



PstI (7) Bsp120I (8)
SdaI (7) SpeI (14)

1 CCTGCAGGGCCCACTAGTAACAGCTGCAAGGTCGTGGATATTTTATGGGTTTTCTTCTCACAAAATACACTCCTATAAGCAGAGATTCCCCCCTCCAC

101 CCCGAAGAGAGGTGACGAATGTCTCAAACACTACCACCACCCCAATAAAAAAGAAAAGGAAGGGGGAGCGTCTTGCAACCCCTTCGTTACACAA

201 GTCCAGCCACTCCCTTTCTCCAGCGCTTCCCATCCCTTCCCCATCCCTAAAAAGTTTGATGACCCAAAGAAACCGAAAAAAGTTGTCTTGCC

301 CCAGTCCTGGCGGCCATCAGCATCTCTTTTGTTCGCTGCGAACCCACAGTCCCCGTGACGTCACCCGGAGCCCGGCCAATCGGCGCGCGGTGCGCTG

NaeI (409)
EagI (405)

401 CGCGCGCCGGCGGGCGGGCGGGTGGGGTGGGGCGGGGCGGGGACAGCCCGGGGTCTCTCTCCCCGCGCCCGGGCTCCAGAGGGCGGGAG

NaeI (550)

501 GGGACCGTCCCATAAAGCCCCGGCTCCCGCGCTCGGACGCCCGCGCGGTGTGTGTCACAGGGGAGGAGAGGGAACCCAGGCGGAGCGGAAGA

PstI (612)

601 GGGGACCTGCAGCCACAACCTTCTGTCTCTGTCATCCCTTGTCCCTCCACCCGTCCTCCACCCCTTGCCCCACCTTCTTGAGGGCGACA

701 ACCCCGGGAGGCATTAGAAGGGATTTTCCCGCAGGTTGCGAAGGGAAGCAAACCTTGGTGGCAACTTGCTCCCGGTGCGGGCTCTCCCCACCGT

NeoI (806) NheI (844) Acc65I (900)

801 CTCACCATGGGGGTTCTCATCATCATCATCATGGTATGGCTAGCATGACTGGTGGACAGCAAATGGGTCGGGATCTGTACGACGATGACGATAAGG
1 MetGlyGlySerHisHisHisHisHisHisGlyMetAlaSerMetThrGlyGlyGlnGlnMetGlyArgAspLeuTyrAspAspAspLysV

Bsu36I (905)

901 TACCTAAGGATCAGCTTGAGTTGATCCCGTCTTTTACAACGTCGTGACTGGGAAAACCTGGCGTTACCCAATTAATCGCCTTGACGACATCCCC
32 aProLysAspGlnLeuGlyValAspProValValLeuGlnArgArgAspTrpGluAsnProGlyValThrGlnLeuAsnArgLeuAlaAlaHisProPr

FspI (1060)

1001 TTTGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCATCGCCCTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGCTTTCCTGGTTCCGGCA
65 oPheAlaSerTrpArgAsnSerGluGluAlaArgThrAspArgProSerGlnGlnLeuArgSerLeuAsnGlyGluTrpArgPheAlaTrpPheProAla

Bsu36I (1142)

1101 CCAGAAGCGGTGCCGAAAGCTGGCTGGAGTGCATCTTCTGAGGCCGATACTGTCGTGCTCCCTCAAACCTGGCAGATGCACGGTTACGATGCGCCCA
99 ProGluAlaValProGluSerTrpLeuGluCysAspLeuProGluAlaAspThrValValValProSerAsnTrpGlnMetHisGlyTyrAspAlaProL

1201 TCTACACCAACGTAACCTATCCATTACGGTCAATCCGCCGTTTGTCCACGGAGAATCCGACGGGTTGTTACTCGCTCACATTAATGTTGATGAAAG
132 leTyrThrAsnValThrTyrProI leThrValAsnProProPheValProThrGluAsnProThrGlyCysTyrSerLeuThrPheAsnValAspGluSe

