



PvuI (7)
SgfI (6)
1 GGATCTGCATCGCTCCGGTGCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCCGAGAAGTTGGGGGAGGGGTCGGCAATTGAACGGGTGCCTA
101 GAGAAAGTGGCGCGGGTAAACTGGAAAAGTATGTCGTGTACTGGCTCCGCTTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

Psp1406I (203) HindIII (245)
201 GTGAACGTTCTTTTTTCGCAACGGGTTTCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCCTTACCGCGCCCGCCCTACCTGAGGCC
301 GCCATCCACGCCGGTTGAGTCGCGTTCTGCCGCTCCCGCTGTGGTGCCTCCTGAACTGCGTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

NgoMIV (441)
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCTCAACTCTACGCTTTTGTTCGTTT

AgeI (552) BspHI (560)
501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGCGCCTACCTGAGATCACCGGTCATCATGAAAGTTGTCCAGAGAAGAATGCTGTACGAATCCT
601 CTGGGGCCGAGAACGGGCACTCGTCCATGGGTGCCAGCGCTTCTGCAGGAGCTGGTGGAGATAAGACTCGATGGATGAAATGGGAGGCAAGAGA
13> W G R E R G T R A M G A Q R L L Q E L V E D K T R W M K W E G K R

BspLU11I (774)
701 GTAGAAGTGCCTGATAGTCCAGCTCGACATTCTTACTGGCCTTCAGCCAGACAGGACTCTCTTGGCATCCACACATGTGAACCATAACATCTATATTA
47> V E L P D S P R S T F L L A F S P D R T L L A S T H V N H N I Y I
801 CAGAGGTTAAGACTGGCAAGTGTGTTCACTCTCTGATCGGACACCGCGTACTCCATGGTGTGTCACCTTTTACCCCCACCATCTCAGGCTTATTGCTTC
80> T E V K T G K C V H S L I G H R R T P W C V T F H P T I S G L I A S
901 TGGTTCCCTAGATGGGAAGTTAGGATTTGGGATTTACATGGGGCAGTGAAAGCTGGTTCACAGACAGCAACAATGCCATAGCCTCCTTGGCTTTCCAC
113> G C L D G E V R I W D L H G G S E S W F T D S N N A I A S L A F H
1001 CCTACGGCTCAGCTTCTACTAATTGCCACTGCAATGAGATCCATTCTGGGATTGGAGTCGTGGGAGCCCTTGTGTGGTGAACACAGCCAGTGAAGA
147> P T A Q L L L I A T A N E I H F W D W S R R E P F A V V K T A S E
1101 TGGAGCGTGTCCGCTGGTGGATTTGATCCACTTGGACACTACTTACTACAGCTATTGTTAACCCCTCTAATCAGCAGGGTGTGACGAACCAGAAAT
180> M E R V R L V R F D P L G H Y L L T A I V N P S N Q Q G D D E P E I
1201 CCCTATAGATGGAACAGAGTTATCTCATTACCGTCAACGTGCCCTCCTGCAATCACAGCCAGTTCCGCGGACACCTCTCTCCACAATTTCTGCACATG
213> P I D G T E L S H Y R Q R A L L Q S Q P V R R T P L L H N F L H M

EagI (1390)
1301 CTGTCCTCCGTTCTCTGGCATCCAGACCGAGCCCTCCATCCCCGGAGCAGGCTTCATCAACGCAGCAGGACCAGGGCCTCTGAACCGCCGCTGTG
247> L S S R S S G I Q T E P F H P P E Q A S S T Q Q D Q G L L N R P S

Bsp120I (1479)
1401 CCTTCAGTACAGTCCAGAGCAGCACTGCGGGCAACACGCTCCGCAACCTCAGTCTGGGTCTACCCGGCGCTCTTTGGGGGCGCCTTTGTCTAGCCACC
280> A F S T V Q S S T A G N T L R N L S L G P T R R S L G G P L S S H P
1501 TTCTAGGTATCACAGAGAAGTACCCCTGGGCTGACAGGTTCTGAGTGGACCCGACAGTACTACTGAACTCCGTTCTGAGGTAGAATCTATGCC
313> S R Y H R E L A P G L T G S E W T R T V L T L N S R S E S M P

