



PvuI (7)
SgfI (6) 1 GGATCTGGGATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA
MfeI (82)
101 GAGAAAGTGGCGCGGGTAAACTGGAAAGTGTGCTGTACTGGTCCGCCTTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

Psp1406I (203) 201 GTGAACGTTCTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCCTTACGCGCCCGCGCCCTACCTGAGGGC
HindIII (245)
Bsu36I (291)
301 GCCATCCACGCGGGTTGAGTCGCGTTTCTGCCGCTCCCGCTGTGGTGCCTCCTGAAGTGCCTCCGCGCTAGGTAAGTTTAAAGCTCAGGTCGAGACC
401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCAACTCTACGCTTTTGTTCGTTT

NcoI (560)
BstEII (555) 501 TCTGTTTCTGCGCCGTTACAGATCCAAGCTGTGACCGGGCGCTACCTGAGATCACCGGTACCATGGAAGCGGGACCCTCGGGAGCAGCGGCAGGTGCCTA
KasI (535) **AgeI (552)** **SmaI (570)**
1 M E A G P S G A A A G A Y
HindIII (670)
601 CCTGCCCTCCCCTGCAGCAGGTGTTTTCAGGCACCCCGCGGCTGGCATTGGCACTGTGGGCAAACCAATCAAGCTTCTGGCCAATTACTTTGAGGTGGAC
13 P P L Q Q V F Q A P R R P G I G T V G K P I K L L A N Y F E V D
701 ATTCCTAAGATTGACGTTTACCATTACGAGGTGGACATCAAGCCGGATAAGTGTCTCGCAGAGTCAACCGGAGGTGGTGAATACATGGTCCAGCATT
47 I P K I D V Y H Y E V D I K P D K C P R R V N R E V V E Y M V Q H
BglII (809) **SspI (850)**
801 TCAAACCGCAGATCTTTGGGGATCGCAAGCCTGTGTATGATGGAAGAAGAATATTTACACGGTCACAGCACTGCCATTGGCAATGAGAGGGTTGACTT
80 F K P Q I F G D R K P V Y D G K K N I Y T V T A L P I G N E R V D F
XmaI (913) **SphI (977)**
901 TGAGGTGACAATCCCGGGGAGGGGAAGGATAGAAATTTTAAAGTCTCCATCAAGTGGCTAGCCATTGTGAGCTGGCGCATGTGCATGAAGCCTTGGTC
113 E V T I P G E G K D R I F K V S I K W L A I V S W R M L H E A L V
XcmI (1049) **BsrBI (1089)**
1001 AGTGGCCAGATCCCTGTGCCCTGGAGTCTGTGCAAGCCCTGGATGTGGCCATGAGGCACCTGGCATCTATGAGGTACACCCCTGTGGGCGGCTCCTTCT
147 S G Q I P V P L E S V Q A L D V A M R H L A S M R Y T P V G R S F
Bsu36I (1108)
1101 TCTCACCCTGAGGGCTACTACCACCCGCTGGGGGTGGGCGCAGGTCTGTTTCCGCTTTCACCAGTCTGTGCGCCCTGCCATGTGGAAGATGATGCT
180 F S P P E G Y Y H P L G G G R E V W F G F H Q S V R P A M W K M M L
1201 CAACATTGATGTCTCAGCCACTGCCTTCTCAAAGCACAGCCAGTATTGAGTTCATGTGTGAGGTCTGGACATCAGGAACATAGACGAACAACCCAAG
213 N I D V S A T A F Y K A Q P V I E F M C E V L D I R N I D E Q P K
StuI (1344)
1301 CCCCTCACGGATTCCCAGCGTGTTCGGTTTACCAAGGAGATAAAAGCCCTGAAGTGGAAAGTGAAGTGGCCACTGTGGACAGATGAAGAGGAAATACCGCGTGT
247 P L T D S Q R V R F T K E I K G L K V E V T H C G Q M K R K Y R V
ApaLI (1470)
1401 GTAATGTTACCCGCGCCCTGCTAGCCATCAGACGTTCCCTTTCAGCTGGAGAGTGGACAGACTGTGGAGTGCCTGTGGCAGATATTTCAAGCAGAA
280 C N V T R R P A S H Q T F P L Q L E S G Q T V E C T V A Q Y F K Q K
XhoI (1576)
1501 ATATAACCTTCAGCTCAAGTATCCTCACCTGCCCTGCCTACAAGTTGGGCAAGAACAAGCATACTATTTGCCCTCGAGGCTGTAAACATTGTGGCT
313 Y N L Q L K Y P H L P C L Q V G Q E Q K H T Y L P L E V C N I V A
1601 GGCAGCGGTGCATTAAGAAGCTGACTGACAACAGACTTCAACCATGATAAAGGCTACAGCTAGGTCCGCCCCAGACAGACAGGAGGAGATCAGCCGCC
347 G Q R C I K K L T D N Q T S T M I K A T A R S A P D R Q E E I S R
BamHI (1725) **BstXI (1737)** **KasI (1797)**
1701 TGATGAAGAATGCTAGCTACAACCTGGATCCCTACATCCAGGAATTTGGAATCAAAGTGAAGGATGACATGACGGAGGTGACAGGACGTGTGCTGCCGGC
380 L M K N A S Y N L D P Y I Q E F G I K V K D D M T E V T G R V L P A
EagI (1818) **XmnI (1872)** **BsaBI (1890)**
1801 GCCATCTTGCAGTATGGCGCCGGAACCGGCCATTGCTACGCCAACAAGGTGTCTGGGACATGCGCGGGAACAGTCTCAATGGGATTGAGATC
413 P I L Q Y G G R N R A I A T P N Q G V W D M R G K Q F Y N G I E I
1901 AAAGTCTGGGCCATCGCTTCTGCACCCAGAAACAGTGTGAGAAGAGGTGCTCAAGAATTCACAGACCAGTTCGGAAGATTTCAAGGATGACAG
447 K V W A I A C F A P Q K Q C R E E V L K N F T D Q L R K I S K D A
BsaBI (2001)
2001 GGATGCCCATCCAGGGTCAGCCATGCTTCTGCAATACGCACAGGGGAGACAGCGTGGAGCCATGTTCCGGCATCTCAAGAACACCTACTCAGGACT
480 G M P I Q G Q P C F C K Y A Q G A D S V E P M F R H L K N T Y S G L
XmaI (2122) **DraIII (2186)**
2101 GCAGCTCATTATCGTCATCCTGCCCGGGAAGACGCCAGTGTATGCTGAAGTGAACAGTGTGCGGAGATACTCTTGGGAATGGCAACACAGTGTGTGCGAG
513 Q L I I V I L P G K T P V Y A E V K R V G D T L L G M A T Q C V Q
Tth111I (2229)
2201 GTGAAGAATGTGGTCAAGACGTACCCGACAGCTGTGCAACCTCTGCCTCAAGATCAATGTCAAACCTCGGTGGCATTAAACAACATCCTAGTCCCACACC
547 V K N V V K T S P Q T L S N L C L K I N V K L G G I N N I L V P H
Eco47III (2300) **AfeI (2300)**
2301 AGCGCTCTGCTGTTTTTCAACAGCCAGTATTCTTCTGGGAGCAGATGTTACACATCCCCAGCTGGGGATGGGAAGAAACCTATACACAGCAGTGGT
580 Q R S A V F Q Q P V I F L G A D V T H P P A G D G K K P S I T A V V
2401 AGGCAGCATGGACGCACACCCAGCCGATACTGTGCCACCGTGCCTGTGACGCGCCACGGCAGGAGATCATTGAAGACTTGTCTATATGGTGGCGGAG
613 G S M D A H P S R Y C A T V R V Q R P R Q E I I E D L S Y M V R E
Tth111I (2560)
2501 CTGCTTATCCAGTCTACAAGTCCACCCGCTTCAAGCCACCCGATCATCTTCTACCGCGACGGCGTCCCGAGGGCCAGCTGCCCCAGATTCTTCACT
647 L L I Q F Y K S T R F K P T R I I F Y R D G V P E G Q L P Q I L H