1301 CTGGCTACAGGAAGCCAGCGCAATTATTTTGTGGCGTTAACTCGCGCTTTCATCTGTTGTCACCGGGCGCTGGGTCGGTTACGGCCAGGACAGT
165 rTrpLeuGlnGluGlyGlnThrArgI leI lePheAspGlyValAsnSerAlaPheHisLeuTrpCysAsnGlyArgTrpValGlyTyrGlyGlnAspSer

1401 CGTTTGGCTGTAATTTGACCTGAGCGCATTTTACGCGCCGAGAAAACCGCCTCGCGGTGATGGTGTGCTGCTGGAGTACGGCAGTTATCTGGGAG
199 ArgLeuProSerGluPheAspLeuSerAlaPheLeuArgAlaGlyGluAsnArgLeuAlaValMetValLeuArgTrpSerAspGlySerTyrLeuGluA

AatII (1541)

1501 ATCAGGATATGTGGCGGATGAGCGCATTTTCCGTGACGTCCTGCTGCATAAACCGACTACACAAATCAGCGATTTCCATGTTGCCACTCGCTTAA
232 spGlnAspMetTrpArgMetSerGlyI lePheArgAspValSerLeuLeuHisLysProThrThrGlnI leSerAspPheHisValAlaThrArgPheAs

1601 TGATGATTTACGCGCGCTGTACTGGAGGCTGAAGTTGATGTCGCGCAGTTGCGTGACTACCTACGGGTAACAGTTTCTTATGGCAGGGTGAACCG
265 nAspAspPheSerArgAlaValLeuGluAlaGluValGlnMetCysGlyGluLeuArgAspTyrLeuArgValThrValSerLeuTrpGlnGlyGluThr

ClaI (1742)

1701 CAGGTCGCCAGCGCCACCGCCCTTTCGGCGGTGAAATTATCGATGAGCGTGGTGGTTATGCCGATCGCGTCACACTACGCTGAACGTCGAAAACCCGA
299 GlnValAlaSerGlyThrAlaProPheGlyGlyGluI leI leAspGluArgGlyGlyTyrAlaAspArgValThrLeuArgLeuAsnValGluAsnProL

1801 AACTGTGGAGCGCCGAAATCCCGAATCTCTATCGTGGGTGGTTGAACTGCACACCGCCGACGGCAGCTGATTGAAGCAGAAGCCTGCGATGTCGGTTT
332 ysLeuTrpSerAlaGluI leProAsnLeuTyrArgAlaValValGluLeuHisThrAlaAspGlyThrLeuI leGluAlaGluAlaCysAspValGlyPh

1901 CCGGAGGTGCGGATGAAAATGGTCTGCTGCTGCTGAACGGCAAGCGTTGCTGATTTCGAGGCGTTAACCGTCACGAGCATCCCTTCGATGGTACG
365 eArgGluValArgI leGluAsnGlyLeuLeuLeuAsnGlyLysProLeuLeuI leArgGlyValAsnArgHisGluHisHisProLeuHisGlyGln

EcoRV (2031)

2001 GTCATGGATGAGCAGACGATGGTGCAGGATATCTGCTGATGAAGCAGAACAACCTTAAACGCGTGCCTGTTTCGATTATCCGAACCATCCGCTGTGGT
399 ValMetAspGluGlnThrMetValGlnAspI leLeuLeuMetLysGlnAsnAsnPheAsnAlaValArgCysSerHisTyrProAsnHisProLeuTrpT

DraIII (2108) SspI (2148)

2101 ACACGCTGTGCGACCGCTACGGCTGTATGTTGGTGAAGCCAATATTGAAACCCACGGCATGGTCCAATGAATCGTCTGACCGATGATCCGCGCTG
432 yrThrLeuCysAspArgTyrGlyLeuTyrValValAspGluAlaAsnI leGluThrHisGlyMetValProMetAsnArgLeuThrAspAspProArgTr

BsaBI (2244)

