



150

PvuI (7) SgfI (6) MfeI (82)
1 GGATCTGGATCGCTCCGGTCCCGTCAGTGGCAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA
101 GAGAAAGTGGCGCGGGTAAACTGGAAAGTGATGTCGTGTAAGTGGTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

Psp1406I (203) HindIII (245) Bsu36I (291)
201 GTGAACGTTCTTTTTTCGCAACGGGTTTCCGCCAGAACACAGTGAAGCTTCGAGGGCTCGCATCTCTCCTTACGCGCCCGCCGCTACCTGAGGGCC
301 GCCATCCACGCGGGTTGAGTCGCGTTTCTGCCGCTCCCGCTGTGGTGCCTCCTGAAGTGCCTCCGCGCTAGGTAAGTTAAAGCTCAGGTCGAGACC
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGTCTCCACGCTTTGCTGACCCTGCTTCACTTACGTCTTTGTTTCGTTT

AgeI (552) SgrAI (551) SphI (561)
501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGGGCGCTACCTGAGATCACCGGTGCAGCATGCCAGGAGGGCCAGAGATGGATGACTACATGG
131 M P G G G P E M D D Y M
601 AGACGCTGAAGGATGAAGAGGACGCTTGTGGGAGAATGTGGAGTGAACCGGCACATGCTCAGCCGCTATATCAACCCTGCCAAGCTCAGCCCTACCT
131 E T L K D E E D A L W E N V E C N R H M L S R Y I N P A K L T P Y L
701 GCGTCAGTGAAGGTCATTGATGAGCAGGATGAAGATGAAGTGCCTAATGCCCTATGCTGCCATCAAGATCAACCGAGCAGCCGGCTGTTGGACATT
461 R Q C K V I D E Q D E D E V L N A P M L P S K I N R A G R L L D I
BsrGI (867)
801 CTACATACCAAGGGCAAAGGGGCTATGTGGTCTTCTGGAGAGCCTAGAATTTTATTACCCAGAAGTGTACAAAAGTGGTACTGGGAAAAGAGCCCACT
801 L H T K G Q R G Y V V F L E S L E F Y Y P E L Y K L V T G K E P T
XcmI (909) SfiI (929)
901 GGAGATTCTCCACTTGGTGGAGGAAGGCCACGAGGGCCCTCAGCACTTCTGATGAACGAGGTCATCAAGTGCAGCAGCAGATGAAGGCCAAGGA
113 R R F S T I V V E E G H E G L T H F L M N E V I K L Q Q Q M K A K D
1001 CCTGCAACGCTGCGAGCTGCTGGCCAGGTTGCGGCAGCTGGAGGATGAGAAGAAGCAGATGACGCTGACGCGCGTGGAGCTGTAACCTTCCAGGAGCGG
146 L Q R C E L L A R L R Q L E D E K K Q M T L T R V E L L T F Q E R
1101 TACTACAAGATGAAGGAAGAGCGGGACAGCTACAATGACGAGCTGGTCAAGGTGAAGGACGACAACACTACAACCTAGCCATGCGCTACGCACAGCTCAGTG
180 Y Y K M K E E R D S Y N D E L V K V K D D N Y N L A M R Y A Q L S
ClaI (1247)
1201 AGGAGAAGAACATGGCGGTCATGAGGAGCCGAGACCTCCAACCTCGAGATCGATCAGCTAAAGCACCGGTTGAATAAGATGGAGGAGGAATGTAAGCTGGA
213 E E K N M A V M R S R D L Q L E I D Q L K H R L N K M E E E C K L E
1301 GAGAAATCAGTCTCTAAAATGAAGAATGACATTGAAAATCGGCCAAGAAGGAGCAGGTTCTGGAAGTGGAGCGGGAGAATGAAATGCTGAAGACAAAA
246 R N Q S L K L K N D I E N R P K K E Q V L E L E R E N E M L K T K
1401 AACAGGAGCTGCAGTCCATCATCCAGGCCGGGAGCGCAGCCTGCCAGACTCAGACAAGGCCATCCTGGACATCTTGAACACGACCCGAAGGAGGCC
280 N Q E L Q S I I Q A G K R S L P D S D K A I L D I L E H D R K E A
