



PvuI (7)
SgfI (6) 1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA
 MfeI (82)

101 GAGAAAGTGGCGCGGGTAAACTGGAAAGTGTATGTCGTACTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

Psp1406I (203) 201 GTGAACGTTCTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCCTTACGCGCCCGCCCTACCTGAGGCC
 HindIII (245)
Bsu36I (291)

301 GCCATCCACGCGGGTTGAGTCGCGTTTCTGCCGCCTCCCGCTGTGGTGCCTCCTGAAGTGCCTCCGCGCTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCTCAACTCTACGTCTTTGTTTCGTTT
 NgoMIV (441)

501 TCTGTTTGTCCGCGCTTACAGATCCAAGCTGTGACCGCGCCCTACCTGAGATCACCGGTGAGCATGCCTGTGCCCTGGTCTTGTCTGCTTGGCACTGGG
 SphI (560)
AgeI (552)

1▶ M P V P W F L L S L A L G

601 CCGAAGCCAGTGGTCTTTCTCTGGAGAGCTTGTGGGCGCTCAGGACGCTACCCACTGCTCTCCGGTGTGAGTCTGGAACCTGGGGAGACGAGGAAAGG
 Bsu36I (640)

13▶ R S P V V L S L E R L V G P Q D A T H C S P V S L E P W G D E E R
 701 CTCAGGGTTCAGTTTTGGCTCAGCAAAGCCTTAGCCTGGCTCCTGCTACTGCTGCCACTGCCAGAAGTCCCTGTCTGGTCTGTCTGGTGTGATGGTA
 47▶ L R V Q F L A Q Q S L S L A P V T A A T A R T A L S G L S G A D G
 801 GAAGAGAAGAACGGGGAAGGGGCAAGAGCTGGGTCTGTCTTTCTGGGAGGGTCTGGGAATACGGAGCCCCAGAAAAAGGGCCTCTCCTGCCGCTCTG
 80▶ R R E E R G R G K S W V C L S L G G S G N T E P Q K K G L S C R L W
 901 GGACAGTGACATACTCTGCCTGGGACATCTGCCTGCTCCGGGCCCGTGTGGCGCTACGCACCTGCAGACAGAGCTGGTGTGAGGTGCCAG
 113▶ D S D I L C L P G D I V P A P G P V L A P T H L Q T E L V L R C Q

1001 AAGGAGACCGACTGTGACCTCTGTCTGCGTGTGGCTGTCCACTTGGCCGTGCATGGGCACTGGGAAGAGCCTGAAGATGAGGAAAAGTTTGGAGGAGCAG
 PshAI (1015)

147▶ K E T D C D L C L R V A V H L A V H G H W E E P E D E E K F G G A

1101 CTGACTCAGGGGTGGAGGAGCCTAGGAATGCCTCTCTCCAGGCCAAGTCTGCTCTCCTTCCAGGCCTACCCTACTGCCGCTGCGTCTGTGAGGT
 AvrII (1120)
StuI (1163)

180▶ A D S G V E E P R N A S L Q A Q V V L S F Q A Y P T A R C V L L E V

1201 GCAAGTGCCTGCTGCCCTTGTGAGTGTGGTGTGGGCTCTGTGGTATATGACTGCTTCGAGGCTGCCCTAGGAGTGAGGTACGAATCTGGTCC
 AvrII (1272)

213▶ Q V P A A L V Q F G Q S V G S V V Y D C F E A A L G S E V R I W S
 1301 TATACTCAGCCCAGGTACGAGAAGGAACCAACACACACAGCAGCTGCCTGACTGCAGGGGGCTCGAAGTCTGGAACAGCATCCCGAGCTGTGGGCC
 247▶ Y T Q P R Y E K E L N H T Q Q L P D C R G L E V W N S I P S C W A
 1401 TGCCTGGCTCAACGTGTGAGCAGATGGTGAACAGTGCATCTGGTCTGAATGTCTCTGAGGAGCAGCACTTCGGCCTCTCCCTGTACTGGAATCAGGT
 280▶ L P W L N V S A D G D N V H L V L N V S E E Q H F G L S L Y W N Q V

1501 CCAGGGCCCCAAAACCCCGTGGCACAAAACCTGACTGGACCGCAGATCATTACCTTGAACCACACAGACCTGGTCCCTGCTGTATTACAGGTG
 XcmI (1510)

313▶ Q G P P K P R W H K N L T G P Q I I T L N H T D L V P C L C I Q V
 1601 TGGCCTCTGGAACCTGACTCCGTTAGGACGAACATCTGCCCTTACGGGAGGACCCCCGCGCACACCAGAACCTCTGGCAAGCCGCCGACTCGCAGCTGC
 347▶ W P L E P D S V R T N I C P F R E D P R A H Q N L W Q A A R L R L

