



Bsp120I (8)
 EcoO109I (8)
PstI (7)
SdaI (7) **SpeI (14)** **Acc65I (23)**

1 CCTGCAGGGCCCACTAGTTGAGGTACCTGGTGTAGTTTTATTTCAGGTTTTATGCTGTCATTTCTGTAATGCTAAGGACTTAGGCATAACTGAATTT

101 TCTATTTTCCACTTCTTTTCTGGTGTGTGTATATATATATGTATATATACACACACACATgTACATATATATATTTTTTAGTATCTCACCTCACATG

BsrGI (162)

201 CTCTCCCTGAGCACTACCCATGATAGATGTTAAACAAAAGCAAAGATGAAATTCACACTGTCAAAATCTCCCTTCCATCTAATTAATTCCTCATCCAAC

AseI (285)

301 TATGTTCCAAAACGAGAATAGAAAATTAGCCCAATAAGCCAGGCAACTGAAAAGTAAATGCTATGTTGTACTTTGATCCATGGTCAACTCATAATC

NcoI (381)

401 TTGAAAAGTGGACAGAAAAGACAAAAGAGTGAACCTTAAAACCTCGAATTTATTTACCAGTATCTCCTATGAAGGGCTAGTAACCAAATAATCCACGG

501 ATCAGGGAGAGAAATGCCTTAAGGCATACGTTTTGGACATTTAGCGTCCCTGCAAATCTGGCCATCGCCGCTTCTTTGTCCATCAGAAGGCAGGAAAC

MseI (563)

601 TTTATATTGGTGACCCGTGGAGCTCACATTAACATTTACAGGGTAACTGCTTAGGACCAGTATTATGAGGAGAATTTACCTTTCCcCCTCTCTTTCCA

BstEII (610) **SacI (625)**

701 AGAAACAAGGAGGGGTGAAGGTACGGAGAACAGTATTTCTTCTGTTGAAAGCAACTTAGCTACAAAGATAAATTACAGCTATGTACACTGAAGGTAGCT

BsrGI (783)

801 ATTTCAATCCACAAAATAAGAGTTTTTAAAAAGCTATGTATGTATGTCTGCATATAGAGCAGATATACAGCCTATTAAGCGTCGCTACTAAACATAA

901 AACATGTCAGCCTTTCTTAACCTTACTCGCCCGAGTCTGTCCCGACGTGACTTCTCGACCCCTAAAGACGTACAGACCAGACACGGCGCGGGCGCGG

1001 GAGAGGGGATTCCCTGCGCCCCGGACCTCAGGGCCGCTCAGATTCTGGAGAGGAAGCCAAGTGTCTTCTGCCCTCCCCGGTATCCCATCCAAGGCG

1101 ATCAGTCCAGAAGTGGCTCTCGGAAGCGCTCGGGCAAAGACTGCGAAGAAGAAAAGACATCTGGCGGAAACCTGTGCGCTGGGGCGGTGGAACCTGGGG

Eco47III (1128)

1201 AGGAGAGGGAGGGATCAGACAGGAGAGTGGGGACTACCCCTCTGCTCCAAATTGGGGCAGCTTCTGGGTTTCCGATTTTCTATTTCCGTGGGTAAA

1301 AAACCCCTGCCCCACCGGGCTTACGCAATTTTTTAAAGGGAGAGGAGGAAAAAATTTGTGGGGGTACGAAAAGCGGAAAGAAACAGTCATTTCTGTCA

1401 CATGGGCTTGGTTTTAGTCTTATAAAAAGGAAGTTCTCTCGGTTAGCGACCAATTGTCATACGACTTGACAGTGCAGTGCAGGAGCAGTCCAGGAAC

MfeI (1454)

1501 CCTCAGCAGCGCTCCTCAGCTCCACAGCCAGACGCCCTCAGACAGCAAAGCTACCCCGCGCCGCGCCCTGCCCGCGGTgCATGAGCGGTTCTC

BspHI (1586)

1600 ATCATCATCATCATGGTATGGCTAGCATGACTGGTGGACAGCAAATGGGTGGGATCTGTACGACGATGACGATAAGGTACCTAAGGATCAGCTTGG

NheI (1624) **1**▶MetSerGlySerH
Acc65I (1680)

