



**Bsp120I (8)**  
 EcoO109I (8)  
**PstI (7)**  
**SdaI (7)**      **SpeI (14)**      **HindIII (24)**

1 CCTGCAGGGCCCACTAGTGCCCAAGCTTAGAAACATGACAAGTCCCTGTGGGCGAGCAGACAGGGGAGAATTGGGTTTCAGCTGCTGGCAGTGGCTTCG  
 101 GTGCCCTTTCTGTGGGCTTGTGCAAGTCCAGACAGTACCTGGCTGCTTCCCTCCCACTCCCTACTGCCCAAGCTGTCTAGCTCCACAATGGCA  
 201 CTTGCCCAAAATAGCTGCCCATGTGAGGGCCAGAGAAAGGCAGAGATTAGACCCCTGGAGGgTTGAGCACGGTAGCAGGAAGGCATGTGGCACCCAGT

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MscI (309)  
 301 GATCCTGGCCAGACTAGCATCTGGAAGGTATAAAAGCCCTTCAGGACCAGGTGGCCTCAAATCTCAGCTGACAGCCAGCCCACTCTCTCTTTTGTG

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**NcoI (416)**      NheI (454)  
 401 CTCTTTAGAAGCCACCATGGGGGTTCTCATCATCATCATCATGGTATGGCTAGCATGACTGGTGGACAGCAAATGGTTCGGGATCTGTACGACGAT

1▶ MetGlyGlySerHisHisHisHisHisHisGlyMetAlaSerMetThrGlyGlyGlnGlnMetGlyArgAspLeuTyrAspAsp

Bsu36I (515)  
**Acc65I (510)**  
 501 GACGATAAGGTACCTAAGGATCAGCTTGAGTGGATCCCGTCGTTTTACAACGTCGTGACTGGGAAAACCTGGCGTTACCAACTTAATCGCCTTGACG

29▶ AspAspLysValProLysAspGlnLeuGlyValAspProValValLeuGlnArgArgAspTrpGluAsnProGlyValThrGlnLeuAsnArgLeuAlaA

**FspI (670)**  
 601 CACATCCCCCTTTCGCCAGCTGGCGTAATAGCGAAGAGGCCGCCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGCTTTCCTCG

62▶ IaHisProProPheAlaSerTrpArgAsnSerGluGluAlaArgThrAspArgProSerGlnGlnLeuArgSerLeuAsnGlyGluTrpArgPheAlaTr

Bsu36I (752)  
 701 GTTCCGGCACCAGAAGCGGTGCCGAAAGCTGGCTGGAGTGCATCTTCTGAGGCCGATACTGTCTGCTGCCCTCAAACCTGGCAGATGCACGGTTAC

95▶ pPheProAlaProGluAlaValProGluSerTrpLeuGluCysAspLeuProGluAlaAspThrValValValProSerAsnTrpGlnMetHisGlyTyr

801 GATGCGCCCATCTACACCAACGTAACCTATCCATTACGGTCAATCCGCCGTTTGTCCACGGAGAATCCGACGGGTGTTACTCGCTCACATTTAATG

129▶ AspAlaProI leTyrThrAsnValThrTyrProI leThrValAsnProProPheValProThrGluAsnProThrGlyCysTyrSerLeuThrPheAsnV

901 TTGATGAAAGCTGGCTACAGGAAGGCCAGACGCAATTATTTTTGATGGCGTAACTCGCGCTTTCATCTGTGGTGAACGGGCGCTGGGTCGGTTACGG

162▶ alAspGluSerTrpLeuGlnGluGlyGlnThrArgI leI lePheAspGlyValAsnSerAlaPheHisLeuTrpCysAsnGlyArgTrpValGlyTyrGI

1001 CCAGGACAGTCGTTTGGCGTCTGAATTTGACCTGAGCGCATTTTTACGCGCCGAGAAAACCGCCTCGCGGTGATGGTGCTGCTGGAGTGACGGCAGT

195▶ yGlnAspSerArgLeuProSerGluPheAspLeuSerAlaPheLeuArgAlaGlyGluAsnArgLeuAlaValMetValLeuArgTrpSerAspGlySer

**AatII (1151)**  
 1101 TATCTGGAAGATCAGGATATGTGGCGGATGAGCGCATTTCCTGTCGCTCTCGTTGCTGCATAAACCGACTACACAAATCAGCGATTTCCATGTTGCCA

229▶ TyrLeuGluAspGlnAspMetTrpArgMetSerGlyI lePheArgAspValSerLeuLeuHisLysProThrThrGlnI leSerAspPheHisValAlaT