2201 GCTACCGCGATGAGCGAACCGGTAACCGAATGGTGCAGCGCGATCGTAATCACCCGAGTGTGATCATCTGGTCGCTGGGGAATGAATCAGGCCACGGC
465 pLeuProAlaMetSerGluArgValThrArgMetValGlnArgAspArgAsnHisProSerValI leI leTrpSerLeuGlyAsnGluSerGlyHisGly

2301 GCTAATCAGACGCGCTGTATCGTGGATCAAATCTGTCGATCCTTCCGCCGGTGCAGTATGAAGCGGGGAGCCGACACCACGGCCACCGATATTA
499 AlaAsnHisAspAlaLeuTyrArgTrpI leLysSerValAspProSerArgProValGlnTyrGluGlyGlyAlaAspThrThrAlaThrAspI leI

BssHIII (2416)

2401 TTTGCCGATGTACGCGCGGATGAGACAGCCCTTCCCGCTGTGCCGAAATGGTCCATCAAAAATGGCTTTCGCTACCTGGAGAGACGCGCC
532 leCysProMetTyrAlaArgValAspGluAspGlnProPheProAlaValProLysTrpSerI leLysLysTrpLeuSerLeuProGlyGluThrArgPr

2501 GCTGATCTTTGCAATACGCCACGCGATGGTAACAGTCTTGGCGTTCGCTAAATACTGGCAGCGTTCGTCAGTATCCCCGTTACAGGGCGGC
565 oLeuI leLeuCysGluTyrAlaHisAlaMetGlyAsnSerLeuGlyGlyPheAlaLysTyrTrpGlnAlaPheArgGlnTyrProArgLeuGlnGlyGly

2601 TTCGCTGGGACTGGTGGATCAGTCGCTGATTAATATGATGAAAACCGCAACCCGTGTCGGCTTACGGCGGTGATTTTGGCGATACCCGAACGATC
599 PheValTrpAspTrpValAspGlnSerLeuI leLysTyrAspGluAsnGlyAsnProTrpSerAlaTyrGlyGlyAspPheGlyAspThrProAsnAspA

Eco47III (2753)

2701 GCCAGTTCGTATGAACGGTCTGGTCTTTCGCCACCGCACGCCGATCCAGCGCTGACGGAAGCAAAACACCAGCAGCAGTTTTCCAGTTCGGTTTATC
632 rgGlnPheCysMetAsnGlyLeuValPheAlaAspArgThrProHisProAlaLeuThrGluAlaLysHisGlnGlnGlnPhePheGlnPheArgLeuSe

SacI (2858)

