



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

HindIII (245)
Psp1406I (203) 201 GTGAACGTTCTTTTTCGCAACGGGTTTCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTACAGCGCCCGCCGCCCTACCTGAGGCC
PvuII (239)
301 GCCATCCACGCGGTTGAGTGCAGTTCGCCGCTCCCGCCTGTGGTGCCTCTGAAGTGCCTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC
Bsu36I (291)

NgoMIV (441)
401 GGGCCTTTGTCCGGCGCTCCCTTGGAGCCTACCTAGACTCAGCGGCTCTCCACGCTTTGCTGACCCTGTTGCTCAACTCTACGCTTTTGTTCGTTT

BspLU11I (560)
AgeI (552) 501 TCTGTTCTGCGCGGTTACAGATCCAAGCTGTGACCGCGGCTACCTGAGATCACCGGTCAACATGTTGACGTTGCAGACTGGCTAGTCAAGCCTTGT
1▶ M L T L Q T W L V Q A L F

XbaI (633) 601 TATTTTCTCACCCTGAATCTACAGTGAACCTTAGATCCATGTGGTTATATCAGTCTGAATCTCCAGTTGTACAATTCATTCTAATTTACTGCA
13▶ I F L T T E S T G E L L D P C G Y I S P E S P V V Q L H S N F T A
Bsu36I (784)
701 GTTTGTGTCTAAAGGAAAAATGTATGGATTATTTTCATGTAATGCTAATTACATTGTCTGAAAAACAAACATTTTACTATTCTTAAGGAGCAATATA
47▶ V C V L K E K C M D Y F H V N A N Y I V W K T N H F T I P K E Q Y

SspI (853) 801 CTATCATAAACAGAACAGCATCCAGTGTACCTTTACAGATATAGCTTCATTAATATTCAGCTCACTTGCAACATTCTTACATTCGGACAGCTTGAACA
80▶ T I I N R T A S S V T F T D I A S L N I Q L T C N I L T F G Q L E Q
901 GAATGTTTATGGAATCACAATAATTTACAGGCTTGCCTCCAGAAAAACCTAAAAATTTGAGTTGCATTGTGAACGAGGGGAAAGAAAATGAGGTGTGAGTGG
113▶ N V Y G I T I I S G L P P E K P K N L S C I V N E G K K M R C E W
1001 GATGGTGGAAAGGAAACACACTTGGAGACAAACTTCACTTTAAAATCTGAATGGGCAACACACAAGTTTCTGATTGCAAAGCAAACCTGACACCCCA
147▶ D G G R E T H L E T N F T L K S E W A T H K F A D C K A K R D T P

BstAPI (1159) 1101 CCTCATGCACTGTTGATTATTCTACTGTGATTTTGTCAACATTGAAGTCTGGGTAGAAGCAGAGAATGCCCTTGGGAAGTTACATCAGATCATATCAA
180▶ T S C T V D Y S T V Y F V N I E V W V E A E N A L G K V T S D H I N
1201 TTTGATCCTGTATATAAAGTGAAGCCCAATCCGCCACATAATTTATCAGTGATCAACTCAGAGGAAGTGTCTAGTATCTTAAAATTGACATGGACCAAC
213▶ F D P V Y K V K P N P P H N L S V I N S E E L S S I L K L T W T N
1301 CCAAGTATTAAGAGTGTATAATACTAAAAATATAACATTCAATATAGGACCAAGATGCCTCAACTTGGAGCCAGATTCTCCTGAAGACACAGCATCCA
247▶ P S I K S V I I L K Y N I Q Y R T K D A S T W S Q I P P E D T A S
1401 CCCGATCTTCATTCTGTTCAAGACCTTAAACCTTTACAGATAATGTGTTTAGGATTCTGATGAAGGAAGTGGTAAGGGATACTGGAGTACTG
280▶ T R S S S F T V Q D L K P F T E Y V F R I R C M K E D G G Y W S D W

BstXI (1549) 1501 GAGTGAAGAAGCAAGTGGGATCACCATGAAGATAGACCATCTAAAGCACCAAGTTTCTGGTATAAAAATAGATCCATCCATACTCAAGGCTACAGA
313▶ S E E A S G I T Y E D R P S K A P S F W Y K I D P S H T Q G Y R T

BsaBI (1676) 1601 GTACAACCTGTTGGAAGACATTGCCTCCTTTTGAAGCAATGGAAAAATCTTGGATTATGAAGTACTCACAAGATGGAATCAGATTTACAAAATT
347▶ V Q L V W K T L P P F E A N G K I L D Y E V T L T R W K S H L Q N

BsaBI (1741) 1701 ACACAGTTAATGCCAAAACTGACAGTAAATCTCACAATGATCGTATCTAGCAACCTAACAGTAAGAAATCTTGGTGGCAATCAGATGGCAGCTGT
380▶ Y T V N A T K L T V N L T N D R Y L A T L T V R N L V G K S D A A V
PvuII (1793)
1801 TTTAACTATCCCTGCCTGTGACTTTCAAGTACTACCCTGTAATGGATCTTAAAGCATTCCCAAAGATAACATGCTTTGGGTGGAATGGACTACTCCA
413▶ L T I P A C D F Q A T H P V M D L K A F P K D N M L W V E W T T P

