



**PvuI (7)**  
**SgfI (6)** 1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGGCAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA  
**MfeI (82)**  
101 GAGAAGTGGCGCGGGTAAACTGGAAAGTGATGTCGTGACTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

**HindIII (245)**  
**Psp1406I (203)** 201 GTGAACGTTCTTTTTTCGCAACGGGTTTGGCCGAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTACCGCGCCCGCCGCTACCTGAGGCC  
**PvuII (239)**  
301 GCCATCCACGCGGTTGAGTCGCGTTCTGCCGCTCCCGCCTGTGGTGCTCCTGAAGTGCCTCCGCGCTAGGTAAGTTTAAAGCTCAGGTCGAGACC  
**Bsu36I (291)**

**NgoMIV (441)**  
401 GGGCCTTTGTCCGGCGCTCCCTTGGAGCCTACCTAGACTCAGCGGCTCTCCACGCTTGGCTGACCCTGTTGCTCAACTCTACGCTTTTGTTCGTTT

**KasI (535)** 501 TCTGTTCTGCGCGGTTACAGATCCAAGCTGTGACCGCGCGCTACCTGAGATCACCGGTCATCATGAATCCAAAGACTCTCCCAACTCTGCTGGAAGC  
**AgeI (552)** 1 M N S K D S S P T L L E A  
**BspHI (560)**  
601 TCTGAGCAGCGATTTCTAGCCTGTAAATCTGCCTGGAGCAGTTACACACACCCCAAGACTCTGCCATGCCTACATACCTATTGCCAGGACTGTCTGGCA  
13 L S S D F L A C K I C L E Q L H T P K T L P C L H T Y C Q D C L A  
701 CAACTGGACATCGGTGGTCAGGTCGCTGCCCCGAGTGTGGGAGATTGTGCCTGTACCCGCCGAAGGGGTGGCCGCTTTAAGACCAACTTCTTTGTCA  
47 Q L D I G G Q V R C P E C R E I V P V P A E G V A A F K T N F F V  
801 ATGGGCTCTTGGATCTTGTCAAGGCCAGAGCTCCCGGAGAGCTCCATTAGGGAAAGCCAACTTGCCTCTGTGCCCTCTGGTGGGAGGCAAGAGCTCTGG  
80 N G L L D L V K A R A P G D V H S G K P T C A L C P L V G G K S S G  
**SmaI (900)**  
901 GGGACCCGCCACAGCCAGGTGCCTGGACTGTGCCGACGACTTATGCCAGGCTGTGCCGATGGGCATCGCTGCTCCCGCAGACCCATAAGCACCGTGTG  
113 G P A T A R C L D C A D D L C Q A C A D G H R C S R Q T H K H R V  
**BsaBI (958)**  
1001 GTTGACTTGGTGGGTTACAGAGCCGGTGGTATGATGAAGAGGCTCGAGAGCCAGGCTCCAGTGTCCCCAGCACCCAGGGGAAGCCCTCTGCTTCC  
147 V D L V G Y R A G W Y D E E A R E R Q A S Q C P Q H P G E A L C F  
**XhoI (1043)**  
1101 TCTGTCAACCTTGTCTCAGTTGCTCTGCAAGGATTGCCGCTGGGTCCTCCATATCGATCACCCCTGCTTGCCTTAGCGGAAGCAGTGCCTCCAGGAA  
180 L C Q P C S Q L L C K D C R L G P H I D H P C L P L A E A V R S R K  
1201 GCCAGGCTTGGAGGTTATTGGCAGGTGTGGACAGCAATCTGGTGGAGCTAGAAGCCACTCGGTTGGCAGAAAAGAACCCCTGGCCTTGTTCGGGAG  
213 P G L E E L L A G V D S N L V E L E A T R V A E K E A L A L L R E  
**BstAPI (1127)** **SmaI (1143)** **ClaI (1153)**  
1301 CAGGCAGCCAGTGTGGGACTCAGTGGAGGAGGCAGCTGAACGAATCTCAAGTCCCTGCTGGCCCGAGAAGCAGGAAGTGTGGGACAACCTCCGGGCC  
247 Q A A S V G T Q V E E A A E R I L K S L L A Q K Q E V L G Q L R A  
