



PvuI (7)
SgfI (6) 1 GGATCTGCATCGCTCCGGTGCCCGTCAGTGGGCAGAGCGCACATCGCCACAGTCCCGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA
MfeI (82) **EcoNI (96)**
101 GAGAAGTGGCGCGGGTAAACTGGAAAGTGATGCTGTACTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

Psp1406I (203) **HindIII (245)** **Bsu36I (291)**
201 GTGAACGTTCTTTTTCGCAACGGGTTTCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTACCGCGCCCGCCCTACCTGAGGCC
EcoNI (287)
301 GCCATCCACGCGGTTGAGTCGCGTTCTGCCGCTCCCGCCTGTGGTGCCTCTGAAGTGCCTCCGCGCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

NgoMIV (441)
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTGGCTGACCCTGCTTGTCTAACTCTACGCTTTGTTTCGTTT

SphI (560)
501 TCTGTTCTGCGCGGTTACAGATCCAAGCTGTGACCGCGGCTACCTGAGATCACCGGTCAGCATGCCCTCTTCTTTCCGGAAGCGAAACCCAGTGAGGA
KasI (535) **AgeI (552)** 1▶ M P L F F R K R K P S E E
601 GGCTCGAAAACGCTGGAGTACCAGATGTGCTGGCAAAAGAAGCTGGGCAGATGACATTCTCGACATCTCTAAATGTGAGCTCTGAGATTCATT
13▶ A R K R L E Y Q M C L A K E A G A D D I L D I S K C E L S E I P F
701 GGGCTTTTGCACGTGCAAAGTTCTACAGAAAAGGTTGATTGTCCATACAAACCACTCACCTCCCTGCTTCCCAAGTCTGCAGCCTCTTGAGCC
47▶ G A F A T C K V L Q K K V L I V H T N H L T S L L P K S C S L L S

XcmI (806)
801 TTGTCAACCTCAAGTTCTGGATCTCCATGAGAACCAGCTGACAGCCCTTCTGATGACATGGGCGAGCTGACAGTCTGCAGGTATTGAATGTGAAAG
80▶ L V T I K V L D L H E N Q L T A L P D D M G Q L T V L Q V L N V E R
901 AAATCAACTCAGCATCTCCCTCGCTCTATTGGAACTGCTGACGCTCCAGACGCTCAATGAAAAGACAACAGCTGAAGGAGCTTCTGACACCCTG
113▶ N Q L T H L P R S I G N L L Q L Q T L N V K D N K L K E L P D T L

BbrPI (1072)
1001 GGGGAGCTGCGGAGCTGCGGACACTCGACATTAGTGAGAACGAGATTAGAGACTTCCCCAGATGCTGGCGCACGTGCGGACCCTGGAGACGCTGAGCC
147▶ G E L R S L R T L D I S E N E I Q R L P Q M L A H V R T L E T L S

EagI (1154)
1101 TCAACGCCTTGGCAATGGTCTACCCCCACAGAGGTGTGTGGCGCTGGCACTGCGGCGTGCAGCAGTTCCTCTGCAAAGAGTCAAGACTGGACTATTA
180▶ L N A L A M V Y P P P E V C G A G T A A V Q Q F L C K E S G L D Y Y
1201 CCCACCTTCTCAGTACCTGCTGCCAGTCTGGAGCAAGATGGAGCAGAGAACCACCAAGACAGCCCGATGGACCAGCCGATTCTCCAGGGAGGAG
213▶ P P S Q Y L L P V L E Q D G A E N T Q D S P D G P A S R F S R E E

KasI (1376) **BsrBI (1372)**
1301 GCTGAATGGCAGAAATCGGTTCTCCGACTACGAGAAGCGGAAGGAGCAGAAGATGCTGGAGAAGCTGGAGTTCGAGCGGCGCCTGGACCTTGGGCAGCGGG
247▶ A E W Q N R F S D Y E K R K E Q K M L E K L E F E R R L D L G Q R
1401 AGCAGCTGAGCTACTGCAGCAGAGCCACAGCCACAAGGACGAGATCTGCAGACGGTCAAGCAGGAGCAGACACGGCTAGAGCAGGACCTGAGCGAGCG
280▶ E H A E L L Q Q S H S H K D E I L Q T V K Q E Q T R L E Q D L S E R

Eco47III (1502) **BsrBI (1519)**
1501 CCAGCGTGTCTGGATGCAGAGCGGCGAGCTCAAGCAGACGGAGCAGATCGCCAGCCGATTAGAGACTCCTGCAGGACAAC
313▶ Q R C L D A E R Q Q L Q E Q L K Q T E Q S I A S R I Q R L L Q D N