1701 TGACCCTGCAGAGCTGGCTGCTGGACGCACCGTGTCTGCTGCCCGCAGAAGCGGCACTGTGCTGGCGGGTCCGGGTGGGGACCCTGCCAGCCACTGGT
 SmaI (1778)

380▶ L T L Q S W L L D A P C S L P A E A A L C W R A P G G D P C Q P L V

1801 CCCACCGTTTTCTGGGAGAAGCTCACTGTGGACAAGTTCTCGAGTTCCATTGCTGAAAGGCCACCCTAACCTCTGTGTTACAGGTGAACAGCTCGGAG
 XhoI (1840)

413▶ P P L S W E N V T V D K V L E F P L L K G H P N L C V Q V N S S E
 1901 AAGCTGCAGCTGCAGGAGTGTCTTGGGCTGACTCCCTGGGCGCTCTCAAAGACGATGTGCTACTGTTGGAGACAGAGGCCCCAGGACAACAGATCCC
 447▶ K L Q L Q E C L W A D S L G P L K D D V L L L E T R G P Q D N R S

2001 TCTGTGCCTTGAACCCAGTGGCTGTACTTCACTACCCAGCAAAGCCTCCACGAGGGCAGCTCGCCTTGGAGAGTACTTACTACAAGACCTGCAGTCAGG
 ScaI (2072)

480▶ L C A L E P S G C T S L P S K A S T R A A R L G E Y L L Q D L Q S G

2101 CCAGTGTCTGCAGCTATGGGACGATGACTTGGGAGCGCTATGGGCTGCCCATGGACAATAACATCCACAAGCGCTGGGCCCTCGTGTGGCTGGCCTGC
 Eco47III (2133)
NcoI (2150)
Eco47III (2171)

513▶ Q C L Q L W D D D L G A L W A C P M D K Y I H K R W A L V W L A C

2201 CTACTCTTTGCCGCTGCGCTTTCCCTCATCCTCTCTCAAAAAGGATCACGCGAAAGGGTGGCTGAGGCTCTTGAACAGGACGTCGGGCGGGCGG
 EagI (2297)
BsrBI (2286)
NotI (2296)

547▶ L L F A A A L S L I L L L K K D H A K G W L R L L K Q D V R S G A
 2301 CCGCCAGGGGCGCGCGCTCTGCTCTACTCAGCCGATGACTCGGGTTTCGAGCGCTGTGGGCGCCCTGGCGTCCGCCCTGTGCCAGCTGCCGCT
 580▶ A A R G R A A L L Y S A D D S G F E R L V G A L A S A L C Q L P L

2401 GCGCGTGGCCGTAGACCTGTGGAGCCGCTGTAAGTGAAGCGCGAGGGCCCGTGGCTTGTGTTTACGCGCAGCGCGCCAGACCTGCAGGAGGGCGG
 BssHII (2438)
SdaI (2484)

613▶ R V A V D L W S R R E L S A Q G G P V A W F H A Q R R Q T L Q E G G
 2501 GTGGTGGTCTTGTCTTCTCCCGGTGCGGTGGCGCTGTGCAGCGAGTGGCTACAGGATGGGGTGTCCGGGCGCGGGCGCACGCCCGCACGACGCT
 647▶ V V V L L F S P G A V A L C S E W L Q D G V S G P G A H G P H D A
 2601 TCCGCGCCTGCTCAGCTGCGTGTGCCGACTTCTTGCAGGGCGGGCGCCCGCAGCTACGTGGGGCCTGCTTGCACAGGCTGCTCCACCCGGAGCG
 680▶ F R A S L S C V L P D F L Q G R A P G S Y V G A C F D R L L H P D A

2701 CGTACCCGCCCTTTCCGACCGTGGCGTCTTCACTGCTCCCAACTGCCAGACTTCTGGGGCCCTGCAGCAGCTCGGCCCGCGTTCCGGG
 BbsI (2728)

713▶ V P A L F R T V P V F T L P S Q L P D F L G A L Q Q P R A P R S G

BsrBI (2813)
2801 CGGCTTCAAGAGAGAGCGGAGCAAGTGTCCCGGGCCCTTCAGCCAGCCCTGGATAGCTACTTCCATCCCCGGGGACTCCCGCGCCGGGACGTGGGGTGG
747▶ R L Q E R A E Q V S R A L Q P A L D S Y F H P P G T P A P G R G V

MscI (2976)
NheI (2970)
2901 GACCAGGGGCGGGACCTGGGGCGGGGACGGGACTTAAATAAAGGCAGACGCTGTTTTCTACCCATGTGGCTAGCTGCCAGACATGATAAGATACATT
780▶ G P G A G P G A G D G T •