**MscI (1463)**  
1401 TTGTGGAGGCTGTGAGGAGGCTACCAGGGAGAGGTTGACCAAAATAGAGCGCCAGGAGCAGGTGGCCAAAGGGCGGGCTGCCTTTGCCGTCGAGTGT  
280 L V E A A E E A T R E R L T K I E R Q E Q V A K A A A A F A R R V L  
**XbaI (1509)**  
1501 CAGCTTGGTCTAGAGCCGAGATCCTTTCGCTGGAGGAGCAATCACAGCGCTGCGCCAACTTCCAGGATGCTCCCTGGACGCTGGGCCACCCCGC  
313 S L G L E A E I L S L E G A I T Q R L R Q L Q D A P W T S G P T R  
**XhoI (1633)**  
1601 TGTGTGCTGCCCCAGCTAGAGTCCATCCCGGGCTCGAGGACAAGAACTGCCACCTGCTCCGACTCATCTTTGAGGAGCCTAAACAATCCCCGAAGGACA  
347 C V L P Q L E L H P G L E D K N C H L L R L I F E E P K Q S P K D  
**Acc65I (1717)**  
1701 GCGGGAAGGGTGGGGCTGGTACCAAGGAGGGGATGAAGCTCAAGGCCAAGGGGACGATAGAACAAGATAGGGAAGCAGGGTGGAGCCAGCCCTGAC  
380 S G K G G A G T Q G G D E A Q G Q G D D R T K I G K Q G G A Q P L T  
**BbsI (1843)**  
1801 TCCCAAAGAAGGCAAAGACCAGAACCCCAAGAAGATGACGGGTCTTTCATCGAAAGGGTAACAGGCCAACAAGAAGAAGTGCAAAGGCAGAGGC  
413 P K E G K D Q N P Q E D D G V F I E R G N R P N K K K K C K G R G  
**Bsu36I (1929)**  
1901 AAGTCTGTTTCTCGGGAGCCAGCCCATCCTGAGGCCAAACCTAGAAGTTCGGGCTCCTCCCTCGGCTGTGTTTTCTGGAGTTTCCCACGAGGA  
447 K S V S R E P S P I L R P N L E G S G L L P R P V F S W S F P T R  
**Eco47III (2012)** **Tth11II (2033)** **XmnI (2091)**  
2001 TGCCCGGGGACAAGCGCTCCCTCGCATCACTGGACTGTCCCTACGGCCCCAGGAAATCTTGGTGGCAGATGAGCAGAACAGGGTCTTGAACGCTT  
480 M P G D K R S P R I T G L C P Y G P Q E I L V A D E Q N R V L K R F  
**PstI (2170)**  
2101 CTCCTCAATGGGACTACAAAGGCACAGTGCAGGTCCCGAGGGCTGTTCCCGTGCAGCGTGGCTGCCCTGAGCAATGCAGTGGCTTTCTCTGCCAAT  
513 S L N G D Y K G T V Q V P E G C S P C S V A A L Q N A V A F S A N  
**DraIII (2272)**  
**XcmI (2267)**  
2201 GCAAACTCTATCTTGTGTCAGTCTGACGGAGAAATTCAGTGGCGCAGGTCCTGAGCCTACCCAGTCCAGCCAGCCGTTGGCCGCAATGCCATGTGGAG  
547 A K L Y L V S P D G E I Q W R R S L S L T Q S S H A V A A M P C G  
**Bst1107I (2335)** **NheI (2386)**  
2301 ACCGAGTAGCTGTGAGTGTGGCAGGCCATGTGGAGTATACAAGAAAGTGGCAGCCTGGCTACCCGCTTTATCCCTGGAGGCAAGGCTAGCCGGGGCCA  
580 D R V A V S V A G H V E V Y K K D G S L A T R F I P G G K A S R G Q  
2401 GCGGGCACTGGTGTCTTAACCACAGCCCGAGGCAATTTTGTAGGGTTCAGATTGGCAGCAGAATAGCGTGGTTTTCTGTGATGGGTTAGGTCAGGTG  
613 R A L V F L T T S P Q G N F V G S D W Q Q N S V V F C D G L G Q V  
2501 ATCTGGGAATACAAGGGCCCCGGGTTACATGGCTGCCAGCCAGGTTCTGTGTCTGTGGATAAGAGGGCTACATATTTCTGACCTTCGAGAGGTGAACA  
647 I W E Y K G P G L H G C Q P G S V S V D K K G Y I F L T L R E V N

