



**PvuI (7)**  
**SgfI (6)** 1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGGCAGAGCGCACATCGCCACAGTCCCCGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA  
**MfeI (82)**  
101 GAGAAAGTGGCGCGGGTAAACTGGAAAGTGATGTCGTGACTGGCTCCGCCTTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

**Psp1406I (203)** 201 GTGAACGTTCTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCCTTACGCGCCCGCCCTACCTGAGGCC  
**HindIII (245)**  
301 GCCATCCACGCGCGTTGAGTCGCGTTTCTGCGCCCTCCCGCTGTGGTGCCTCCTGAAGTGCCTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC  
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCAACTCTACGCTTTTGTTCGTTT

**SphI (560)**  
**AgeI (552)** 501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGGCGCCTACCTGAGATCACCGGTGAGCATGCCCGCCATGCCCTCCAGCGGCCCGGGGACACCAG  
1 M P A M P S S G P G D T S

**BsrBI (613)** 601 CAGCTCTGCTGCGGAGCGGGAGGAGACCAGAAAGACGGAGAGGAGCAGGAGGAGCCCGTGGCAAGGAGGAGCGCAAGAGCCAGCACCCAGCCGACGG  
13 S S A A E R E E D R K D G E E Q E E P R G K E E R Q E P S T T A R  
**NotI (791)**  
701 AAGGTGGGCGGCCTGGGAGGAAGCGCAAGCACCCCGGTGGAAAGCGGTGACACGCCAAAGACCCTGCGGTGATCTCCAAGTCCCATCCATGGCCC  
47 K V G R P G R K R K H P P V E S G D T P K D P A V I S K S P S M A

**XcmI (827)** 801 AGGACTCAGGCGCCTCAGAGCTATTACCAATGGGACTTGGAGAAGCGGAGTGAGCCCCAGCCAGAGGAGGGGAGCCCTGCTGGGGGCGAGAAGGGCGG  
80 Q D S G A S E L L P N G D L E K R S E P Q P E E G S P A G G Q K G G  
901 GGCCCCAGCAGAGGGAGAGGGTGACAGCTGAGACCTGCCTGAAGCCTCAAGAGCAGTGAAAAATGGCTGCTGCACCCCAAGGAGGGCCGAGGAGCCCT  
113 A P A E G E G A A E T L P E A S R A V E N G C C T P K E G R G A P  
1001 GCAGAAGCGGGCAAGAACAAGAAGGAGACCAACATCGAATCCATGAAAATGGAGGGCTCCCGGGCCGGCTGCGGGGTGGCTGGGCTGGGAGTCCAGCC  
147 A E A G K E Q K E T N I E S M K M E G S R G R L R G G L G W E S S

**SmaI (1139)** 1101 TCCGTGAGCGGCCATGCCGAGGCTCACCTTCCAGGCGGGGACCCCTACTACATCAGCAAGCGCAAGCGGGACGAGTGGCTGGCAGCTGAAAAAGGGA  
180 L R Q R P M P R L T F Q A G D P Y Y I S K R K R D E W L A R W K R E  
1201 GGCTGAGAAGAAAGCAAGGTCATTGCAGGAATGAATGCTGTGGAAGAAAACAGGGGCGGGGAGTCTCAGAAGGTGGAGGAGGCCAGCCCTCCTGCT  
213 A E K K A K V I A G M N A V E E N Q G P G E S Q K V E E A S P P A  
1301 GTGCAGCAGCCACTGACCCCGCATCCCCCACTGTGGCTACCAAGCGCTGAGCCCGTGGGGTCCGATGCTGGGGACAAGAATGCCACCAAGCAGGCGATG  
247 V Q Q P T D P A S P T V A T T P E P V G S D A G D K N A T K A G D

**EagI (1419)** 1401 ACAGCCAGAGTACGAGGACGGCCGGGCTTGGCATTGGGGAGCTGGTGTGGGGAAACTGCGGGGCTTCTCCTGGTGGCCAGGCCGATTGTGTCTTG  
280 D E P E Y E D G R G F G I G E L V W G K L R G F S W W P G R I V S W  
1501 GTGGATGACGGGCGGAGCCGAGCAGCTGAAGGACCCGCTGGGTGATGTTGCGGAGACGGCAAATCTCAGTGGTGTGTTGAGAAGCTGATGCCG  
313 W M T G R S R A A E G T R W V M W F G D G K F S V V C V E K L M P

**SdaI (1677)** 1601 CTGAGCTCGTTTTGCAGTGCCTTCCACCAGGCCACGTACAACAAGCAGCCATGTACCGCAAAGCCATCTACGAGGCTCTGCAGGTGGCCAGCAGCCGCG  
347 L S S F C S A F H Q A T Y N K Q P M Y R K A I Y E V L Q V A S S R

**XmnI (1704)** 1701 CGGGAAGCTGTTCCCGGTGTCACACGACAGCATGAGAGTGACACTGCCAAGCCGTGGAGGTGCGAACAAGCCATGATTGAATGGGCCCTGGGGGG  
380 A G K L F P V C H D S D E S D T A K A V E V Q N K P M I E W A L G G