Acc65I (1984) 1901 AGGGAATCTGTAAGAAATATACTTGAAGTGGTGTGTTATCAGATAAAGCACCTGTATCACAGACTGGCAACAAGAAGATGGTACCCTGCATCGCA
447▶ R E S V K K Y I L E W C V L S D K A P C I T D W Q Q E D G T V H R
2001 CCTATTTAAGAGGAACTTAGCAGAGAGCAAATGCTATTTGATAACAGTACTCCAGTATATGCTGATGGACCAGGAAGCCCTGAATCCATAAAGGCATA
480▶ T Y L R G N L A E S K C Y L I T V T P V Y A D G P G S P E S I K A Y

EcoO109I (2124) 2101 CCTTAAACAAGCTCCACCTTCCAAGGACCTACTGTTCCGACAAAAAAGTAGGGAAAAACGAAGCTGTCTTAGAGTGGGACCAACTTCTGTTGATGTT
513▶ L K Q A P P S K G P T V R T K K V G K N E A V L E W D Q L P V D V
2201 CAGAATGGATTTATCAGAAATATACTATATTTATAGAACCATCATTGGAAATGAAACTGCTGTGAATGTGGACTCTTCCCA CACAGAATATACATTG
547▶ Q N G F I R N Y T I F Y R T I I G N E T A V N V D S S H T E Y T L

EcoRI (2374) 2300 TCCTCTTTGACTAGTGACACATTGTACATGGTACGAATGGCAGCATAACAGATGAAGGTGGGAAGGATGGTCCAGAATTCACCTTTTACTACCCCAAAGT
580▶ S S L T S D T L Y M V R M A A Y T D E G G K D G P E F T F T T P K
2400 TTGCTCAAGGAGAAATTAAGCCATAGTCGTGCCTGTTTGGCTTAGCATTCTATTGACAACTTCTGGGAGTCTGTTCTGCTTTAATTAAGCGAGACCT
613▶ F A Q G E I E A I V V P V C L A F L L T T L L G V L F C F N K R D L

BstEII (2558) 2500 AATTAATAAACACATCTGGCCTAATGTTCCAGATCCTTCAAAGAGTCAATTTGCCAGTGGTCACTCACACTCTCCAAGGCACAATTTAATTCAAAA
646▶ I K K H I W P N V P D P S K S H I A Q W S P H T P P R H N F N S K

BglII (2679) 2600 GATCAATGTATTAGATGGCAATTTCACTGATGTAAGTGTGGAAATAGAAGCAATGACAAAAAGCCTTTTCCAGAAGATCTGAAATCATTGGACC
680▶ D Q M Y S D G N F T D V S V V E I E A N D K K P F P E D L K S L D

