



150

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

1 CCTGCAGGGCCACTAGTGCCCAACCCCGTCCGCGTTACAACCGGGAGGCCCGCTGGGTCTGCACCGTCACCTCCTCCCTGTGACCGCCACCTGAT

101 ACCCAAACAACTTTCTCGCCCTCCAGTCCCCAGCTCGCCGAGCGCTTGCGGGAGCCACCCAGCCTCAGTTTCCCCAGCCCCGGCGGGGGAGGGGGC

201 ATGACGTCATGCCGGCGCGGGCATTGTGGGGCGGGCGAGGCGGGCGCCGGGGGAGCAACTGAGACGCCATTTTCGGCGGGGAGCGGGCGCAGG

301 CGGCCGAGCGGGACTGGCTGGGTGGGTGGGTGCTGGTGCAGGAGCCGCGGGGCTGTGTCTCGCGGCCAAGGGGACAGCGCTGGGTGGCCGAGGATG

401 CTGCGGGGCGGTAGCTCCGGCGCCCTCGCTGGTGACTGCTGCGCCGTGCTCACACAGCCGAGCGGGCTCGGCGCACAGTCGCTGCTCCGCGCTCGCG

501 CCCGGCGCGCTCCAGGTGCTGACAGCGCGAGAGCGCGCCCTCAGGAGCAACACCATGGGGGTTCTCATCATCATCATCATGGTATGGCTAGCA

601 TGA CTGGTGGACAGCAATGGGTGGGATCTGTACGACGATGACGATAAGGTACCTAAGGATCAGCTTGAGTTGATCCCCTGTTTACAACGTCGTGA

15▶ etThrGlyGlyGlnGlnMetGlyArgAspLeuTyrAspAspAspLysValProLysAspGlnLeuGlyValAspProValValLeuGlnArgArgAs

701 CTGGAAACCCCTGGCGTTACCAACTAATCGCCTTGACGACATCCCCCTTTCGCGAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCCCTTCC

48▶ pTrpGluAsnProGlyValThrGlnLeuAsnArgLeuAlaAlaHisProProPheAlaSerTrpArgAsnSerGluGluAlaArgThrAspArgProSer

801 CAACAGTTGCGCAGCCTGAATGGCGAATGGCGCTTTCGCTGGTTCCGGCACCAGAAGCGGTGCCGAAAGCTGGCTGGAGTGCGATCTTCTGAGGCCG

82▶ GlnGlnLeuArgSerLeuAsnGlyGluTrpArgPheAlaTrpPheProAlaProGluAlaValProGluSerTrpLeuGluCysAspLeuProGluAlaA

901 ATACTGTCGTGCTCCCTCAAACCTGGCAGATGCACGGTTACGATGCGCCATCTACACCAACGTAACCTATCCATTACGGTCAATCCGCGCTTGTTC

115▶ spThrValValValProSerAsnTrpGlnMetHisGlyTyrAspAlaProl IeTyrThrAsnValThrTyrProIeThrValAsnProProPheValPr

1001 CACGAGAATCCGACGGGTTGTTACTCGCTCACATTTAATGTTGATGAAAGCTGGCTACAGGAAGCCAGACGCGAATTATTTTTGATGGCGTTAACTCG

148▶ oThrGluAsnProThrGlyCysTyrSerLeuThrPheAsnValAspGluSerTrpLeuGlnGluGlyGlnThrArgIleIePheAspGlyValAsnSer

1101 GCGTTTCATCTGTGGTCAACGGCGCTGGGTGGTTACGGCCAGGACAGTCTTTCGCGTGAATTTGACCTGAGCGCATTTTTACGCGCCGGAGAAA

182▶ AlaPheHisLeuTrpCysAsnGlyArgTrpValGlyTyrGlyGlnAspSerArgLeuProSerGluPheAspLeuSerAlaPheLeuArgAlaGlyGluA

1201 ACCGCTCGGGTGATGGTGCTGCGTTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGATGAGCGGCATTTCCGTGACGCTCGTTGCT

215▶ snArgLeuAlaValMetValLeuArgTrpSerAspGlySerTyrLeuGluAspGlnAspMetTrpArgMetSerGlyIlePheArgAspValSerLeuLe