SdaI (1537)
1501 TGGAGGACAGGCAGGAGCTGGTCAACAGGATCTACAACCTGCAGGAGGAGGCCGCCAGGCAGAGGAGCTGCGAGACAAGTACCTGGAGGAGAAGGAGGA
313 L E D R Q E L V N R I Y N L Q E E A R Q A E E L R D K Y L E E K E D
BsrGI (1641)
1601 CCTGGAGCTCAAGTGTCTGACCCTGGGAAAGGACTGTGAAATGTACAAGCACCGCATGAACACGGTCATGCTGACGCTGGAGGAGTGGAGCGGGAGCGG
346 L E L K C S T L G K D C E M Y K H R M N T V M L Q L E E V E R E R
ScaI (1737)
1701 GACCAGGCCTTCCACTCCCGAGATGAAGCTCAGACACAGTACTCGAGTGCTTAATCGAAAAGGACAAGTACAGGAAGCAGATCCGCGAGCTGGAGGAGA
380 D Q A F H S R D E A Q T Q Y S Q C L I E K D K Y R K Q I R E L E E
BsaBI (1810) PshAI (1898)
1801 AGAACGACGAGATGAGGATCGAGATGGTGGCGGGGAGGCTGCATCGTCAACCTGGAGAGCAAGCTGCGCGCCTCTCCAAGGACAGCAACAACCTGGA
413 K N D E M R I E M V R R E A C I V N L E S K L R R L S K D S N N L D
1901 CCAGAGTCTGCCAGGAACCTGCCAGTAACCATCATCTCTCAGGACTTTGGGGATGCCAGCCAGCAATGGTCAAGAAGCTGACGATTCTCCACC
446 Q S L P R N L P V T I I S Q D F G D A S P R T N G Q E A D D S S T
ScaI (2025)
2001 TCGGAGGAGTCACTGAAGACAGCAAGTACTTCTGCCCTACCATCCGCCAGCGCAGGATGAACCTGAAGGGCATCCAGCTGCAGAGAGCCAAATCCC
480 S E E S P E D S K Y F L P Y H P P Q R R M N L K G I Q L Q R A K S
2101 CCATCAGCCTGAAGCGAAGCATCAGATTTTCAAGCAAGGGGACGAGGAAAGGACGAGCCAGCCAGCCTAGCTCCTGCGGATCTCTGCCATCACCAA
513 P I S L K R T S D F Q A K G H E E E G T D A S P S S C G S L P I T N
XmaI (2263)
2201 CTCCTTACCAAGATGCAGCCCCCGGAGCCGAGCAGCATCATGTCAATCACCGCCGAGCCCCGGGAAACGACTCCATCGTCAGACGCTACAAGGAG
546 S F T K M Q P P R S R S S I M S I T A E P P G N D S I V R R Y K E
BglIII (2359)
2301 GACGCGCCCATCGCAGCACAGTCAAGAAGACAATGACAGCGGGGTTTACGCTTAGATCTGGATGATGACAGTACGAAACGCTACTCCTTTGGAC
580 D A P H R S T V E E D N D S G G F D A L D L D D D S H E R Y S F G
2401 CCTCTCCATCCACTCCTCCTCCTCCACCAATCCGAGGGCTGGATGCCTACGACTGGAGCAGGTCAACCTCATGTTCCAGGAAGTCTCTCTGGA
613 P S S I H S S S S S H Q S E G L D A Y D L E Q V N L M F R K F S L E
Bsp120I (2542)
2501 AAGACCCTTCCGGCCTTCCGGTCACTCTGTGGGACAGTGCAGGCGCCAGGGCCCTCGGTGCAGCACACGACGCTGAATGGCGACAGCCTCACCTCCCAG
646 R P F R P S V T S V G H V R G P G P S V Q H T T L N G D S L T S Q
2601 CTCACCCTGCTGGGGGCAACGCGGAGGGAGTCTGTGCACTCGTCAAGCTGGCTCTGCGCCGAGAAAGCCGCTCCGTGAGGGCCACCAGCTGC
680 L T L L G G N A R G S F V H S V K P G S L A E K A G L R E G H Q L
2701 TGCTGCTAGAAGGCTGCATCCGAGGCGAGAGGAGGAGTGTCCCGTTGGACACATGCACCAAAGGAGGCCACTGGACCATCCAGAGGTGCAGCGGCC
713 L L L E G C I R G E R Q S V P L D T C T K E E A H W T I Q R C S G P

Acc65I (2832)