1201 CTCGCTTAATGATGATTTTCAGCCGCTGTACTGGAGGCTGAAGTTCAGATGTGCGCGAGTTGCTGACTACCTACGGGTAAACAGTTTCTTTATGGCA

262▶ hrArgPheAsnAspAspPheSerArgAlaValLeuGluAlaGluValGlnMetCysGlyGluLeuArgAspTyrLeuArgValThrValSerLeuTrpGI

**ClaI (1352)**  
 1301 GGGTGAAACGCAGGTGCCAGCGGCACCGCCCTTTCGGCGGTGAAATTATCGATGAGCGTGGTGGTATGCCGATCGCTCACACTACGTCTGAACGTC

295▶ nGlyGluThrGlnValAlaSerGlyThrAlaProPheGlyGlyGluI leI leAspGluArgGlyGlyTyrAlaAspArgValThrLeuArgLeuAsnVal

1401 GAAAACCCGAAACTGTGGAGCGCCGAAATCCCGAATCTCTATCTGCGGTGGTTGAACTGCACACCGCCGACGGCAGCTGATTGAAGCAGAAGCCTGCG

329▶ GluAsnProLysLeuTrpSerAlaGluI leProAsnLeuTyrArgAlaValValGluLeuHisThrAlaAspGlyThrLeuI leGluAlaGluAlaCysA

1501 ATGTCGGTTCCGCGAGGTGCCGATTGAAATGGTCTGCTGCTGCTGAACGGCAAGCGTTGCTGATTCGAGCGTTAACCGTCACGAGCATCATCTCT

362▶ spValGlyPheArgGluValArgI leGluAsnGlyLeuLeuLeuLeuAsnGlyLysProLeuLeuI leArgGlyValAsnArgHisGluHisHisProLe

**EcoRV (1641)**  
 1601 GCATGGTCAGGTCATGGATGAGCAGACGATGGTGCAGGATATCTGCTGATGAAGCAGAACAACCTTTAACGCGTGCCTGTTTCGATTATCCGAACCAT

395▶ uHisGlyGlnValMetAspGluGlnThrMetValGlnAspI leLeuLeuMetLysGlnAsnAsnPheAsnAlaValArgCysSerHisTyrProAsnHis

**SspI (1758)**  
 1701 CCGCTGTGGTACACGCTGTGCGACCGCTACGGCCTGTATGTGGTGGATGAAGCCAATATTGAAACCCACGGCATGGTCCAATGAATCGTCTGACCGATG

429▶ ProLeuTrpTyrThrLeuCysAspArgTyrGlyLeuTyrValValAspGluAlaAsnI leGluThrHisGlyMetValProMetAsnArgLeuThrAspA

**BsaBI (1854)**  
 1801 ATCCGCGCTGGCTACCGCGATGAGCGAACCGTAACGCGAATGGTGCAGCGCATCGTAATCACCCGAGTGTGATCATCTGGTCGCTGGGAATGAATC

462▶ spProArgTrpLeuProAlaMetSerGluArgValThrArgMetValGlnArgAspArgAsnHisProSerVal I leI leTrpSerLeuGlyAsnGluSe

1901 AGGCCACGGCGTAATCACGACGCGCTGTATCTGCTGATCAAATCTGTGATCCTTCCCGCCGGTGCAGTGAAGCGGGGGAGCCGACACCACGGCC

495▶ rGlyHisGlyAlaAsnHisAspAlaLeuTyrArgTrpI leLysSerValAspProSerArgProValGlnTyrGluGlyGlyGlyAlaAspThrThrAla

**BssHIII (2026)**  
 2001 ACCGATATTATTTGCCGATGTACGCGCGGTGGATGAAGACCAGCCCTTCCGCGTGTGCCGAAATGGTCCATCAAAAATGGCTTTCGCTACCTGGAG

529▶ ThrAspI leI leCysProMetTyrAlaArgValAspGluAspGlnProPheProAlaValProLysTrpSerI leLysLysTrpLeuSerLeuProGlyG