Bst1107I (1677)
1601 CCACCGAGGACAGTGCCTCCTCAGTGAAGTTGCTTTCTGTACTGAGACAGCAGGAAGTGGCTCTCAGGCATCTGTGTATACTTCAGCCACAGAAGGGA
347> P P R T S A S S V S L L S V L R Q Q E G G S Q A S V Y T S A T E G
1701 GGGGTTTTCCATCATCAGGGTTGGCAACTGAGTCAGATGGAGGGAATGGTCCAGCCAAAACAACTCAGGCAGCATTCCGCATGAGCTTCAATGTGACCT
380> R G F P S S G L A T E S D G G N G S S Q N N S G S I R H E L Q C D L
1801 GAGACGCTCTTTTTGGAGTATGACAGGCTGACAGGCTGAGTGGGAACTCCCCAGACCAACAGGCCAGGAAATGCTCAACAAT
413> R R F F L E Y D R L Q E L D Q S L S G E T P Q T Q Q A Q E M L N N

SspI (1900) Tth11I (1916) ClaI (1988)
1901 AATATTGAATCTGAGAGACCAGTCTTCCACCTGCCTACCCACACAGCAGTGAAGAACAATCCAACCTGTCTCGGGGCCACCTTAATCGATGCCGTG
447> N I E S E R P G P S H L P T P H S S E N N S N L S R G H L N R C R

SapI (2081) NheI (2077)
2001 CTTGCCATAATCTTCAACCTTCAACAATGATACCCTTCGTTGGGAAAGAACCACACCTAACTACTCATCTGGTGGAGGCTAGCTCTTCTCGCACGCTCTC
480> A C H N L L T F N N D T L R W E R T T P N Y S S G E A S S S W H V S

DraIII (2120) SphI (2114) BsrBI (2149)
2101 CACTACCTTTGAGGGCATGCCAPCAAGTGGCAACCAGCTACCACCTTTGAGCGGACTGAGGGCCAAATGCCTAGCTCCAGCAGGCTGGAGTTGAGCAGC
513> T T F E G M P P S G N Q L P P L E R T E G Q M P S S S R L E L S S
2201 TCTGCTAGTTCACAAGAGGAGAGGACTGTGGGGTGGCCTTTAACCAGGAGACAGGCCACTGGGAACGCATTTATAACCAAGTCCAGCAGATCTGGAACCTG
547> S A S S Q E E R T V G V A F N Q E T G H W E R I Y T Q S S R S G T
2301 TATCACAGGAGGCTTACATCAAGATATGCCTGAAGAAAGCTCTGAGGAAGACTCCCTCAGGAGGAGGCTGCTGGAGTCTTCCCTCATTTCATTATCCCG
580> V S Q E A L H Q D M P E E S S E E D S L R R R L L E S S L I S L S R
2401 TTATGATGGAGCAGGATCCAGAGAGCACCAATTTACCAGACCCAGCGAGATTATCTCTGTGCTACTACGCCACAGGAGGATGATCCAGTATCTCTCA
613> Y D G A G S R E H P I Y P D P A R L S P A A Y Y A Q R M I Q Y L S

Eco47III (2519)
2501 AGGAGAGACAGTATTCCGACGCTCCATGCGCTACCAACAGAATCGGCTTCTTCCACCTCCTTCTTCTCAGACAACCAGGGTCCATCAGTAG
647> R R D S I R Q R S M R Y Q Q N R L R S S T S S S S S D N Q G P S V
2601 AGGGAACCGACTTGAATTTGAGGACTTTGAGGACAATGGTACAGATCTAGGACCCGAGCTCCCCGAAATGCCCGAATGTCTGCACCTTCACTTGGAGC
680> E G T D L E F E D F E D N G D R S R H R A P R N A R M S A P S L G R

BspHI (2754)

2701 ATTTGTTCCAAGGCGTTTTTGTGCTGCTGAGTACTTGCCTTATGCTGGGATTTTTTCATGAACGTGGACAGCCTGGCTTGGCTACTCATTCTTCTGTTAAC
713▶ F V P R R F L L P E Y L P Y A G I F H E R G Q P G L A T H S S V N

MscI (2843)