BamHI (2613) NcoI (2655) BstEII (2676) NcoI (2684) ScaI (2699)  
 2601 AGGTGGTGATACTGGATCCCAAGGGTCACTTCTTGGTGACTIONCTAACAGCATACCATGGCCGGTAAACCACCATGGTAGACGGCAA  
 680▶K V V I L D P K G S L L G D F L T A Y H G L E K P R V T T M V D G K  
 2701 G T A C T T G G T G G T G T C A C T T A G C A A T G G G A C C A T C C A T G T C T T T A G G G T C A G G T T T C T G A C A G C T A A A G C G G C T T C C T A G G A C T A G T G G C C A G A C A T G A  
 713▶ Y L V V S L S N G T I H V F R V R F P D S •  
 2801 T A A G A T A C A T T G A T G A G T T T G G C A A A C C A C A A C T A G A A T G C A G T G A A A A A A A T G C T T T A T T T G T G A A A T T T G T G A T G C T A T T G C T T T A T T T G T A A C C A T

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HpaI (2919) MfeI (2930)  
 2901 T A T A A G C T G C A A T A A A C A A G T T A A C A A C A A C A A T T G C A T T C A T T T T A T G T T T C A G T T C A G G G G A G G T G T G G G A G G T T T T T A A G C A A G T A A A C C T C

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EcoRI (3015)  
 3001 T A C A A A T G T G G T A T G G A A T T C T A A A A T A C A G C A T A G C A A A A C T T T A A C C T C C A A A T C A A G C C T C T A C T T G A A T C C T T T T C T G A G G G A T G A A T A A G C A T A

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SspI (3254) SwaI (3268)  
 3201 C T T C A T T T C T T T A T G T T T A A A T G C A C T G A C C T C C C A C A T T C C C T T T T A G T A A A A T A T T C A G A A A T A A T T T A A A T A C A T C A T T G C A A T G A A A A A A A T G

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3301 T T T T T A T T A G G C A G A A T C C A G A T G C T C A A G G C C T T C A T A A T A T C C C C A G T T T A G T A G T T G G A C T T A G G G A A C A A A G G A A C C T T T A A T A G A A A T T G G A

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3401 C A G C A A G A A A A G C G A G C T T C T A G C T T T A G T T C C T G G T A C T T G A G G G G A T G A G T T C C A A T G G T G G T T T T G A C C A G C T T G C C A T T C A T C T C A A T G A G C

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3501 A C A A A G C A G T C A G G A C A T A G T C A G A G A T G A G C T C T G C A C A T G C C A C A G G G C T G A C C A C C C T G A T G G A T C T G T C C A C C T C A T C A G A G T A G G G G T G C C

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3601 T G A C A G C C A C A A T G G T G T C A A A G T C C T T C T G C C G T T G C T C A C A G C A G C C C A A T G G C A A T G G C C T T C A G C A C A G A C A G T G A C C C T G C C A A T G T A G G C C T C

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3701 A A T G T G G A C A G C A G A G A T G A T C T C C C C A G T C T T G T C C T G A T G G C C G C C C G A C A T G G T G C T T G T T G C C T C A T A G A G C A T G G T G A T C T T C T C A G T G G C G

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3801 A C C T C C A C C A G C T C C A G A T C C T G C T G A G A G A T G T T G A A G G T C T T C A T G A T G G C C C T C T A T A G T G A G T C G T A T T A T A C T A T G C C G A T A T A C T A T G C C G A T