2801 CGTCACGCTGCACTACAAGGTCAACCACGAAGGGTACCGGAAGCTGGTGAAGGACATGGAGGACGGCCTGATCACATCGGGGACTCGTTCTACATCCGG
746▶ V T L H Y K V N H E G Y R K L V K D M E D G L I T S G D S F Y I R
2901 CTGAACCTGAACATCTCCAGCCAGCTGGACGCCTGACCATGTCCCTGAAGTGTGACGATGTTGTGACGTCCTGACACCATGTACCAGGACAGGCACG
780▶ L N L N I S S Q L D A C T M S L K C D D V V H V R D T M Y Q D R H

SalI (3017)

BssHIII (3009)

3001 AGTGGCTGTGCGCGGGTCCAGCCCTTTACAGACCATGACCTGGATATGGGCACCATACCCAGCTACAGCCGAGCCAGCAGCTCCTCTGGTGAACCT
813▶ E W L C A R V D P F T D H D L D M G T I P S Y S R A Q Q L L L V K L

BspEI (3165)

Eco47III (3190)

3101 GCAGCGCCTGATGCACCGAGGCAGCCGGGAGGAGGTAGACGGCACCCACACCCCTGCGGGCACTCCGGAACACCCTGCAGCCAGAAGAAGCGCTTTCA
846▶ Q R L M H R G S R E E V D G T H H T L R A L R N T L Q P E E A L S

HindIII (3238)

XmaI (3210)

NruI (3230)

3201 ACAAGCGACCCCGGGTCAAGCCCGTCTCTCGGAGCAAGCTTCTTTTTGGCCAGCTCCTTCAGTTCGTCAGCAGGTCCGAGAACAAGTATAAGCGGA
880▶ T S D P R V S P R L S R A S F L F G Q L L Q F V S R S E N K Y K R
3301 TGAACAGCAACGAGCGGGTCCGCATCATCTCGGGAGTCCGCTAGGGAGCCTGGCCCGTCTCGCTGGACGCCACCAAGCTTTGACTGAGAAGCAGGA
913▶ M N S N E R V R I I S G S P L G S L A R S S L D A T K L L T E K Q E
3401 AGAGCTGGACCCTGAGAGCGAGCTGGGCAAGAACCTCAGCCTCATCCCTACAGCCTGGTACGCGCTTCTACTGCGAGCGCCGCGCCGCTGCTTTC
946▶ E L D P E S E L G K N L S L I P Y S L V R A F Y C E R R R P V L F

NeoI (3555)

EcoRV (3581)

3501 ACACCCACCGTGTGCCAAGACGCTGGTGCAGAGGCTGCTCAACTCGGGAGGTGCCATGGAGTTCACCATCTGCAAGTCAGATATCGTCAAGAGATG
980▶ T P T V L A K T L V Q R L L N S G G A M E F T I C K S D I V T R D

Ppu10I (3667)

BstBI (3662)

AsuII (3662)

MluI (3657) NsiI (3667)

3601 AGTTCCTCAGAAGGCAGAAGACGGAGACCATCATCTACTCCCGAGAGAAGAACCCCAACGCGTTCGAATGCATCGCCCTGCCAACATTGAAGCTGTGGC
1013▶ E F L R R Q K T E T I I Y S R E K N P N A F E C I A P A N I E A V A
3701 CGCAAGAACAAGCACTGCCTGCTGGAGGCTGGATCGGCTGACACAAGAGACTTGATCAAGTCCAACATCTACCCATCGTCTTCCGGTGTGT
1046▶ A K N K H C L L E A G I G C T R D L I K S N I Y P I V L F I R V C
3801 GAGAAGAACATCAAGAGGTTCCAGAAAGCTGCTGCCCGACCTGAGACGGAGGAGGTTCTGCGCGTGTGCCGGCTGAAGGAGAAGGAGCTGGAGGCC
1080▶ E K N I K R F R K L L P R P E T E E E F L R V C R L K E K E L E A

BspLU11I (3930)

3901 TGCCGTGCCTGTACGCCACGGTGAACCTGACATGTGGGCGAGCGTAGAGGAGCTGCTCCGCGTGTCAAGGACAAGATCGGCAGGAGCAGCGCAAGAC
1113▶ L P C L Y A T V E P D M W G S V E E L L R V V K D K I G E E Q R K T

NheI (4086)

4001 CATCTGGGTGGACGAGGACCAGCTGTGAGGCGGGCGCCCTGGGCAGAGAGACTCTGTGGCGGGGCATCCTATGAGGCAGGCACCCGCTAGCTGGCCAGA
1146▶ I W V D E D Q L •
4101 CATGATAAGATACATTGATGAGTTTGGACAACCAACTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTA

HpaI (4224) MfeI (4235)

4201 ACCATTATAAGCTGCAATAAACAAGTTAAACAACAATTGCATTTATTTATGTTTCAGGTTTCAGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAA

EcoRI (4320)

4301 ACCTCTACAAATGTGGTATGGAATTCTAAAATACAGCATAGCAAACTTTAACCTCCAATCAAGCCTCTACTGAACTCTTTCTGAGGGATGAATAAG
4401 GCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTTCTTTCATGGAGTTAAGATATAGTGATTTTTCCAAGGTTTGAAC

SspI (4559)

Swal (4573)

4501 TAGCTCTTCAATTTCTTTATGTTTTAAATGCACTGACCTCCACATTCCCTTTTTAGTAAAATATTAGAAATAATTTAAATACATCATTGCAATGAAAAT
4601 AAATGTTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGAACCTTTAATAGAAA

4701 TTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCCTGGTGTACTTGAGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCCATTCTCTCAA
1414 • N R T Y K L P I L E E I T T K V L K G N M E I
4801 TGAGCACAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTCTGCACATGCCACAGGGGCTGACCACCCTGATGGATCTGTCCACCTCATCAGAGTAGGG
117▶ 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 D S Y P
4901 GTGCTGACAGCCACAATGGTGTCAAAGTCTTCTCGGCTCACAGCAGACCCAAATGGCAATGGCTTCAGCAGACAGTACCCTGCCAATGTAG
84▶ 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 R G I Y
5001 GCCTCAATGTGGACAGCAGAGATGATCTCCCAGTCTGGTCTGATGGCCGCCCGACATGGTGTGTTGTCTCATAGAGCATGGTATCTTCTCAG
504▶ 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 I K E T

BspHI (5148)

XmnI (5140)

5101 TGGCGACCTCCACGAGCTCCAGATCCTGCTGAGAGATGTTGAAGTCTTCATGATGGCCCTCTATAGTGAGTGTATTATACTATGCCGATATACTATG
17▶ A V E V L E L D Q Q S I N F T K M

VspI (5206)

AseI (5206)

5201 CCGATGATTAATTGTCAAACACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTTACTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCC

SpeI (5361)

5300 TACCGCCATTTGCGTCAATGGGCGGAGTTGTTACGACATTTTGGAAAGTCCGTTGATTTACTAGTCAAAAACAACTCCATTGACGTCAATGGGGT

SnaBI (5489)
Eco105I (5489)

5399 GGAGACTTGAAAATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTAAGTCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGAT

NdeI (5594)

5499 GTACTGCCAAGTAGGAAAGTCCCATAAGGTCATGTAAGTGGCATAATGCCAGGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCGTACTTGGCATA

5599 TGATACACTTGATGTAAGTGGCAGTTTACCCTAAATACTCCACCCATTGACGTCAATGGAAAGTCCCTATTGGCGTTACTATGGGAACATACG

SdaI (5772) PacI (5780) BspLU11I (5790)

5699 TCATTATTGACGTCAATGGGCGGGGTCGTTGGGCGGTCAGCCAGGCGGGCCATTTACCGTAAGTTATGTAACGCCTGCAGGTTAA TTAAGAACATGT

5797 GAGCAAAGGCCAGCAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGACG

5897 CTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTTCCCCCTGGAAGCTCCCTCGTGCCTCTCTGTTCCGACCCTGCCGCTT

5997 ACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTGTTTCGCTCCAAGC

6097 TGGGCTGTGTGCACGAACCCCCGTTCCAGCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGGTCCAAACCCGGTAAGACAGACTTATCGCCACT

6197 GGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACA

6297 GTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGAAAAAGAGTTGGTAGCTCTTGGTCCGCAAACAAACCACCGCTGGTAGCGGTGGTTTTT

6397 TTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGAACGAAAACTCACG

EagI (6540)

PacI (6520) SwaI (6529) NotI (6539)

6497 TTAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATCAGCGGCCCAATAAAATATCTTTATTTTATTACATCTGTGTGTTGGTTTTTGTGTG

6597 AATCGTAACTAACATACGCTCTCCATCAAACAAAACGAAACAAAACAACTAGCAAATAGGCTGTCCCCAGTGCAAGTGCAGGTGCCAGAACATTTCT

6697 CTATCGAA