1301 GCATAAACCGACTACACAAATCAGCGATTTCCATGTTGCCACTCGCTTAAATGATGATTTACGCGCGCTGTACTGGAGGCTGAAGTTCAGATGTGGCG

248▶ uHisLysProThrThrGlnIleSerAspPheHisValAlaThrArgPheAsnAspAspPheSerArgAlaValLeuGluAlaGluValGlnMetCysGly

1401 GAGTTGCGTGACTACCTACGGTAACAGTTTCTTTATGGCAGGGTAAACGCAGGTCGCCAGCGCACCGCCTTTCGGCGGTGAAATTATCGATGAGC

282▶ GluLeuArgAspTyrLeuArgValThrValSerLeuTrpGlnGlyGluThrGlnValAlaSerGlyThrAlaProPheGlyGlyGluIleIeAspGluA

1501 GTGGTGGTTATGCCGATCGCTCACACTACGCTGAACGTCGAAAACCCGAACTGTGGAGCGCGAAATCCCGAATCTCTATCGTGGGTGGTTGAACT

315▶ rgGlyGlyTyrAlaAspArgValThrLeuArgLeuAsnValGluAsnProLysLeuTrpSerAlaGluIleProAsnLeuTyrArgAlaValValGluLe

1601 GCACACCGCCGACGGCAGCTGATTGAAGCAGAAGCCTGCGATGTCGGTTTCCGCGAGGTGCGGATTGAAAATGGTCTGCTGCTGTAACGGCAAGCCG

348▶ uHisThrAlaAspGlyThrLeuIleGluAlaGluAlaCysAspValGlyPheArgGluValArgIleGluAsnGlyLeuLeuLeuLeuAsnGlyLysPro

1701 TTGCTGATTCGAGGCGTTAACCGTCACGAGCATCATCCTCTGCATGGTCAGGTCATGGATGAGCAGACGATGGTGACGATATCCTGCTGATGAAGCAGA

382▶ LeuLeuIleArgGlyValAsnArgHisGluHisHisProLeuHisGlyGlnValMetAspGluGlnThrMetValGlnAspIleLeuLeuMetLysGlnA

1801 ACAACTTAAACGCCGTGCGCTGTTTCGATTATCCGAACCATCCGCTGTGGTACACGCTGTGCGACCGCTACGGCCTGTATGTGGTGGATGAAGCCAATAT

415▶ snAsnPheAsnAlaValArgCysSerHisTyrProAsnHisProLeuTrpTyrThrLeuCysAspArgTyrGlyLeuTyrValValAspGluAlaAsnIle

1901 TGA AACCCACGGCATGGTGCCAAATGAATCGTCTGACCGATGATCCGCGCTGGCTACCGCGATGAGCGAACGCGTAACGCGAATGGTGCAGCGCGATCGT

448▶ eGluThrHisGlyMetValProMetAsnArgLeuThrAspAspProArgTrpLeuProAlaMetSerGluArgValThrArgMetValGlnArgAspArg

2001 AATCACCCGAGTGTGATCATCTGGTGCCTGGGAATGAATCAGGCCACGGCGTAATCACGACGCGCTGTATCGCTGGATCAAATCTGCTGATCCTTCCC

482▶ AsnHisProSerValIleIleTrpSerLeuGlyAsnGluSerGlyHisGlyAlaAsnHisAspAlaLeuTyrArgTrpIleLysSerValAspProSerA

2101 GCCCGGTGCAGTATGAAGGCGGCGAGCCGACACCACGGCCACCGATATTATTTGCCCGATGTACGCGCGCTGGATGAAGACCAGCCCTTCCCGGCTGT

515▶ rgProValGlnTyrGluGlyGlyGlyAlaAspThrThrAlaThrAspI leI leCysProMetTyrAlaArgValAspGluAspGlnProPheProAlaVa
2201 GCCGAAATGGTCCATCAAAAAATGGCTTTCGTACCTGGAGAGACGCGCCCGCTGATCCTTTGCGAATACGCCACGCGATGGTAAACAGCTTGGCGGT

548▶ lProLysTrpSerI leLysLysTrpLeuSerLeuProGlyGluThrArgProLeuI leLeuCysGluTyrAlaHisAlaMetGlyAsnSerLeuGlyGly
2301 TTCGCTAAATACTGGCAGGCGTTCGTAGTATCCCCGTTTACAGGGCGGCTTCGTCTGGGACTGGGTGGATCAGTCGCTGATTAATATGATGAAAACG