3001 GATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCA

HpaI (3108) MfeI (3119)
3101 AATAACAAGTTAAACAACAACAATTGCATTCATTTTATGTTTCAGGTTCCAGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAAACTCTACAAATGTGG

EcoRI (3204)
3201 TATGGAATTCTAAAATACAGCATAGCAAACCTTAACTCCAAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGG
3301 CTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTCTTTCATGGAGTTAAGATATAGTGTATTTCCCAAGGTTTGAAGTACTGCTCTTCATTTCTT

SspI (3443) SwaI (3457)
3401 TATGTTTTAAATGCACTGACCTCCACATTCCCTTTTTAGTAAATATTCAGAAATAATTTAAATACATCATTGCAATGAAAAAATGTTTTTTATTAG
3501 GCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGGAACCTTTAATAGAAATTGGACAGCAAGAAAG
3601 CGAGCTTCTAGCTTTAGTTCCTGGTGTACTTGAGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCCATTCTCTCAATGAGCACAAAGCAGTC
141▶ • 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

SacI (3718) BstXI (3747)
3701 AGGAGCATAGTCAGAGATGAGCTCTCTGCACATGCCACAGGGGCTGACCACCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCCTGACAGCCACA
112▶ P A Y D S 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

StuI (3882)
3801 ATGGTGTCAAAGTCTTCTGCCGTTGCTCACAGCAGACCCAATGGCAATGGCTTCAGCACAGACAGTACCCTGCCAATGTAGGCCTCAATGTGGACAG
78▶ I T D F D 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
3901 CAGAGATGATCTCCCAGTCTTGGTCTGATGGCCGCCCGACATGGTCTTGTCTCATAGAGCATGGTATCTTCTCAGTGGCAGCTCCACCAG
45▶ S I I E G 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

BspHI (4032)
BbsI (4028)
XmnI (4024) AseI (4090)
4001 CTCCAGATCCTGCTGAGAGATGTTGAAGTCTTCATGATGGCCCTCTATAGTGAAGTCTATTATACTATGCCGATATACTATGCCGATGATTAATTGTC
12▶ E L D Q Q S I N F T K M

SacI (4147)
4101 AAACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTCACTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCCTACCGCCATTGCGTC

SpeI (4245)
4201 AATGGGGCGGAGTTGTTACGACATTTGGAAAGTCCCGTTGATTTACTAGTCAAACAACTCCATTGACGTCAATGGGGTGGAGACTTGGAAATCCCC

SnaBI (4373)
4301 GTGAGTCAAACCGCTATCCACGCCATTGATGTAAGTCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGACTGCCAAGTAGGAAA

NdeI (4478)
4401 GTCCATAAGGTCATGTAAGTGGCATAATGCCAGGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCGTACTTGGCATATGATACACTTGTGTAAGT
4501 GCCAAGTGGGCGAGTTTACCGTAAATACTCCACCCATTGACGTCAATGGAAAGTCCCTATTGGCGTTACTATGGGAACATACGTCAATATTGACGTCAATG

SdaI (4656) PacI (4664) BspLU11I (4674)
4601 GCGGGGGTCTGTTGGCGGTGAGCCAGGCGGGCCATTTACCGTAAAGTATGTAACGCTGCAGGTTAATAAGAACATGTGAGCAAAGGCCAGCAAAG
4701 GCCAGAACCGTAAAGGCCGCGTGTGCGGTTTTTCCATAGGCTCCGCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAGAGGTGGCGAA
4801 ACCCGACAGGACTATAAAGATACCAGGCGTTTTCCCTGGAAGCTCCCTCGTGCCTCTCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCTT

ApaI (4988)
4901 TCTCCCTTCGGGAAGCGTGGCGTTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTGTTGCTCCAAGCTGGGCTGTGTGCACGAACCC
5001 CCCGTTGAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGTGTTGAGTCCAAACCCGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACA
5101 GGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTCTTGAAGTGGTGGCTAACTACGGCTACACTAGAAGAAGTATTTGGTATCTGCGCTCT
5201 GCTGAAGCCAGTTACCTTCGAAAAAGAGTTGGTAGCTCTTATCGGCAACAAACCCGCTGGTAGCGGTGTTTTTTGTTTGAAGCAGCAGATT
5301 ACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTACGGGGTCTGACGCTCAGTGGAACGAAAACCTCACGTTAAGGGATTTTGGTCATGG

EagI (5424)
PacI (5404) SwaI (5413) NotI (5423)
5401 CTAGTTAATTAACATTTAAATCAGCGGCCCAATAAAATATCTTTATTTTATTACATCTGTGTGTTGTTTTTTGTGTGAATCGTAACTAACATACGCT
5501 CTCCATCAAACAAACGAAACAAACAAACTAGCAAATAGGCTGTCCCGAGTGAAGTGCAGGTGCCAGAACATTTCTCTATCGAA