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3901 G A T T A A T T G T C A A A C A G C G T G G A T G G C G T C T C C A G C T A T C T G A C G G T T C A C T A A A C G A G C T C T G C T T A T A T A G A C C T C C C A C C G T A C A C G C T A C C G

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SpeI (4056)  
 4000 C C C A T T T G C G T C A A T G G G G C G G A G T T G T T A C G A C A T T T T G A A A G T C C C G T T G A T T T A C T A G T C A A A A C A A A C T C C C A T T G A C G T C A A T G G G G T G G A G A

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4099 C T T G G A A T C C C C G T G A G T C A A A C C G C T A T C C A C G C C C A T T G A T G T A C T G C C A A A A C C G C A T C A T C A T G G T A A T A G C G A T G A C T A A T A C G T A G A T G T A C T

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4199 G C C A A G T A G G A A A G T C C C A T A A G G T C A T G T A C T G G G C A T A A T G C C A G G C G G G C C A T T T A C C G T C A T T G A C G T C A A T A G G G G G C T A C T T G G C A T A T G A T A

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4299 C A C T T G A T G T A C T G C C A A G T G G G C A G T T T A C C G T A A A T A C T C C A C C C A T T G A C G T C A A T G G A A G T C C C T A T T G G C G T T A C T A T G G G A A C A T A C G T C A T T

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PstI (4468) SdaI (4467) PaeI (4475) BspLU11I (4485)  
 4399 A T T G A C G T C A A T G G G C G G G G T C G T T G G G C G G T C A G C C A G G C G G C C A T T T A C C G T A A G T T A T G T A A C G C C T G 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

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4497 A A A G C C A G C 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 G T T G C T G G C G T T T T T C C A T A G G C T C C G C C C C C T G A C G A G C A T C A C A A A A T C G A C G C T C A A

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4597 G T C A G A G G T G G C G A A A C C C G A C A G G A C T A T A A A G A T A C C A G G C G T T T C C C C T G G A A G C T C C C T G T G C G C T C T C T G T T C G A C C C T G C C G T T A C C G G

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4697 A T A C C T G T C C G C T T T C T C C T T C G G A A G C G T G G C G C T T T C T A T A G C T C A C G C T G T A G G T A T C T C A G T T C G G T G T A G G T C G T T C G C T C C A A G C T G G G C

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ApaLI (4799)  
 4797 T G T G T G C A C G A A C C C C C G T T C A G C C C A C C G T G C G C C T T A T C C G T A A C T A T C G T C T T G A G T C C A A C C G G T A A G A C A C G A C T T A T C G C C A C T G G C A G

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4897 C A G C C A C T G G T A A C A G G A T T A G C A G A G C G A G G T A T G T A G G C G G T G C T A C A G A G T T C T T G A A G T G G T G G C C T A A C T A C G G C T A C A C T A G A A G A A C A G T A T T

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4997 T G G T A T C T G C G C T C T G C T G A A G C C A G T T A C C T T C G A A A A A G A G T T G G T A G C T C T T G A T C C G G C A A C A A A C C A C C G C T G G T A G C G G T G G T T T T T T G T T

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5097 T G C A A G C A G C A G A T T A C G C G C A G A A A A A A G G A T C T C A A G A A G A T C C T T T G A T C T T T T C A C G G G T C T G A C G C T C A G T G A A C G A A A A C T C A C G T T A A G

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EagI (5235) PaeI (5215) SwaI (5224) NotI (5234)  
 5197 G G A T T T T G G T C A T G G C T A G T T A A T T A A C A T T T A A A T C A G C G G C C G C A A T A A A A T A T C T T T A T T T T C A T T A C A T C T G T G T T G G T T T T T T G T G A A T C G

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5297 T A A C T A A C A T A C G C T C T C C A T C A A A A C A A A A C G A A A C A A A A C T A G C A A A A T A G G C T G T C C C C A G T G C A A G T G C A G G T G C C A G A A C A T T T C T C T A T C

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5397 G A A