BsaBI (1668) **Bsu36I (1698)**
1601 CAGAGGCAAAAGAAGTCTGAGATTCTGAAATCGCTGGAGAATGAGAGAATAAGAATGGAGCAGTTGATGTCCATACCCAGGAGGAGACAGAGAACC
347▶ Q R Q K K S S E I L K S L E N E R I R M E Q L M S I T Q E E T E N

NgoMIV (1757)
1701 TCAGGCGAGTGCAGTGCAGCAGATGCTGACGGAGAGCTGTAAGAGCCGGCTCATCCAGATGGCCTATGAGTCTCAGAGGCAGAGCCT
380▶ L R Q R E I A A A M Q Q M L T E S C K S R L I Q M A Y E S Q R Q S L
1801 GGGCAGCAGGCTGTTCCAGCATGGCTGAAATGGACAAGCGGTTCCAGCAGATTCTGTCTTGGCAGCAGATGGATCAGAACAAGCCATCAGCCAGATC
413▶ A Q Q A C S S M A E M D K R F Q Q I L S W Q Q M D Q N K A I S Q I

NsiI (1960)
1901 CTTCAGGAGAGTGAATGCAGAAGGCTGCCTTCGAGGCTCTCCAGGTGAAGAAGGACCTGATGCATCGGCAGATCAGGAACCAGATTAGGCTAATAGAAA
447▶ L Q E S V M Q K A A F E A L Q V K K D L M H R Q I R N Q I R L I E

Eco47III (2081)
2001 CTGAGTTACTGCAGTGCACAGCTGGAGTTAAAGAGGAAGTCCCTGGACACAGAGACGTTTCCAGGAGATGGTCTCAGAGCAGCCTGGGCACCTAGCAA
480▶ T E L L Q L T Q L E L K R K S L D T E T L Q E M V S E Q R W A L S N

NcoI (2148)
2101 CCTGCTCCAGCAGCTCCTGAAAGAGAAGAAGCAGCGGGAAGAGGAACTCCATGGCATCCTGGCGGAATTAGAGGCCAAGAGCGAAACGAAGCAGGAAAT
513▶ L L Q Q L L K E K K Q R E E L H G I L A E L E A K S E T K Q E N
2201 TACTGGCTCATCCAGTACCAACGCTTTTAAACCAGAAGCCTTTGCTTGAACCTGCAGGAAGAAGGATGGAGCAGCGCTGGTGGCCTGCTGTTGG
547▶ Y W L I Q Y Q R L L N Q K P L S L K L Q E E G M E R R L V A L L V

BglII (2379)
2301 AGCTTTCTGCAGAGCACTACCTGCCCTCTTCGCCACCACCGCATCTCACTGGACATGCTGAGCCGAATGAGCCCCGGAGATCTGGCTAAGGTGGGCGT
580▶ E L S A E H Y L P L F A H H R I S L D M L S R M S P G D L A K V G V

NheI (2448) **AvrII (2458)** **XhoI (2485)**
2401 CTCAGAAGCAGGCTGCAACATGAGATCCTACGGAGAGCCAGGACCTGCTAGTGTGCTAGGTTCCAGCCAGAGTTGAAACCCTCGAGAATGAGGTC
613▶ S E A G L Q H E I L R R A Q D L L A V P R V Q P E L K P L E N E V

XhoI (2509) **XmaI (2528)**
2501 CTTGGTGCCTCGAGCCCCACAGCTCCCGGGAGCTCCAAGAGTCAAGTGCAGCCGCTCCGCCCCCCAGCTGAACTGGACATGCCGACCTCAGAGTGTG
647▶ L G A L E P P T A P R E L Q E S V R P S A P P A E L D M P T S E C

2601 TTGTGTGCCTGGAACGTGAAGCCAGATGGTCTTCCTCACCTGTGGCCACGTCTGCTGTCTGAGCAGTGCTGCCAGCCTCTGCGCACCTGCCACTGTG
680▶ **V V C L E R E A Q M V F L T C G H V C C C Q Q C C Q P L R T C P L C**
BbsI (2629) MscI (2643) FspI (2681)

2701 CCGCCAGGAGATCTCCAGCGCCTCCGGATCTACCACAGCAGTGAAGGCACTAGTCTAGCTGCCCAGACATGATAAGATACTTGTAGGTTTGACAA
713▶ **R Q E I S Q R L R I Y H S S •**
BglIII (2708) BspEI (2723) SpeI (2750) MscI (2761)

2801 ACCACAAC TAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAACAAGTTAACA
HpaI (2893)

2901 ACAACAATTGCATTCAATTTATGTTTCAGGTTTCAGGGGAGGTTGGGAGGTTTTTAAAGCAAGTAAAACTCTACAAATGTGGTATGGAATCTAAAA
MfeI (2904) EcoRI (2989)