1700 5▶ isHisHisHisHisHisGlyMetAlaSerMetThrGlyGlyGlnGlnMetGlyArgAspLeuTyrAspAspAspAspLysValProLysAspGlnLeuGI
 AGTTGATCCCGTCGTTTACAACGTCGTGACTGGGAAAACCTGGCGTTACCCAACCTAATCGCCTTGACGACATCCCCCTTCCGACGTGGCGTAAT

1800 38▶ yValAspProValValLeuGlnArgArgAspTrpGluAsnProGlyValThrGlnLeuAsnArgLeuAlaAlaHisProProPheAlaSerTrpArgAsn

FspI (1840)

1900 72▶ SerGluGluAlaArgThrAspArgProSerGlnGlnLeuArgSerLeuAsnGlyGluTrpArgPheAlaTrpPheProAlaProGluAlaValProGluS
 GCTGGCTGGAGTGCATCTTCTGAGGCCGATACTGTCTGCTCCCTCAAACCTGGCAGATGACGGTTACGATGCGCCATCTACACCAACGTAACTA

2000 105▶ erTrpLeuGluCysAspLeuProGluAlaAspThrValValValProSerAsnTrpGlnMetHisGlyTyrAspAlaProl leTyrThrAsnValThrTy
 TCCATTACGGTCAATCCGCCGTTTGTCCACGAGAAATCCGACGGTTGTTACTCGCTCACATTTAATGTTGATGAAAGCTGGCTACAGGAAGGCCAG

2100 138▶ rProI leThrValAsnProProPheValProThrGluAsnProThrGlyCysTyrSerLeuThrPheAsnValAspGluSerTrpLeuGlnGluGlyGln
 ACGCGAATTATTTTATGATGGCGTTAACTCGGCTTTCATCTGTGGTGAACGGCGCTGGGTGGGTTACGGCCAGGACAGTCTTCCGCTCGAATTTG

2200 172▶ ThrArgI leI lePheAspGlyValAsnSerAlaPheHisLeuTrpCysAsnGlyArgTrpValGlyTyrGlyGlnAspSerArgLeuProSerGluPheA
 ACCTGAGCGCATTTTTACGCGCCGGAGAAAACCGCTCGCGGTGATGGTGTCTGCGTTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGAT

2300 205▶ spLeuSerAlaPheLeuArgAlaGlyGluAsnArgLeuAlaValMetValLeuArgTrpSerAspGlySerTyrLeuGluAspGlnAspMetTrpArgMe
 GAGCGGCATTTTCCGTGACGTCTGTTGCTGCATAAACCGACTACACAAATCAGCGATTTCCATGTTGCCACTCGCTTAAATGATGATTTAGCCGCGCT

AatII (2321)

2400 238▶ tSerGlyI lePheArgAspValSerLeuLeuHisLysProThrThrGlnI leSerAspPheHisValAlaThrArgPheAsnAspAspPheSerArgAla
 GACTGGAGGCTGAAGTTCAGATGTGGCGGAGTGGGTGACTACCTACGGTAACAGTTCCTTTATGGCAGGGTGAACCGCAGGTCGCCAGCGGCACCG

272▶ ValLeuGluAlaGluValGlnMetCysGlyGluLeuArgAspTyrLeuArgValThrValSerLeuTrpGlnGlyGluThrGlnValAlaSerGlyThrA