2101 AGACGCGCCCGCTGATCCTTTGCGAATACGCCACGCGATGGGTAACAGTCTTGCGGTTTCGCTAAATACTGGCAGCGTTCGTGATATCCCCGTTT  
562▶ luThrArgProLeuI leLeuCysGluTyrAlaHisAlaMetGlyAsnSerLeuGlyGlyPheAlaLysTyrTrpGlnAlaPheArgGlnTyrProArgLe  
2201 ACAGGGCGGCTTCGTCTGGGACTGGGTGGATCAGTCGCTGATTAATATGATGAAAACGGCAACCCGTGGTCGGCTTACGGCGGTGATTTTGCGGATACG  
595▶ uGlnGlyGlyPheValTrpAspTrpValAspGlnSerLeuI leLysTyrAspGluAsnGlyAsnProTrpSerAlaTyrGlyGlyAspPheGlyAspThr  
Eco47III (2363)  
2301 CCGAACGATCGCCAGTTCTGTATGAACGGTCTGGTCTTTGCCACCGCACGCCGCATCCAGCGCTGACGGAAGCAAAACACCAGCAGATTTTTCCAGT  
629▶ ProAsnAspArgGlnPheCysMetAsnGlyLeuValPheAlaAspArgThrProHisProAlaLeuThrGluAlaLysHisGlnGlnGlnPhePheGlnP  
SacI (2468)  
2401 TCCGTTTATCCGGGCAAACCATCGAAGTGACCAGCGAATACCTGTTCCGTCATAGCGATAACGAGCTCCTGCACTGGATGGTGGCGCTGGATGGTAAGCC  
662▶ heArgLeuSerGlyGlnThrl leGluValThrSerGluTyrLeuPheArgHisSerAspAsnGluLeuLeuHisTrpMetValAlaLeuAspGlyLysPr  
2501 GCTGGCAAGCGGTGAAGTGCCCTCTGGATGTGCTCCACAAGTAAACAGTTGATTGAACTGCCTGAACTACCGCAGCCGGAGAGCGCCGGCAACTCTGG  
695▶ oLeuAlaSerGlyGluValProLeuAspValAlaProGlnGlyLysGlnLeuI leGluLeuProGluLeuProGlnProGluSerAlaGlyGlnLeuTrp  
2601 CTCACAGTACGGTAGTGCAACCGAACCGCAGCCGATGGTCAGAAGCCGGGCACATCAGCGCTGGCAGCAGTGGCGTCTGGCGGAAAACCTCAGTGTGA  
729▶ LeuThrValArgValValGlnProAsnAlaThrAlaTrpSerGluAlaGlyHisI leSerAlaTrpGlnGlnTrpArgLeuAlaGluAsnLeuSerValT  
2701 CGTCCCGCCCGCTCCACGCCATCCCGCATCTGACCACCAGCGAAATGGATTTTTGCATCGAGCTGGGTAATAAGCGTTGGCAATTAACCGCCAGTC  
762▶ hrLeuProAlaAlaSerHisAlal leProHisLeuThrThrSerGluMetAspPheCysI leGluLeuGlyAsnLysArgTrpGlnPheAsnArgGlnSe  
2801 AGGCTTCTTTACAGATGTGGATTGGCGATAAAAAACACTGCTGACGCCGCTGCGCGATCAGTTCACCCGTGACCGCTGGATAACGACATTGGCGTA  
795▶ rGlyPheLeuSerGlnMetTrpI leGlyAspLysLysGlnLeuLeuThrProLeuArgAspGlnPheThrArgAlaProLeuAspAsnAspI leGlyVal  
2901 AGTGAAGCGACCCGATTGACCTAACGCCTGGTTCGAACGCTGGAAGCGGGCGGCCATTACCAGGCCGAGCAGCGTTGTTCAGTGCACGGCAGATA  
829▶ SerGluAlaThrArgI leAspProAsnAlaTrpValGluArgTrpLysAlaAlaGlyHisTyrGlnAlaGluAlaAlaLeuLeuGlnCysThrAlaAspT  
3001 CACTTGTGATCGCGTGTGATTACGACCGCTCACGCGTGGCAGCATCAGGGGAAAACCTTATTTATCAGCCGAAAACCTACCGGATTGATGGTAGTGG  
862▶ hrLeuAlaAspAlaValLeuI leThrThrAlaHisAlaTrpGlnHisGlnGlyLysThrLeuPheI leSerArgLysThrTyrArgI leAspGlySerGl  
3101 TCAAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGATACCCGCATCCGCGCGGATTGCCTGAACTGCCAGTGGCGCAGGTAGCAGAGCGGTA  
895▶ yGlnMetAlal leThrValAspValGluValAlaSerAspThrProHisProAlaArgI leGlyLeuAsnCysGlnLeuAlaGlnValAlaGluArgVal  
Bst1107I (3290)  
3201 AACTGGCTCGGATTAGGGCCGCAAGAAAACCTATCCCGACCGCCTTACTGCCGCTGTTTTGACCGCTGGGATCTGCCATTGTGAGACATGTATACCCCGT  
BspLU11I (3287) BsiWI (3298)  
929▶ AsnTrpLeuGlyLeuGlyProGlnGluAsnTyrProAspArgLeuThrAlaAlaCysPheAspArgTrpAspLeuProLeuSerAspMetTyrThrProT  
3301 ACGTCTTCCCGAGCGAAAACGGTCTGCGCTGCGGGACGCGCAATTGAATTATGCCCCACACAGTGGCGCGGCGACTTCCAGTTCAACATCAGCCGCTA  
962▶ yrValPheProSerGluAsnGlyLeuArgCysGlyThrArgGluLeuAsnTyrGlyProHisGlnTrpArgGlyAspPheGlnPheAsnI leSerArgTy  
NdeI (3485)  
3401 CAGTCAACAGCAACTGATGAAACAGCCATCGCCATCTGCTGCACGCGGAAGAAGGCACATGGCTGAATATCGACGTTTTCCATATGGGGATTGGTGGC  
995▶ rSerGlnGlnGlnLeuMetGluThrSerHisArgHisLeuLeuHisAlaGluGluGlyThrTrpLeuAsnI leAspGlyPheHisMetGlyI leGlyGly  
EcoRI (360)  
3501 GACGACTCTGGAGCCCGTCAGTATCGCGGAATTACAGCTGAGCGCCGGTCTACCATTACCAGTTGGTCTGGTGTCAAAAATAATAATCTAGTCGAG  
1029▶ AspAspSerTrpSerProSerValSerAlaGluLeuGlnLeuSerAlaGlyArgTyrHisTyrGlnLeuValTrpCysGlnLys•••  
NheI (3607)  
3601 AATTCGCTAGCTCGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCT  
MfeI (3781)  
3701 ATTGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGTTAACAACAACAATTGCATTCAATTTATGTT  
DraI (3869)  
3801 TCAGGTTTCAGGGGAGGTGTGGGAGGTTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTAGATCCATTTAAATGTTAATTAAGTCCATGACCAAAA  
DraI (3830) SwaI (3872)  
3901 TCCCTTAACGTGAGTTTTCTGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCCTTTTTTTCTGCGCGTAATCTGCTGCTT  
4001 GCAAACAAAAAACCCAGCTACCAGCGGTGGTTTTGTTTCCCGGATCAAGAGCTACCAACTCTTTTTCCGAAGGTAAGTGGCTTCCAGCAGAGCGCAGATA  
4101 CCAAATACTGTTCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAACTCTGTAGCACCCTACATACTCGCTCTGCTAATCCTGTTACCAGTGG  
4201 CTGCTGCCAGTGGCGATAAGTCTGTCTTACCAGGTTGGACTCAAGACGATAGTTACCAGGATAAGGCGCAGCGGTGGGCTGAACGGGGGGTTCGTGCAC  
4301 ACAGCCCAGCTTGAGCGAACGACCTACACCGAACTGAGATACTACAGCGTGAAGTATGAGAAAGCGCCAGCTTCCGGAAGGAGAAAGCGGACAGG  
4401 TATCCGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGAAACGCTGGTATCTTTATAGTCTGTGGGTTTCGCCACCTCT  
4501 GACTTGAGCGTCGATTTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGAAAAACGCCAGCAACGCGGCTTTTTACGGTTCTGGCCTTTTGTGGCC