**SfiI (1813)** 1801 CTTCCAGCCTTCTGGCCCTAAGGCGCTGGAGCCACCAGAAGAAGAAGAATCCCTACAAGAAGTGTACACGGACATGTTGGTGGAACTGAGGCAGCT  
413 F Q P S G P K G L E P P E E E K N P Y K E V Y T D M W V E P E A A  
**BsrGI (1865)**  
1901 GCCTACGCACCACCTCCACCAGCCAAAAAGCCCGGAAGAGCAGCAGCGGAGAAGCCCAAGGTCAAGGAGATTATTGATGAGCGCACAAGAGCGGCTGG  
447 A Y A P P P P A K K P R K S T A E K P K V K E I I D E R T R E R L  
2001 TGTACGAGGTGCGGCAGAAGTGCAGCAACATTGAGGACATCTGCATCTCCTGTGGGAGCTCAATGTTACCCTGGAACACCCCTCTTCTGTTGGAGGAAT  
480 V Y E V R Q K C R N I E D I C I S C G S L N V T L E H P L F V G G M  
2101 GTGCCAAAAGTGAAGAAGTCTTCTGGAGTGTGCTACAGTACGACGACGAGGCTACCAGTCTACTGCACCATCTGCTGTGGGGCCGTGAGGTG  
513 C Q N C K N C F L E C A Y Q Y D D D G Y Q S Y C T I C C G G R E V  
2201 CTCATGTGCGGAAACAACAACACTGCTGAGGTGCTTTTGGCTGGAGTGTGTGGACCTTGGTGGGGCGGGGGTCCAGGCAGCCATTAAGGAAGACC  
547 L M C G N N N C R C F C V E C V D L L V G P G A A Q A A I K E D

**Acc65I (2329)** 2301 CCTGGAAGTGTACATGTCGCGGCGACAAGGGTACTACGGGCTGCTGCGCGCGGAGAGGACTGGCCCTCCCGGCTCCAGATGTTCTTTCGCTAATAACCA  
580 P W N C Y M C G H K G T Y G L L R R R E D W P S R L Q M F F A N N H  
2401 CGACCAGGAATTTGACCTCCAAAGGTTTACCCTCTGCCAGCTGAGAAGAGGAAGCCATCCGGGTGCTGTCTCTTTGATGGAATCGTACAGGG  
613 D Q E F D P P K V Y P P V P A E K R K P I R V L S L F D G I A T G  
2501 CTCCTGGTGTGAAGGACTTGGGCAATCAGGTGACCGCTACATTGCCTCGGAGGTGTGTGAGGACTCCATCACGGTGGGCATGTTGCGGCACCAGGGGA  
647 L L V L K D L G I Q V D R Y I A S E V C E D S I T V G M V R H Q G  
2601 AGATCATGTACGTCGGGACGTCCGACGCTCACACAGAAGCATCCAGGAGTGGGGCCATTCGATCTGGTATTGGGGCAGTCCCTGCAATGACCT  
680 K I M Y V G D V R S V T Q K H I Q E W G P F D L V I G G S P C N D L  
2701 CTCATCGTCAACCTGCTCGAAGGGCTCTACGAGGCACTGGCCGGCTCTTCTTTGAGTTCTACCGCTCCTGCATGATGCGCGGCCCAAGGAGGGA  
713 S I V N P A R K G L Y E G T G R L F F E F Y R L L H D A R P K E G

**XhoI (2878)** 2801 GATGATCGCCCTTCTTCTGGCTCTTTGAGAATGTGGTGGCCATGGGCGTTAGTGACAAGAGGACATCTCGGATTTCTCGAGTCCAACCTGTGATGA  
747 D D R P F F W L F E N V V A M G V S D K R D I S R F L E S N P V M

**NcoI (2840)** **NruI (2869)**

**BstEII (2947)**

2901 TTGATGCCAAAGAAGTGTCTCAGCTGCACACAGGGCCCGCTACTTCTGGGGTAACCTTCCCGGTATGAACAGGCCGTTGGCATCCACTGTGAATGATAAGCT  
780▶ I D A K E V S A A H R A R Y F W G N L P G M N R P L A S T V N D K L

3001 GGAGCTGCAGGAGTGTCTGGAGCATGGCAGGATAGCCAAGTTCAGCAAAGTGAGGACCATTACTACGAGGTCAAACCTCCATAAAGCAGGGCAAAGACCAG  
813▶ E L Q E C L E H G R I A K F S K V R T I T T R S N S I K Q G K D Q

**BspHI (3113)** **ApaLI (3141)**

3101 CATTTCCTGTCTTCATGAATGAGAAAGAGGACATCTTATGGTGCACCTGAAATGGAAAGGGTATTTGGTTCCAGTCCACTATACTGACGTCTCCAACA  
847▶ H F P V F M N E K E D I L W C T E M E R V F G F P V H Y T D V S N

3201 TGAGCCGCTTGGCGAGGCAGAGACTGCTGGCCGGTCTGAGCGTGCCAGTCACTCCGCACCTTCTGCTCCGCTGAAGGAGTATTTGCGTGTGTGTGA  
880▶ M S R L A R Q R L L G R S W S V P V I R H L F A P L K E Y F A C V •