ClaI (2522)
 2500 CGCCTTTCGGCGTGAATTATCGATGAGCGTGGTGTATGCCGATCGCGTACACTACGTCTGAACGTCGAAAACCCGAAACTGTGGAGCGCCGAAAT
 305▶ laProPheGlyGlyGluI leI leAspGluArgGlyGlyTyrAlaAspArgValThrLeuArgLeuAsnValGluAsnProLysLeuTrpSerAlaGluI
 2600 CCCGAATCTCTATCGTGGCGTGGTGAACGACACCCGCCGACGCGCTGATTGAAGCAGAAGCCTGCGATGTCGGTTTCCGCGAGGTGCGGATTGAA
 338▶ eProAsnLeuTyrArgAlaValValGluLeuHisThrAlaAspGlyThrLeuI leGluAlaGluAlaCysAspValGlyPheArgGluValArgI leGlu
 2700 AATGGTCTGCTGCTGCTGAACGGCAAGCCGTTGCTGATTCGAGGCGTTAACCGTCACGAGCATCATCTCTGCATGGTCAGGTCATGGATGAGCAGCGA
 372▶ AsnGlyLeuLeuLeuLeuAsnGlyLysProLeuLeuI leArgGlyValAsnArgHisGluHisHisProLeuHisGlyGlnValMetAspGluGlnThrM
EcoRV (2811) **DraIII (2888)**
 2800 TGGTGCAGGATATCCTGCTGATGAAGCAGAACAACCTTAAACGCCGTGCGCTGTTCCGATTATCCGAACCATCCGCTGTGGTACACGCTGTGCGACCGCTA
 405▶ etValGlnAspI leLeuLeuMetLysGlnAsnAsnPheAsnAlaValArgCysSerHisTyrProAsnHisProLeuTrpTyrThrLeuCysAspArgTy
SspI (2928)
 2900 CGGCCTGTATGTGGTGGATGAAGCCAATTATTGAAACCCACGGCATGGTGCCAATGAATCGTCTGACCGATGATCCGCGCTGGCTACCGCGATGAGCGAA
 438▶ rGlyLeuTyrValValAspGluAlaAsnI leGluThrHisGlyMetValProMetAsnArgLeuThrAspAspProArgTrpLeuProAlaMetSerGlu
BsaBI (3024)
 3000 CGCGTAACGCGAATGGTGCAGCGCGATCGTAATCACCCGAGTGTGATCATCTGGTCGCTGGGAATGAATCAGGCCACGGCGTAATCACGACGCGCTGT
 472▶ ArgValThrArgMetValGlnArgAspArgAsnHisProSerValI leI leTrpSerLeuGlyAsnGluSerGlyHisGlyAlaAsnHisAspAlaLeuT
BssHII (3196)
 3100 ATCGCTGGATCAATCTGTCGATCCTTCCCGCCGGTGCAGTATGAAGCGCGGAGCCGACACCACGGCCACCGATATTATTTGCCGATGTACGCCGG
 505▶ yrArgTrpI leLysSerValAspProSerArgProValGlnTyrGluGlyGlyGlyAlaAspThrThrAlaThrAspI leI leCysProMetTyrAlaAr
 3200 CGTGGATGAAGACCAGCCCTTCCCGGCTGTGCCGAAATGGTCCATCAAAAAATGGCTTTCGTACCTGGAGAGACGCCCGCTGATCCTTTGCCAATAC
 538▶ gValAspGluAspGlnProPheProAlaValProLysTrpSerI leLysLysTrpLeuSerLeuProGlyGluThrArgProLeuI leLeuCysGluTyr
 3300 GCCCACGCGATGGGTAACAGTCTTGGCGGTTTCGCTAAATACTGGCAGGCGTTCGTGAGTATCCCGTTTACAGGGCGGCTTCGTCTGGGACTGGGTGG
 572▶ AlaHisAlaMetGlyAsnSerLeuGlyGlyPheAlaLysTyrTrpGlnAlaPheArgGlnTyrProArgLeuGlnGlyGlyPheValTrpAspTrpValA
 3400 ATCAGTCGCTGATTAATATGATGAAAACGGCAACCCGTGGTCGGCTTACGGCGGTGATTTTGGCGATACGCCGAACGATCGCCAGTTCTGTATGAACGG
 605▶ spGlnSerLeuI leLysTyrAspGluAsnGlyAsnProTrpSerAlaTyrGlyGlyAspPheGlyAspThrProAsnAspArgGlnPheCysMetAsnGl
Eco47III (3533)
 3500 TCTGGTCTTTGCCGACCGCACGCCGATCCAGCGCTGACGGAAGCAAACACCCAGCAGCAGTTTTTCCAGTTCCGTTTATCCGGGCAAACCATCGAAGTG
 638▶ yLeuValPheAlaAspArgThrProHisProAlaLeuThrGluAlaLysHisGlnGlnGlnPhePheGlnPheArgLeuSerGlyGlnThrI leGluVal