2801 CGGGCAAACCATCGAAGTGACCAGCGAATACCTGTTCCGTCATAGCGATAACGAGCTCCTGCACTGGATGGTGGCGCTGGATGGTAAGCCGCTGGCAAGC
665▶ rGlyGlnThrI leGluValThrSerGluTyrLeuPheArgHisSerAspAsnGluLeuLeuHisTrpMetValAlaLeuAspGlyLysProLeuAlaSer
2901 GGTGAAGTGCCTCTGGATGTCGCTCCACAAGGTAAACAGTTGATTGAACTGCCTGAACTACCGCAGCCGGAGAGCGCCGGGCAACTCTGGCTCACAGTAC
699▶ GlyGluValProLeuAspValAlaProGlnGlyLysGlnLeuI leGluLeuProGluLeuProGlnProGluSerAlaGlyGlnLeuTrpLeuThrValA
3001 GCGTAGTCAACCGAACGCGACCCGATGGTTCAGAAGCCGGGCACATCAGCGCCTGGCAGCAGTGGCGTCTGGCGGAAAACCTCAGTGTGACGCTCCCGC
732▶ rgValValGlnProAsnAlaThrAlaTrpSerGluAlaGlyHisI leSerAlaTrpGlnGlnTrpArgLeuAlaGluAsnLeuSerValThrLeuProAl
3101 CCGTCCACGCCATCCCGCATCTGACCACCAGCGAAATGGATTTTTGCATCGAGCTGGGTAATAAGCGTTGGCAATTTAACGCCAGCTCAGGCTTTCTT
765▶ aAlaSerHisAlaI leProHisLeuThrThrSerGluMetAspPheCysI leGluLeuGlyAsnLysArgTrpGlnPheAsnArgGlnSerGlyPheLeu
3201 TCACAGATGTGGATTGGCGATAAAAAACAACCTGCTGACGCCGCTGCGCATCAGTTCACCCGTGCACCGCTGGATAACGACATTGGCGTAAGTGAAGCGA
799▶ SerGlnMetTrpI leGlyAspLysLysGlnLeuLeuThrProLeuArgAspGlnPheThrArgAlaProLeuAspAsnAspI leGlyValSerGluAlaT
3301 CCCGATTGACCCTAACGCTGGTGGTGAACGCTGGAAGGCGGCGGGCCATTACCAGGCCGAAGCAGCGTTGTTGAGTGCACGGCAGATACTTGTCTGA
832▶ hrArgI leAspProAsnAlaTrpValGluArgTrpLysAlaAlaGlyHisTyrGlnAlaGluAlaAlaLeuLeuGlnCysThrAlaAspThrLeuAlaAs
3401 TCGGGTCTGATTACGACCGCTCAGCGTGGCAGCATCAGGGGAAAACCTTATTATCAGCCGAAAACCTACCGGATTGATGGTAGTGGTCAAATGGCG
865▶ pAlaValLeuI leThrThrAlaHisAlaTrpGlnHisGlnGlyLysThrLeuPheI leSerArgLysThrTyrArgI leAspGlySerGlyGlnMetAla
3501 ATTACCGTTGATTTGAAGTGGCGAGCGATACCCGATCCGCGCGGATTGGCTGAACCTGCCAGCTGGCGCAGGTAGCAGAGCGGGTAAACTGGCTCG
899▶ I leThrValAspValGluValAlaSerAspThrProHisProAlaArgI leGlyLeuAsnCysGlnLeuAlaGlnValAlaGluArgValAsnTrpLeuG

Bst1107I (3680)

BspLU11I (3677) **BsiWI (3688)**

3601 GATTAGGGCCGCAAGAAAACCTATCCCGACCGCTTACTGCCGCTGTTTTGACCGCTGGGATCTGCCATTGTCCAGACATGTATACCCCGTACGTCTCC
932▶ lyLeuGlyProGlnGluAsnTyrProAspArgLeuThrAlaAlaCysPheAspArgTrpAspLeuProLeuSerAspMetTyrThrProTyrValPhePr
3701 GAGCGAAAACGGTCTGCGCTGCGGGACGCGCAATTGAATTATGCCACACAGTGGCGCGGCGACTTCCAGTTCAACATCAGCCGCTACAGTCAACAG
965▶ oSerGluAsnGlyLeuArgCysGlyThrArgGluLeuAsnTyrGlyProHisGlnTrpArgGlyAspPheGlnPheAsnI leSerArgTyrSerGlnGln

NdeI (3875)

3801 CAACTGATGAAAACAGCCATCGCCATCTGCTGCACGCGAAGAAGGCACATGGCTGAATATCGACGTTTTCCATATGGGGATTGGTGGCGAGACTCCT
999▶ GlnLeuMetGluThrSerHisArgHisLeuLeuHisAlaGluGluGlyThrTrpLeuAsnI leAspGlyPheHisMetGlyI leGlyGlyAspAspSerT

NheI (3997)

EcoRI (3991)

3901 GGAGCCCGTCAGTATCGCGGAATTACAGCTGAGCGCCGCTGCTACCATTACCAGTTGGTCTGGTGTCAAAAAATAAATCTAGTCGAGAATTCGCTAG
1032▶ rpSerProSerValSerAlaGluLeuGlnLeuSerAlaGlyArgTyrHisTyrGlnLeuValTrpCysGlnLys•••
4001 CTCGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAAATGCTTTATTTGTGAATTTGTGATGCTATTGCTTTAT