3001 TACAGCATAGCAAAACTTAACTCCAAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGC
EcoRI (2989)

3101 ATTAGCTGTTTGCAGCCTCACCTCTTTTTCATGGAGTTAAGATATAGTGTATTTCCCAAGGTTTGAAGCTTCTCATTCTTTATGTTTAAATGCA
SapI (3171)

3201 CTGACCTCCCACATTCCTTTTATGAAATATTCAGAAATAATTTAAATACATCATTGCAATGAAAAAATGTTTTTTATTAGGCAGAATCCAGATGC
SspI (3228) SwaI (3242)

3301 TCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGACTTAGGGAACAAAGGAACCTTTAATAGAAATTTGGACAGCAAGAAAGCGAGCTTCTAGCTTT
141 ◆ •

3401 AGTTCCTGGTGTACTTGGAGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCCATTCTCAATGAGCACAAAGCAGTCAGGAGCATAGTCAGA
140◆ **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**
BstXI (3532)

3501 GATGAGCTCTGTGCACATGCCACAGGGGTGACACCCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCTGACAGCCACAATGGTGTCAAAGTCC
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**

3601 TTCTGCCCGTTGCTCACAGCAGACCCAATGGCAATGGCTTTCAGCACAGACAGTGACCTGCAATGTAGGCCTCAATGTGGACAGCAGAGATGATCTCCC
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**

3701 CAGTCTTGGTCTGATGGCCGCCGACATGGTCTTGTGTCCCTCATAGAGCATGGTGTCTTCTCAGTGGCGACCTCCACCAAGCTCCAGATCCTGCTG
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**

3801 AGAGATGTTGAAGGTCTTCAATGTTGGCCCTCTATAGTGTGATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAAACAGCGTGGATG
7◆ **S I N F T K M**
BbsI (3813) AseI (3875)

3901 CGGTCTCCAGCTTACTGACGGTTCACTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCCTACCGCCATTTCGCTCAATGGGGGGAGTTG
SpeI (4030)

4001 TTACGACATTTTGAAAGTCCCCTTGTATTAAGTAGCAAAAACAACTCCATTGACGTC AATGGGGTGAGACTTGGAAATCCCCGTGAGTCAAACCGCT
SnaBI (4158)

4101 ATCCACGCCCAATGATGTACTGCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGTACTGCCAAGTAGGAAAGTCCCATAGGTCAT
NdeI (4263)

4201 GTACTGGCATAATGCCAGGCGGGCATTACCCTGATTGACGTC AATAGGGGGCGTACTTGGCATATGATACACTTGATGTACTGCCAAGTGGGCAGTT
NdeI (4263)

4301 TACCGTAAATACTCCACCAATTGACGTC AATGGAAAGTCCTATTGGCGTTACTATGGGAACATACGTCAATATTGACGTC AATGGCGGGGGTCTTTG
PacI (4449) BspLU11I (4459)

4401 GCGGTGAGCCAGGCGGGCCATTTACCGTAAGTTATGTAACGCCTGCAGGTTAAATAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAA
BspLU11I (4459)

4501 AAGGCCGCTGTGTGGCCTTTTCCATAGGCTCCGCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAGAGGTGGCAACCCGACAGGACTAT
BspLU11I (4459)

4601 AAAGATACCAGGCTTTCCCTGGAAGCTCCCTGTGCGCTCTCCTGTTCCGACCCTGCCGTTACCGGATACCTGTCCGCTTTCTCCTTCGGGAAG
ApaLI (4773)

4701 CGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTAGTTCTGGTGTAGTGCCTCGCTCCAAGCTGGGTGTTGACGCAACCCCCCTTCCAGCCGAC
ApaLI (4773)

4801 CGCTGCGCCTTATCCGGTAACTATCGTCTTGTGTTGACTCAACCCTAAGACAGACTTATCGCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGA
ApaLI (4773)

4901 GGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCTAACTACGGCTACTAGAAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTAC
ApaLI (4773)

5001 CTTCCGAAAAAGAGTTGGTAGCTCTTGTATCCGCAACAAACCACCGCTGTTAGCGTGGTTTTTTTTGTTTGAAGCAGCAGATTACGCCAGAAAAAAA
ApaLI (4773)

5101 GGATCTCAAGAAGATCCTTTGATCTTTTACGGGGTCTGACGCTCAGTGAACGAAAACTCACGTTAAGGGATTTTGTGTCATGGCTAGTTAATTAACAT
PacI (5189) SwaI (5198)

5201 TTAATCAGCGGCCGCAATAAAAATATCTTTATTTTTCATTACATCTGTGTTGGTTTTTTTGTGTTGAATCGTAACTAACATACGCTCTCCATCAAAAACAA
EagI (5209)

5301 ACGAAAACAAACAACTAGCAAAAATAGGCTGTCCCGAGTCAAGTGCAGTGGCAAGAACATTTCTCTATCGAA
NotI (5208)