SacI (3638)
 3600 ACCAGCGAATACCTGTTCCGTCATAGCGATAACGAGCTCCTGCACTGGATGGTGGCGCTGGATGGTAAGCCGCTGGCAAGCGGTGAAGTGCCTCTGGATG
 672▶ ThrSerGluTyrLeuPheArgHisSerAspAsnGluLeuLeuHisTrpMetValAlaLeuAspGlyLysProLeuAlaSerGlyGluValProLeuAspV
 3700 TCGCTCCACAAGGTAAACAGTTGATTGAACTGCTGAACTACCGCAGCCGGAGAGCCGGGCAACTCTGGCTCACAGTACGCGTAGTGCAACCGAACCGC
 705▶ alAlaProGlnGlyLysGlnLeuI leGluLeuProGluLeuProGlnProGluSerAlaGlyGlnLeuTrpLeuThrValArgValValGlnProAsnAl
 3800 GACCGCATGGTCAGAAGCCGGGCACATCAGCGCTGGCAGCAGTGGCGTCTGGCGAAAACCTCAGTGTGACGCTCCCGCCGCTCCACGCGCATCCCG
 738▶ aThrAlaTrpSerGluAlaGlyHisI leSerAlaTrpGlnGlnTrpArgLeuAlaGluAsnLeuSerValThrLeuProAlaAlaSerHisAlaI lePro
 3900 CATCTGACCACCAGCGAATGGATTTTGCATCGAGCTGGTAATAAGCGTTGGCAATTTAACGCCAGTCAGGCTTTTTCACAGATGTGGATTGGCG
 772▶ HisLeuThrThrSerGluMetAspPheCysI leGluLeuGlyAsnLysArgTrpGlnPheAsnArgGlnSerGlyPheLeuSerGlnMetTrpI leGlyA
 4000 ATAAAAAACAACTGCTGACGCCGCTGCGGATCAGTTACCCGTCACCGCTGGATAACGACATTGGCGTAAGTGAAGCGACCCGATTGACCTAACCGC
 805▶ spLysLysGlnLeuLeuThrProLeuArgAspGlnPheThrArgAlaProLeuAspAsnAspI leGlyValSerGluAlaThrArgI leAspProAsnAl
 4100 CTGGGTGAAACGCTGGAAGGCGGGCCATTACCAGGCCGAAGCAGCGTTGTTGAGTGCACGGCAGATACACTTGTGATGCGGTGCTGATTACGACC
 838▶ aTrpValGluArgTrpLysAlaAlaGlyHisTyrGlnAlaGluAlaAlaLeuLeuGlnCysThrAlaAspThrLeuAlaAspAlaValLeuI leThrThr
 4200 GCTCACGCGTGGCAGCATCAGGGGAAAACCTTATTTATCAGCCGAAAACCTACCGGATTGATGGTAGTGGTCAAATGGCGATTACCGTTGATGTTGAAG
 872▶ AlaHisAlaTrpGlnHisGlnGlyLysThrLeuPheI leSerArgLysThrTyrArgI leAspGlySerGlyGlnMetAlaI leThrValAspValGluV
 4300 TGGCGAGCGATACCCGATCCGGCGGGATTGGCTGAACTGCCAGCTGGCGCAGGTAGCAGAGCGGGTAAACTGGCTCGGATTAGGGCCGCAAGAAAA
 905▶ alAlaSerAspThrProHisProAlaArgI leGlyLeuAsnCysGlnLeuAlaGlnValAlaGluArgValAsnTrpLeuGlyLeuGlyProGlnGluAs
BsiWI (4468)
Bst1107I (4460)
 4400 CTATCCCGACCGCCTTACTGCCGCTGTTTTGACCGCTGGGATCTGCCATTGTCAGACATGTATACCCGTCAGCTCTCCCGAGCGAAAACGGTCTGCGC
 938▶ nTyrProAspArgLeuThrAlaAlaCysPheAspArgTrpAspLeuProLeuSerAspMetTyrThrProTyrValPheProSerGluAsnGlyLeuArg
 4500 TGCGGGACGCGAATGAATTATGGCCACACCACTGGCGCGGCGACTTCCAGTTCAACATCAGCCGCTACAGTCAACAGCAACTGATGGAACACGCGC
 972▶ CysGlyThrArgGluLeuAsnTyrGlyProHisGlnTrpArgGlyAspPheGlnPheAsnI leSerArgTyrSerGlnGlnGlnLeuMetGluThrSerH
NdeI (4655)
 4600 ATCGCCATCTGCTGCACGCGGAAGAAGGCACATGGCTGAATATCGACGGTTTCCATATGGGGATTGGTGGCGAGACTCTGGAGCCCGTCAATATCGGC
 1005▶ isArgHisLeuLeuHisAlaGluGluGlyThrTrpLeuAsnI leAspGlyPheHisMetGlyI leGlyGlyAspAspSerTrpSerProSerValSerAl