NsiI (2625)
SphI (2623)
NsiI (2621)
2601 ATGAGCTGCTTGCCATTCGAGATGCATGCACTCAAACCTGGAAAAAGACTACCAGCCTGGGATCACATATATTGTGGTGCAGAAGCGCCATCACACCCGCCT
680▶ Y E L L A I R D A C I K L E K D Y Q P G I T Y I V V Q K R H H T R L

BsrBI (2719)
2701 GTTCTGTGCTGACAAGAATGAGCGGATTGGGAAGAGTGGTAACATCCCAGCAGGGACCCTGTGGACACCAACATCACCCACCCATTTGAGTTCGACTTC
713▶ F C A D K N E R I G K S G N I P A G T T V D T N I T H P F E F D F

Asp718I (2827)
Acc65I (2827)
BglII (2894)
2801 TATCTGTGCAGCCATGCAGGCATCCAGGTACCAGCCGACCATCCCATTATTATGTCCTTTGGGATGACAACCGTTTCACAGCAGATGAACTCCAGATCT
747▶ Y L C S H A G I Q G T S R P S H Y Y V L W D D N R F T A D E L Q I

BsiWI (2925)
SnaBI (2923)
2901 TGACATACCAGCTGTGCCACACTTACGTACGATGCACACGTTCTGTCTCTATCCCAGCACCTGCCTACTATGCTCGCTTGGTGGCTTTCCGGGCACGATA
780▶ L T Y Q L C H T Y V R C T R S V S I P A P A Y Y A R L V A F R A R Y

DraIII (3001)
3001 CCACCTGGTGGACAAGGAACATGACAGTGGAGAGGGGACCCACATATCAGGGCAAAGCAATGGGCGAGACCCCGAGCCCTGGCCAAAGCTGTGCAGGTT
813▶ H L V D K E H D S G E G S H I S G Q S N G R D P Q A L A K A V Q V