**NheI (3318)**

3301 AGGGACATGGGGCAAACGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTATT  
913▶

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**HpaI (3456)** **MfeI (3467)**

3401 GTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAAACAAGTAAACAACAACAATTGCATTCTTTTATGTTTCAGTTTCAGGG

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**EcoRI (3552)**

3501 GGAGGTGTGGGAGGTTTTTAAAGCAAGTAAAACCTCTACAAATGTGGTATGGAATTTAAAATACAGCATAGCAAACCTTTAACCTCCAATCAAGCCT  
3601 CTACTTGAATCCTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGACGCTCACCTTCTTTCATGGAGTT

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**SspI (3791)**

3701 TAAGATATAGTGTATTTCCCAAGGTTTGAAGTCTCTTCTTTATGTTTTAAATGCACTGACCTCCACATTCCCTTTTTAGTAAAATATTCAG

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**SwaI (3805)**

3801 AAATAATTTAAATACATCATTGCAATGAAAATAAATGTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTG

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3901 GACTTAGGGAACAAAGAACCTTAAATAGAAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCTGGTACTTGGGGGATGAGTTCCTCAAT  
4001 GGTGGTTTTGACCAGCTTGCATTCTCAATGAGCACAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTCTGCACATGCCACAGGGGCTGACC  
128▶ T T 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

4101 CTGATGGATCTGCCACCTCATCAGAGTAGGGTGCCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCGTTGCTCAGCAGACCCAATGGCAATGG  
94▶ R I 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

**StuI (4230)**

4201 CTTCAGCAGACAGTACCCTGCCAATGTAGGCCTCAATGTGGACAGCAGAGATGATCTCCAGTCTTGGTCTGATGGCCGCCGACATGGTGCTT  
61▶ E 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

**XmnI (4372)**

4301 GTTGTCTCATAGAGCATGGTATCTTCTCAGTGGCGACCTCCACCAGTCCAGATCCTGCTGAGAGATGTTGAAGGTCTTATGGTGGCCCTCCTATAG  
28▶ N D 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

**AseI (4438)**

4401 TGAGTCGTATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTTCACTAAACGAGCT

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**SpeI (4593)**

4501 CTGCTTATATAGACCTCCCACCTACACGCTACCGCCATTTGCGTCAATGGGGCGAGTTGTTACGACATTTTGAAAGTCCCCTGTTGATTTACTAGTC  
4601 AAAACAAACTCCCATTGACGTCAATGGGGTGGAGACTTGAAATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTACTGCCAAAACCGCATCAT

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**SnaBI (4721)**

4701 CATGGTAATAGCGATGACTAATACGTAGATGTACTGCCAAGTAGGAAAGTCCCATAAGGTCATGTACTGGCATAATGCCAGGCGGGCATTACCGTCA

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**NdeI (4826)**

4801 TTGACGTCAATAGGGGCGTACTTGGCATATGATACACTTGTACTGCCAAGTGGGCAGTTTACCCTAAATACTCCACCATTGACGTCAATGAAAG  
4901 TCCCTATTGGCGTACTATGGGAACATACGTCATTATTGACGTCAATGGGCGGGGCTGTTGGCGGTGAGCCAGGCGGGCATTACCGTAAGTTATGT

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**SdaI (5004)** **PaeI (5012)**

5001 AACGCCTGCAGGTTAATAAGAACATGTGAGCAAAAGGCCAGCAAAGGCCAGGAACCGTAAAAAGCCGCGTTGCTGGCGTTTTTCATAGGCTCCGCC  
5101 CCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGCGTTTTCCCTGGAAGCTCCCTCGT  
5201 GCGCTCTCTGTTCCGACCTGCCGTTACCGGATACCTGTCCGCTTCTCCCTTGGGAAGCGTGGCGTTTCTCATAGCTCACGCTGTAGGTATCTC

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**ApaLI (5336)**

5301 AGTTCGGTGTAGGTCGTTTCCCTCAAGCTGGGCTGTGTGCACGAACCCCGTTCAGCCGACCCTGCGCTTATCCGGTAACATATCGTCTTGAGTCCA  
5401 ACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCGGTGCTACAGAGTTCTTGAAGTGGTG  
5501 GCCTAACTACGGCTACACTAGAAGAACGATTTTGGTATCTGCGCTGCTGGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAA  
5601 CAAACCACCGCTGGTAGCGGTGTTTTTTGTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGT

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**EagI (5772)**

5701 CTGACGCTCAGTGAACGAAAACCTCACGTTAAGGGATTTTGGTCAAGGCTAGTTAATTAACATTTAAATCAGCGCGCAATAAAATATCTTTATTTTCA  
5801 TTACATCTGTGTGTTGTTTTTGTGTAATCGTAACTAACATACGCTCTCCATCAAACAAAACGAAACAAAACAACTAGCAAATAGGCTGTCCCA  
5901 GTCAAGTGACGGTGCCAGAACATTTCTCTATCGAA