACCCCGGCTCCACAGTGTTCACAGAGGACTGCAACATCCTGCTGAAGCTGGTGTGGTGGGAGACCACCAACTCCCGCGGCCAGGCGTCCCCCA  
1180▶ N N P G S T V F T E D C N I L L K L V M A G E T T N S R G Q R L P Q  
4201 GAAGGGAGACGTGGAGATGCTGTGCGGCGGGCCGCTGCCAGGGCTTCCAGCGCATGAACCGCTTCAATTCGCGCACCTACTCCAAGTTCAAAACCTCT  
1213▶ K G D V E M L C G G P P C Q G F S G M N R F N S R T Y S K F K N S

**Eco47III (4385)**

4301 CTGGTGGTTTCCTTCTCAGCTACTGCGACTACTACCGGCCCCGTTCTTCTCCTGGAGAATGTCAGGAACCTTGTCTCCTTCAAGCGCTCCATGGTCC  
1247▶ L V V S F L S Y C D Y Y R P R F F L L E N V R N F V S F K R S M V

**ApaLI (4440)**

4401 TGAAGCTCACCTCCGCTGCCTGGTCCGCATGGGCTATCAGTGCACCTTCGGCGTGTGCAGGCCGTCAGTACGGCGTGGCCAGACTAGGAGGCGGGC  
1280▶ L K L T L R C L V R M G Y Q C T F G V L Q A G Q Y G V A Q T R R R A

**BbrPI (4555)**

**XmaI (4568)**

4501 CATCATCTGGCCGCGGCCCTGGAGAGAAGCTCCCTCTGTTCCCGGAGCCACTGCACGTGTTTGTCTCCCGGCCCTGCCAGCTGAGCGTGGTGGTGGAT  
1313▶ I I L A A A P G E K L P L F P E P L H V F A P R A C Q L S V V V D

**BspEI (4646)**

4601 GACAAGAAGTTTGTGAGCAACATAACCAGTTGAGCTCGGGTCTTTCGGACCATCACGGTGCAGACACGATGTCCGACTGCCGGAGGTGCGGAATG  
1347▶ D K K F V S N I T R L S S G P R T I T V R D T M S D L P E V R N  
4701 GAGCCTCGGCACTGGAGATCTCTACAACGGGAGCCTCAGTCTGTTTCCAGAGGACGCTCCGGGGCGCACAGTACCAGCCATCTCAGGGACCACAT  
1380▶ G A S A L E I S Y N G E P Q S W F Q R Q L R G A Q Y Q P I L R D H I

**XcmI (4855)**

4801 CTGTAAGGACATGAGTGCATTGGTGGCTGCCCGCATGCGGCACATCCCCTTGGCCCCAGGGTCAAGTGGCGCATCTGCCAACATCGAGGTGCGGCTC  
1413▶ C K D M S A L V A A R M R H I P L A P G S D W R D L P N I E V R L

**Bst1107I (4929)**

**EagI (4953)**

**Bsp120I (4970)**

4901 TCAGACGGACCATGGCCAGGAAGCTGCGGTATACCCACCATGACAGGAAGAAGCGCCGAGCAGCTCTGGGGCCCTCCGTTGGGCTGCTCCTGCGTGG  
1447▶ S D G T M A R K L R Y T H H D R K N G R S S S G A L R G V C S C V  
5001 AAGCCGGCAAAGCTGCGACCCCGCAGCCAGGAGTCAACACCTCATCCCCTGGTGCCTGCCCCACACCGGGAACCGGCACAACCACTGGGCTGGCCT  
1480▶ E A G K A C D P A A R Q F N T L I P W C L P H T G N R H N H W A G L  
5101 CTATGAAAGGCTCGAGTGGGACGGCTTTCAGCACAACCGTACCAACCCCGAGCCATGGCAAGCAGGGCCGCTGCTCCACCCAGAGCAGCACCGT  
1513▶ Y G R L E W D G F F S T T V T N P E P M G K Q G R V L H P E Q H R

**BsrBI (5223)**

5201 GTGGTGAAGTGCAGGAGTGTGCCGCTCCAGGGCTTCCCTGACACCTACCGGCTTTCGGCAACATCCTGGACAAGCACCGGCAGGTGGGCAATGCCG  
1547▶ V V S V R E C A R S Q G F P D T Y R L F G N I L D K H R Q V G N A  
5301 TGCCACCGCCCTGGCCAAAGCATTGGCTTGGAGATCAAGCTTTGTATGTTGGCCAAAGCCGAGAGAGTGCCTCAGCTAAAATAAAGGAGGAGGAAGC  
1580▶ V P P P L A K A I G L E I K L C M L A K A R E S A S A K I K E E E A