NheI (4777)
EcoRI (4771)

4700 GGAATTACAGCTGAGCGCCGGTCGCTACCATTACCAGTTGGTCTGGTGTCAAAAATAATAATCTAGTCGAGAATTCGCTAGCTCGACATGATAAGATACA

1038▶ aGluLeuGlnLeuSerAlaGlyArgTyrHisTyrGlnLeuValTrpCysGlnLys•••

4800 TTGATGAGTTTGACAAACCACTAGAAATGCAAGTGAATAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTGAAATTTGTGATGCT

MfeI (4951)

4900 ATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGTTAACAACAACAATTGCATTCATTTTATGTTTCAGGTTACAGGGGAGGTGTGGGAGGTTT

SwaI (5042)

5000 TTTAAAGCAAGTAAACCTCTACAAATGTGGTAGATCCATTTAAATGTTAATTAAGTACCATGACCAAAATCCCTTAACGTGAGTTTTCGTCCACTGA

5100 CCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCCTTTTTTCTGCGGTAATCTGCTGCTTGCAAACAAAAAACCCCGCTACCAGCGG

5200 TGGTTTTGTTGCCGGATCAAGAGCTACCAACTCTTTTTCCGAAGTAACTGGCTTCAGCAGAGCGCAGATACCAATACTGTTCTTCTAGTGTAGCCGTA

5300 GTTAGGCCACCACCTTCAAGAACTCTGTAGCACCGCTACATACCTCGCTCTGCTAATCCTGTTACCAGTGGCTGCTGCCAGTGGCGATAAGTCGTGTCTT

5400 ACCGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCGGTCCGGCTGAACGGGGGTTCTGTCACACAGCCAGCTTGAGCGAACGACCTACA

5500 CCGAACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTCCCGAAGGGAGAAAGCGGACAGGTATCCGGTAAGCGGCAGGGTCCGGAACAGG

5600 AGAGCGCACGAGGGAGCTTCCAGGGGAAACGCCTGGTATCTTTATAGTCTGTCCGGTTTTCCGCACCTCTGACTTGAGCGTCGATTTTTGTGATGCTCG

5700 TCAGGGGGCGGAGCCTATGAAAAACGCCAGCAACGCGCCTTTTTACGGTTCCTGGCCTTTTGCTGCACATGTTCTTAATTAATTTT

AseI (5818)

SfiI (5869) MscI (5880)

5800 TCAAAAGTAGTTGACAATTAATCATCGGCATAGTATATCGGCATAGTATAATACGACTCACTATAGGAGGGCCATCATGGCCAAGTTGACCAGTGCTGTC

5900 CCAGTGCTCACAGCCAGGGATGTGGCTGGAGCTGTTGAGTTCTGGACTGACAGGTTGGGTTCTCCAGAGATTTTGTGGAGGATGACTTTCAGGTGTGG

6000 TCAGAGATGATGTCACCCTGTTTCATCTCAGCAGTCCAGGACCAGGTGGTGCCTGACAACACCCTGGCTTGGGTGTGGGTGAGAGGACTGGATGAGCTGTA

6100 TGCTGAGTGGAGTGAGGTGGTCTCCACCAACTTCAGGGATGCCAGTGGCCCTGCCATGACAGAGATTGGAGAGCAGCCCTGGGGGAGAGATTTGCCCTG

6200 AGAGACCCAGCAGGCAACTGTGTGCACCTTTGTGGCAGAGGAGCAGGACTGAGGATAAGAATTGAGTTTCAGAAAAGGGGCGCTGAGTGGCCCTTTTTTC

6300 AACTTAATTAA

DraIII (6230)

SfiI (6278)
EcoO109I (6278)

109▶ ArgAspProAlaGlyAsnCysValHisPheValAlaGluGluGlnAsp•••