2801 AGGGTCCTGGCAGGGCAGTAATTTGGAGATGGACAGTCTGTGCTGGCCAGTAACATTGCCAATACTACCTACAGGCTCCAGTGGTGGGACTTCACTAAGT
747▶ R V L A G A V I G D G Q S A V A S N I A N T T Y R L Q W W D F T K
2901 TTGACCTTCCAGAAATCAGTAATGCCTCTGTGAATGCTGCTGGTACAGAATTGCAAGATCTACAATGATGCCAGCTGTGACATTTCTGCAGATGGTCAGCT
780▶ F D L P E I S N A S V N V L V Q N C K I Y N D A S C D I S A D G Q L
3001 CCTGGCAGCCTTATCCCGAGCAGCCAGAGGGCTTCTCTGATGAAGGCATCCTGGCAGTGTATTCCCTGGCCCCCATAACTTGGGGGAAATGCTCTAC
813▶ L A A F I P S S Q R G F P D E G I L A V Y S L A P H N L G E M L Y
3101 ACCAAGCGATTTGGTCCCAATGCCATTTCTGTAAGCCTGTCCCCGATGGGCCGATACGTTATGGTGGGCTTGGCCTCACGAAGGATCCTACTGACCCCT
847▶ T K R F G P N A I S V S L S P M G R A Y V M V G L A S R R I L L H P
3201 CCACAGACACATGGTAGCCAGGTCTTCAGGCTGCAACAGGCCATGGTGGTGGAGACTTCCATGAGGAGAGTTTCAATGTCCTTTACCCCATGCCTGC
880▶ S T E H M V A Q V F R L Q Q A H G G E T S M R R V F N V L Y P M P A
3301 AGACCAACGGAGACAGTCTGAGTCAACTCTGCCCGTTGGCTACCCGAGCCAGGGCTTGGTTTGGCCTATGGCACCAAAAGGAGACTTGGTGTCTGC
913▶ D Q R R H V S I N S A R W L P E P G L G L A Y G T N K G D L V I C

BsrBI (3490)

3401 CGACCAGAGGCCTTAACTCTGGCATCGAGTACTACTGGGACCAGCTAAGTGAACAGTCTTCACTGTCCACTCAAGTAGCAGGAGCAGCGAGCGGCCTG
947▶ R P E A L N S G I E Y Y W D Q L S E T V F T V H S S S R S S E R P

BbrPI (3513)

3501 GAACCAGCAGAGCCAGTGGCGGACAGACAGACATGGGTTTGTGAATGCAATTGGGCTACAGCCTCGGAACCAACCACCTCTGTGACATCTCAGGG
980▶ G T S R A T W R T D R D M G L M N A I G L Q P R N P T T S V T S Q G
3601 CACCCAGACTCTGGCCCTCCAGTTGCAGAACGCTGAAACACAGACTGAGAGGGAGGAAGAGGAACAGGGGCAGCATCTTCAGGTCCTGGTGAAGGCGAG
1013▶ T Q T L A L Q L Q N A E T Q T E R E E E E P G A A S S G P G E G E
3701 GGCTCAGAATATGGTGGCAGTGGGGAAGATGCCCTCAGCAGGATCCAGAGGCTGATGGCCGAGGTTGGCATGACAGCTGTGGTACAACGGGAACAGAGCA
1047▶ G S E Y G G S G G E D A L S R I Q R L M A E G G M T A V V Q R E Q T S
3801 CCACCATGGCCTCCATGGGTGGCTTTGGCAACAALCATCGTTAGCCACCGCATTACCCGACGCTCCAGACAGGCACAGATCAGGGGCTGCTCGTAC
1080▶ T T M A S M G G F G N N I I V S H R I H R S S Q T G T E S G A A R T

XhoI (3923)

Eco47III (3963)

3901 CTCCTACCCAGCCCTCCACCTCTCGAGGACTGCCATCAGAACCTGGGCACTGGCAGAGCGAGCGTAAGCCCCGGACAGCCTCCTGGGACCAGCCT
1113▶ S S P Q P S T S R G L P S E P G Q L A E R A L S P R T A S W D Q P
4001 AGTACCTCTGGGAGGAACTACCCAGCCAGCCTGTCTCTTCTCCCTGTCCCATTCAGTCCCCCTTCCAGCAATGAGGGACCAACCATGCAT
1147▶ S T S G R E L P Q P A L S S S S P V P I P V P L A S N E G P T M H

AvrII (4192)

4101 GCAATGTGACCAATAACAGTACCTTCTGAGGGTGTGGTAGCAACAGGGGGGAAGTGCAGGCCCTAGTGGAGAGCCACAGAACCAGATAGCCTAGGAC
1180▶ C N V T N N S H L P E G D G S N R G E A A G P S G E P Q N R •

MscI (4204)