MfeI (4171)

4101 TTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGTTAACAACAACAATTGCATTCATTTTATGTTTCAGGTTTCAG

DraI (4220)

DraI (4259)

SwaI (4262)

4201 GGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTAGATCCATTTAAATGTTAATTAAGTCCATGACCAAAATCCCTTAACG
4301 TGAGTTTTCTGTTCCACTGAGCGTCCAGCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCCTTTTTTCTGCGGTAATCTGCTGCTTCAAACAAAA
4401 AAACCACCGCTACCAGCGGTGTTTTGTTTCCGGATCAAGAGCTACCAACTCTTTTTCCGAAGGTAAGTGGCTTCCAGCAGAGCGCAGATACCAATACTG
4501 TTCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAAGTCTGTAGCACCCTACATACCTCGCTCTGCTAATCCTGTTACCAGTGGCTGCTGCCAG
4601 TGGCGATAAGTCTGTCTTACCAGGTTGGACTCAAGACGATAGTTACCAGGATAAGGCGCAGCGGTGGGCTGAACGGGGGTTCTGTGCACACAGCCCAGC
4701 TTGGAGCGAACGACCTACACCGAAGTGAAGTACCTACAGCGTGAAGTATGAGAAAGCGCCACGCTTCCGAAGGAGAAAGCGGACAGGTATCCGGTAA
4801 CGCGCAGGGTCCGAACAGGAGAGCGCAGGAGGAGCTTCCAGGGGAAACGCTGATCTTTATAGTCTGTGGGTTTCCGCACCTCTGACTTGAGCG

BspLU11I (500)

4901 TCGATTTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGAAAAACGCCAGCAACGCGCCTTTTTACGGTTCTGGCCTTTTGTGCCTTTTGTCTCAC

AseI (5038)

SfiI (5089) **MseI (5100)**

5001 ATGTTCTTAATTAATTTTCAAAGTAGTTGACAATTAATCATCGGCATAGTATATCGGCATAGTATAATACGACTCACTATAGGAGGCCATCATGGC
1▶ MetAI

5101 CAAGTTGACCAAGTGTGTCCAGTGTCCAGGCTCACAGCCAGGGATGTGGCTGGAGCTGTTGAGTTCTGGACTGACAGGTTGGGGTCTCCAGAGATTTGTGGAG
2▶ aLysLeuThrSerAlaValProValLeuThrAlaArgAspValAlaGlyAlaValGluPheTrpThrAspArgLeuGlyPheSerArgAspPheValGlu
5201 GATGACTTTGCAAGTGTGGTCCAGAGATGATGTCAACCTGTTTATCTCAGCAGTCCAGGACCGGTGGTGCCTGACAACCCCTGGCTTGGGTGTGGTGA
36▶ AspAspPheAlaGlyValValArgAspAspValThrLeuPheI leSerAlaValGlnAspGlnValValProAspAsnThrLeuAlaTrpValTrpValA
5301 GAGGACTGGATGAGCTGTATGCTGAGTGGAGTGGTGTCTCCACCAACTTCAGGGATGCCAGTGGCCCTGCCATGACAGAGATTGGAGAGCAGCCCTG
69▶ rgGlyLeuAspGluLeuTyrAlaGluTrpSerGluValValSerThrAsnPheArgAspAlaSerGlyProAlaMetThrGluI leGlyGluGlnProTr

DraIII (5450)

SfiI (5498)

5401 GGGGAGAGAGTTTCCCTGAGAGACCCAGCAGGCAACTGTGTGCACTTTGTGGCAGAGGAGCAGGACTGAGGATAAGAATTGAGTTTCAGAAAAGGGGGC
102▶ pGlyArgGluPheAlaLeuArgAspProAlaGlyAsnCysValHisPheValAlaGluGluGlnAsp•••
5501 CTGAGTGGCCCTTTTTCAACTTAATTAA