2700 TGTTCAAAAAGGAAAAAATTAATACTGAAGGACACAGCAGTGGTATTGGGGGCTTTCATGCATGTCATCTTCTAGGCCAAGCATTCTAGCAGTGATGA
713▶ L F K K E K I N T E G H S S G I G G S S C M S S S R P S I S S S D E
2800 AAATGAATCTTCAAAAACACTTCGAGCACTGTCAGTATTCTACCGTGGTACACAGTGGCTACAGACACCAAGTTCCGTCAGTCCAAGTCTTCTCAAGA
746▶ N E S S Q N T S S T V Q Y S T V V H S G Y R H Q V P S V Q V F S R
BsrBI (2932) BglII (2943)
2900 TCCGAGTCTACCCAGCCCTTGTAGATTGAGAGGAGCGGCCAGAAGATCTACAATTAGTAGATCATGTAGATGGCGGTGATGGTATTTTGCCAGGCAAC
780▶ S E S T Q P L L D S E E R P E D L Q L V D H V D G G D G I L P R Q
ScaI (2999)
3000 AGTACTTCAAACAGAAGTGCAGTCAGCATGAATCCAGTCCAGATATTTACATTTTGAAGGTCAAAGCAAGTTTCATCAGTCAATGAGGAAGATTTTGT
813▶ Q Y F K Q N C S Q H E S S P D I S H F E R S K Q V S S V N E E D F V
BstAPI (3178)
3100 TAGACTTAAACAGCAGATTTGAGATCATATTTCAATCCTGTGGATCTGGGCAAATGAAAATGTTTCAGGAAGTTTCTGACAGATGCTTTTGGTCCA
846▶ R L K Q Q I S D H I S Q S C G S G Q M K M F Q E V S A A D A F G P
SphI (3260)
3200 GGTACTGAGGGACAAGTAGAAAGATTTGAAACAGTTGGCATGGAGGCTGCGACTGATGAAGGCATGCCTAAAAGTTACTTACCACAGACTGTACGGCAAG
880▶ G T E G Q V E R F E T V G M E A A T D E G M P K S Y L P Q T V R Q
MscI (3360)
NheI (3354)
3300 GCGGCTACATGCCTCAGTGAAGGACTAGTAGTTCCTGCTACAACCTCAGCAGTACGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGACAA
913▶ G G Y M P Q •
HpaI (3492)
3400 ACCACAAC TAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAGTTAA
MfeI (3503) EcoRI (3588)
3500 ACAACAATTGCATTCATTTTATGTTTCAGGTTTCAGGGGAGGTGTGGGAGTTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGAAATCTAAAA
3600 TACAGCATAGCAAACTTTAACCTCAAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGC
SapI (3770)
3700 ATTAGCTGTTTGCAGCCTCACCTCTTTTCATGGAGTTTAAAGATATAGTGTATTTTCCCAAGTGTGAAGTACTAGCTCTTCATTTCTTTATGTTTTAAATGCA
SspI (3827) SwaI (3841)
3800 CTGACCTCCACATTCCCTTTTTAGTAAATATTCAGAAATAATTTAAATACATCATTGCAATGAAAAATAATGTTTTTTATTAGGCAGAATCCAGATGC
EcoO109I (3902)
3900 TCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGGAACCTTTAATAGAATTTGGACAGCAAGAAAGCGAGCTTCTAGCTTT
4000 AGTTCCTGGTGTACTTGAGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCCATTCTCAATGAGCACAAAGCAGTCAGGAGCATAGTCAGA
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 P A Y D S
SacI (4102) BstXI (4131)
4100 GATGAGCTCTCTGCATGCCACAGGGGCTGACCACCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCCTGACAGCCACAATGGTGTCAAAGTCC
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
StuI (4266)
4200 TTCTGCCGTTGCTCACAGCAGACCCAATGGCAATGGCTTCAGCACAGACAGTACCCTGCCAATGTAGGCCTCAATGTGGACAGCAGAGATGATCTCCC
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
4300 CAGTCTTGGTCTGATGGCCGCCGACATGGTGTGTTGTCCTCATAGAGCATGGTGTCTTCTCAGTGGCGACCTCCACCAGCTCCAGATCTGCTG
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
XmnI (4408) AseI (4474)
4400 AGAGATGTTGAAGGTCTTCATGTTGGCCCTCTATAGTGAGTCGTATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACAGCGTGGATG
74▶ S I N F T K M
SacI (4531)
4500 GCGTCTCCAGCTTATCTGACGGTCACTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCCTACCGCCATTTGCGTCAATGGGGCGGAGTTG
4600 TTACGACATTTTGGAAAGTCCCGTTGATTTACTAGTCAAACAAACTCCATTGACGTCAATGGGGTGGAGACTTGAAATCCCCTGAGTCAAACCGCT
SnaBI (4757)
4700 ATCCACGCCATTGATGACTGCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGACTGCCAAGTAGGAAAGTCCATAAGGTCAT
NdeI (4862)
4800 GTACTGGGCATAATGCCAGGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCTACTTGGCATATGATACTTGTACTGCAAGTGGGCAGTT
4900 TACCATAAATACTCCACCATTGACGTCAATGGAAAGTCCCTATTGGCGTTACTATGGGAACATACGTCAATTATTGACGTCAATGGGCGGGGGTCTGTTGG
PacI (5048) SdaI (5040) BspLU11I (5058)
5000 GCGGTCAGCCAGGCGGGCCATTTACCGTAAGTTATGTAACGCTGCAGGTTAAATAAGAACATGTGAGCAAAGGCCAGCAAAGGCCAGGAACCGTAAA
5100 AAGGCCGCTTGTGGCGTTTTTCCATAGGCTCCGCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAGAGGTGGCAAACCCGACAGGACTAT
5200 AAAGATACCAGGCGTTTTCCCCTGGAAGCTCCCTCGTGCCTCTCTGTTCCGACCCTGCCGTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGAAG
PpaI (5372)
5300 CGTGGCGCTTCTCATAGCTCACGCTGAGGTATCTCAGTTCGGTGTAGGTCTGCTCCAAGCTGGGCTGTGTGCACGAACCCCGTTCCAGCCGAC

5400 CGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGA

5500 GGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTAC

5600 CTTCGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAACCACCGCTGGTAGCGGTGGTTTTTTTGGTTGCAAGCAGCAGATTACGCGCAGAAAAAAA

5700 GGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGAACGAAAACCTCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACAT

PacI (5788) SwaI (5797)

EagI (5808)

NotI (5807)

5800 TTAAATC AGCGGCCGCAATAAAATATCTTTATTTTCATTACATCTGTGTGTTGGTTTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAAACAAA

5900 ACGAAACAAAACAACTAGCAAATAGGCTGTCCCCAGTGCAAGTGCAAGTGCCAGAACATTTCTCTATCGAA