AvrII (3164)
3101 CACCAGGATACTCTACGCACCATGTACTTCGTTGAAGGCAGAACGCTGTTACCTCACTGGATACCTAGGCTAGCTGCCAGACATGATAAGATACATT
847▶ H Q D T L R T M Y F A •

3201 GATGAGTTTGGACAAACCACAAC TAGAATGCAGTGAATAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCA

HpaI (3308) MfeI (3319)
3301 AATAACAAGTTAAACAACAACAATTGCATTCTTTATGTTTCAGGTTTCAGGGGAGGTGTGGGAGTTTTTTAAAGCAAGTAAAACCTCTACAAATGTGG

EcoRI (3404)
3401 TATGGAATTTCAAATACAGCATAGCAAACTTTAACCTCAAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGG
3501 CTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTTCTTTCATGGAGTTTAAAGATATAGTGATTTTCCCAAGGTTTGAAGTACTCTTCTATTCTT

SspI (3643) SmaI (3657)
3601 TATGTTTTAAATGCACTGACCTCCACATTCCCTTTTTAGTAAATATTCAGAAATAATTTAAATACATCATTGCAATGAAAATAAATGTTTTTTATTAG
3701 GCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGGAACCTTTAATAGAAATTGGACAGCAAGAAAG

3801 CGAGCTTCTAGCTTTAGTTCCTGGTGTACTTGGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCCATTCTCTCAATGAGCACAAAGCAGTC
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 (3918) BstXI (3947)
3901 AGGAGCATAGTCAGAGATGAGCTCTCTGCACATGCCACAGGGGCTGACCACCCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCCTGACAGCCACA
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 (4082)
4001 ATGGTGTCAAAGTCTTCTGCCCTTGTCTCACAGCAGACCCAATGGCAATGGCTTCCAGCACAGACAGTACCCTGCCAATGTAGGCTCAATGTGGACAG
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

4101 CAGAGATGATCTCCCAGTCTTGGTCTGATGGCCGCCGACATGGTCTTGTGCTCTCATAGAGCATGGTATCTTCTCAGTGGCAGCTCCACCAG
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 (4232)
XmnI (4224) AseI (4290)
4201 CTCCAGATCTGCTGAGAGATGTTGAAGTCTTCATGATGGCCCTCTATAGTGAGTCGATTATACTATGCCGATATACTATGCCGATGATTAATTGTC
12▶ E L D Q Q S I N F T K M

SacI (4347)
4301 AAAACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTTCATAAACGAGCTCTGTTATATAGACCTCCACCGTACACGCTACCGCCATTTGCGCTC

SpeI (4445)
4401 AATGGGGCGGAGTTGTTACGACATTTTGGAAAGTCCCCTTGATTTACTAGTCAAAACAAACTCCATTGACGTCAATGGGGTGGAGACTTGGAAATCCC

SnaBI (4573)
4500 CGTGAGTCAAACCGTATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATGGAATAGCGATGACTAATACGTAGATGACTGCCAAGTAGGAA

NdeI (4678)
4600 AGTCCCATAAGGTCATGTACTGGGCATAATGCCAGGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCTACTTGGCATATGATACACTTGATGTAC
4700 TGCCAAGTGGGAGTTTACCCTAAATACTCCACCCATTGACGTCAATGAAAGTCCCTATTGGCGTACTATGGGAACATACGTCATTATTGACGTCAAT

SdaI (4856) PacI (4864) BspLU11I (4874)
4800 GGGCGGGGTCGTTGGGCGTCAAGCAGGCGGGCCATTTACCGTAAGTTATGTAACGCC T G C A G T T A A T T A A G A A C A T G T G A C A A A A G G C C A G C A A
4898 AAGCCAGGAACCGTAAAAAGCCGCTTGTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAGAGGTGGC
4998 GAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCTGGAAGTCCCTCGTGGCTCTCTGTTCCGACCCTGCCGTTACCGGATACCTGTCCGC

ApaLI (5188)
5098 CTTTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTGTTCCGCTCCAAGCTGGGCTGTGTCACGAA

5198 CCCCCGTTAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTA
5298 ACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGC
5398 TCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGGTTGCAAGCAGCAG
5498 ATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGAACGAAAACTCACGTTAAGGGATTTTGGTCA

EagI (5624)

PacI (5604) SmaI (5613) **NotI (5623)**

5598 TGGCTAGTTAATTAACATTTAAATC AGCGGCCGCAATAAAATATCTTTATTTTCATTACATCTGTGTGTTGGTTTTTTGTGTGAATCGTAACTAACATAC
5698 GCTCTCCATCAAAACAAAACGAAACAAAACAACTAGCAAAATAGGCTGTCCCAGTGCAAGTGCAGGTGCCAGAACATTTCTCTATCGAA