4201 TAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATT
4301 GCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGTTAACAACAACAATTGCATTCATTTTATGTTTCAGTTTCAGGGGAGGTGTGGGAGTTTTTT

EcoRI (4432)

4401 AAAGCAAGTAAACCTCTACAAATGTGGTATGGAATTTCAAATACAGCATAGCAAACTTTAACCTCAAATCAAGCCTCTACTTGAATCCTTTTCTGA
4501 GGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTTCTTTCATGGAGTTTAAGATATAGTGTATTTTCC

SapI (4614)

SspI (4671)

SwaI (4685)

4601 CAAGTTTGAAGTACTCTTCTTCTTATGTTTTAAATGCACTGACCTCCACATTCCTTTTTAGTAAAAATTCAGAAAATAATTTAAATACATCAT
4701 TGCAATGAAAATAAATGTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGGAAC
4801 CTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCCTGGTGTACTTGGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGC

4901 CATTATCTCAATGAGCACAAGCAGTCAAGAGCATAGTCAAGATGAGCTCTGACATGCCACAGGGGCTGACCACCCTGATGGATCTGTCCACCTC
121▶ 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 S R D V E
5001 ATCAGAGTAGGGTGCCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCGTTGCTCACAGCAGACCCAATGGCAATGGCTTCCAGCAGACAGTGAAC
88▶ 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 A C V T V
5101 CTGCCAATGTAGGCCTCAATGTGGACAGCAGAGATGATCTCCCGAGTCTTGGTCTGATGGCCGCCCGACATGGTGTCTGTTGCTCCTCATAGAGCATGG
54▶ 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 E Y L M T

XmnI (5252)

5201 TGATCTTCTCAGTGGCGACTCCACCAGCTCCAGATCCTGCTGAGAGATGTTGAAGGCTTTCATGGTGGCCCTCTATAGTGAAGTCTTACTATGC
21▶ I K E T A V E V L E L D Q Q S I N F T K M

AseI (5318)

5301 CGATATACTATGCCGATGATTAATTGTCAAACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTCACTAAACGAGCTCTGCTTATATAGACTCCCA

SpeI (5473)

5401 CCGTACACGCCTACCGCCATTTGCGTCAATGGGGCGAGTTGTTACGACATTTTGGAAAGTCCCGTTGATTTACTAGTCAAAAACAACTCCCATTGAGC
5501 TCAATGGGGTGGAGACTTGGAAATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTAAGTCCAAAACCGCATCATCATGTAATAGCGATGACTA

SnaBI (5601)

5601 ATACGTAGATGACTGCCAAGTAGGAAAGTCCCATAAGGTCATGACTGGGCATAATGCCAGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCGT

NdeI (5706)

5701 ACTTGGCATATGATACTTGATGACTGCCAAGTGGGCGATTACCCTAAATACTCCACCCATTGACGTCAATGGAAAGTCCCTATTGGCGTTACTATG

PacI (5892)

SdaI (5884)

5801 GGAACATACGTCAATTATTGACGTCAATGGGCGGGGTCGTTGGGCGGTGAGCCAGCGGGCCATTTACCGTAAGTTATGTAACGCTGCAGGTTAATTA

BspLU11I (5902)

5901 GAACATGTGAGCAAAAGGCCAGCAAAGGCCAGGAACCGTAAAAAGGCCGCTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAA



6001 AATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTCCCCCTGGAAGCTCCCTCGTGCCTCTCCTGTTCCGACCC

6101 TGCCGTTACCGGATACCTGTCCGCTTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTGCTTCG

ApaLI (6216)

6201 CTCCAAGCTGGGCTGTGTGCACGAACCCCGTTCAGCCCGACCGCTGCGCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTA

6301 TCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCGGTGCTACAGAGTCTTGAAGTGGTGGCCTAACTACGGCTACACTA

6401 GAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGG

6501 TGGTTTTTTTGTGTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTACGGGGTCTGACGCTCAGTGAACGAA

EagI (6652)

PacI (6632) SwaI (6641) **NotI (6651)**

6601 AACTCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATCAGCGGCCCAATAAAATATCTTTATTTTCATTACATCTGTGTGTTGGTTT

6701 TTTGTGTAATCGTAACTAACATACGCTCTCCATCAAACAAAACGAAACAAAACAACTAGCAAATAGGCTGTCCCAGTGAAGTGCAGGTGCCAGA

6801 ACATTTCTCTATCGAA