BspLU11I (4610) AseI (4648) SfiI (4699)  
 4601 TTTTGCTCACATGTTCTTAAATTAATTTTTCAAAGTAGTTGACAATTAATCATCGGCATAGTATATCGGCATAGTATAATACGACTCACTATAGGAGGG  
MscI (4710)  
 4701 CCATCATGGCCAAGTTGACCAGTGCTGTCCCAGTGCTCACAGCCAGGGATGTGGCTGGAGCTGTTGAGTTCTGGACTGACAGGTTGGGTTCTCCAGAG  
 1▶ MetAlaLysLeuThrSerAlaValProValLeuThrAlaArgAspValAlaGlyAlaValGluPheTrpThrAspArgLeuGlyPheSerArgA  
 4800 ATTTTGTGGAGGATGACTTTCAGGTGTGGTCAGAGATGATGTCACCCTGTTTCATCTCAGCAGTCCAGGACCAGGTGGTGCCTGACAACACCCTGGCTTG  
 32▶ spPheValGluAspAspPheAlaGlyValValArgAspAspValThrLeuPheI leSerAlaValGlnAspGlnValValProAspAsnThrLeuAlaTr  
 4900 GGTGTGGGTGAGAGGACTGGATGAGCTGTATGCTGAGTGGAGTGAGGTGGTCTCCACCACTTCAGGGATGCCAGTGGCCCTGCCATGACAGAGATTGGA  
 65▶ pValTrpValArgGlyLeuAspGluLeuTyrAlaGluTrpSerGluValValSerThrAsnPheArgAspAlaSerGlyProAlaMetThrGluI leGly  
 5000 GAGCAGCCTGGGGGAGAGAGTTTGCCTGAGAGACCCAGCAGGCAACTGTGTGCACTTTGTGGCAGAGGAGCAGGACTGAGGATAAGAATTGAGTTTCA  
 99▶ GluGlnProTrpGlyArgGluPheAlaLeuArgAspProAlaGlyAsnCysValHisPheValAlaGluGluGlnAsp•••  
SfiI (5108)  
EcoO109I (5108)  
 5100 GAAAAGGGGGCCTGAGTGGCCCTTTTTTCAACTTAATTAA