**NheI (5413)**

5401 TGCTAAGGACTAGGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTATTTGTGAA  
1613▶ A K D •

**HpaI (5551)** **MfeI (5562)**

5501 ATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAACAAGTTAACAAACAATTCATTCTTTATGTTTCAGGTTTCAGGGGGAGG

5601 **EcoRI (5647)**  
TGTGGGAGGTTTTTTAAAGCAAGTAAAACCTCTACAAATGTGGTATGGAATTCATAAATACAGCATAGCAAACCTTTAACCTCCAATCAAGCCTCTACT

5701 TGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTTCTTTCATGGAGTTAAGA

5801 **SspI (5886)**  
TATAGTGTATTTTCCAAGGTTTGAAGTAGCTCTTCATTTCTTTATGTTTTAAATGCACTGACCTCCACATTCCCTTTTGTAGTAAATATTCAGAAATA

5901 **SwaI (5900)**  
ATTTAAATACATCATTGCAATGAAAATAAATGTTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTT

6001 AGGGAACAAAGGAACCTTTAATAGAAATGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCCTGGTGTACTTGAGGGGGATGAGTTCCTCAATGGTGG

6101 TTTTGACCAGCTTGCCATTCATCTCAATGAGCACAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTCTGCACATGCCACAGGGGCTGACCACCTGAT  
126 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 V R I

6201 GGATCTGTCCACCTCATCAGAGTAGGGGTGCCTGACAGCCACAATGGTGTCAAAGCTTCTGCCCGTTGCTCACAGCAGACCAATGGCAATGGCTTCA  
93 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 I A E

6301 GCACAGACAGTGACCCTGCCAATGTAGGCCTCAATGTGGACAGCAGAGATGATCTCCCAGTCTTGGTCTGATGGCCGCCCCGACATGGTGTGTTGT  
59 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 K N D

6401 CCTCATAGAGCATGGTGTCTTCTCAGTGGCGACTCCACCAGCTCCAGATCTGCTGAGAGATGTTGAAGTCTTCATGGTGGCCCTCTATAGTGAGT  
26 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

6501 **AseI (6533)**  
CGTATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTTCACTAAACGAGCTCTGCT

6601 **SpeI (6688)**  
TATATAGACCTCCACCGTACACGCCTACCGCCATTTGCGTCAATGGGGCGGAGTTGTTACGACATTTTGAAAAGTCCCCTTGATTTACTAGTCAAAC

6701 AAACCTCCATTGACGTCAATGGGGTGGAGACTTGAAATCCCCGTGAGTCAAACCGTATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATGG

6801 **SnaBI (6816)**  
TAATAGCGATGACTAATACGTAGATGTACTGCCAAGTAGGAAAGTCCATAAGGTCATGTACTGGGCATAATGCCAGGCGGGCCATTTACCGTCATTGAC

6901 **NdeI (6921)**  
GTCAATAGGGGGCTACTTGGCATATGATACACTTGATGTACTGCCAAGTGGGCGAGTTTACCGTAAATACTCCACCCATTGACGTCAATGAAAGTCCCT

7001 **SdaI (7099)**  
ATTGGCGTACTATGGGAACATACGTCAATTATTGACGTCAATGGGCGGGGCTGTTGGGCGGTGAGCCAGGCGGGCCATTTACCGTAAAGTTATGTAACGC

7101 **PacI (7107) BspLU11I (7117)**  
CTGCAGGTTAAITTAAGAACATGTGAGCAAAAGGCCAGCAAAGGCCAGGAACCGTAAAAAGGCCGCTTGCTGGCGTTTTTTCATAGGCTCCGCCCCCT

7201 GACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCGGCGTTTCCCCTGGAAGCTCCCTCGTGGCT

7301 CTCCTGTTCCGACCCTGCCGTTACCGGATACCTGTCCGCTTCTCCCTTCGGGAAGCGTGGCGTTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTC

7401 **ApaLI (7431)**  
GGTGTAGGTCGTTGCTCCAAGCTGGGCTGTGTGCACGAACCCCCGTTACGCCGACCGTGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCG

7501 GTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTCTTGAAGTGGTGGCCTA

7601 ACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAC

7701 CACCGCTGGTAGCGGTGGTTTTTTTTGTTTGAAGCAGCAGATTACCGCCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTACGGGGTCTGAC

7801 **EagI (7867) PacI (7847) SwaI (7856) NotI (7866)**  
GCTCAGTGAACGAAAACCTCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATCAGCGGCCCAATAAAATATCTTTATTTTCATTACA

7901 TCTGTGTGTTGGTTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAAACAAAACGAAACAAAACAACTAGCAAATAGGCTGTCCCAGTGCA

8001 AGTGCAGGTGCCAGAACATTTCTCTATCGAA