582▶ PheAlaLysTyrTrpGlnAlaPheArgGlnTyrProArgLeuGlnGlyGlyPheValTrpAspTrpValAspGlnSerLeuI leLysTyrAspGluAsnG
2401 GCAACCCGTGGTCGGCTTACGGCGGTGATTTTGGCGATACGCCGAACGATCGCCAGTCTGTATGAACGGTCTGGTCTTTGCCGACCACGCCGCATCC

615▶ lyAsnProTrpSerAlaTyrGlyGlyAspPheGlyAspThrProAsnAspArgGlnPheCysMetAsnGlyLeuValPheAlaAspArgThrProHisPr
Eco47III (2504)
2501 AGCGCTGACGGAAGCAAAACACCAGCAGCAGTTTTTCCAGTTCGGTTTATCCGGGCAAACCATCGAAGTGACCAGCGAATACCTGTTCCGTCATAGCGAT

648▶ oAlaLeuThrGluAlaLysHisGlnGlnGlnPhePheGlnPheArgLeuSerGlyGlnThrI leGluValThrSerGluTyrLeuPheArgHisSerAsp
SacI (2609)
2601 AACGAGCTCCTGCCTGGTGGTGGCGCTGGATGGTAAGCCGCTGGCAAGCGGTGAAGTGCTCTGGATGTCGCTCCACAAGGTAACAGTTGATTGAAC

682▶ AsnGluLeuLeuHisTrpMetValAlaLeuAspGlyLysProLeuAlaSerGlyGluValProLeuAspValAlaProGlnGlyLysGlnLeuI leGluL
2701 TGCCTGAACTACCGCAGCCGGAGAGCGCCGGCAACTCTGGCTCACAGTACGCTAGTGCAACCGAACGCGACCGCATGGTCAGAAGCCGGGCACATCAG

715▶ euProGluLeuProGlnProGluSerAlaGlyGlnLeuTrpLeuThrValArgValValGlnProAsnAlaThrAlaTrpSerGluAlaGlyHisI leSe
2801 CGCCTGGCAGCAGTGGCGTCTGGCGAAAACCTCAGTGTGACGCTCCCGCCGCGTCCACGCCATCCGCATCTGACCACCAGCGAAATGGATTTTTCG

748▶ rAlaTrpGlnGlnTrpArgLeuAlaGluAsnLeuSerValThrLeuProAlaAlaSerHisAlaI leProHisLeuThrThrSerGluMetAspPheCys
2901 ATCGAGCTGGGTAATAAGCGTTGGCAATTTAACCGCCAGTCAGGCTTCTTTTACAGATGTGGATTGGCGATAAAAAACAACCTGCTGACGCCGCTGCGCG

782▶ l leGluLeuGlyAsnLysArgTrpGlnPheAsnArgGlnSerGlyPheLeuSerGlnMetTrpI leGlyAspLysLysGlnLeuLeuThrProLeuArgA
3001 ATCAGTTACCCGTGCACCGCTGGATAACGACATTGGCGTAAGTGAAGCGACCCGCATTGACCTAACGCTGGGTCGAACGCTGGAAGGCGGGGCCA

815▶ spGlnPheThrArgAlaProLeuAspAsnAspI leGlyValSerGluAlaThrArgI leAspProAsnAlaTrpValGluArgTrpLysAlaAlaGlyHi
3101 TTACCAGGCCGAAGCAGCGTTGTTGACGTGCACGGCAGATACACTTGTCTGATGCGGTGCTGATTACGACCGCTCACGCGTGGCAGCATCAGGGGAAAACC

848▶ sTyrGlnAlaGluAlaAlaLeuLeuGlnCysThrAlaAspThrLeuAlaAspAlaValLeuI leThrThrAlaHisAlaTrpGlnHisGlnGlyLysThr
3201 TTATTTATCAGCCGAAAACCTACCGGATTGATGGTAGTGGTCAAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGATACCCGCATCCGGCGCGGA

882▶ LeuPheI leSerArgLysThrTyrArgI leAspGlySerGlyGlnMetAlaI leThrValAspValGluValAlaSerAspThrProHisProAlaArgI
3301 TTGCCTGAACTGCCAGCTGGCGCAGTAGCAGAGCGGGTAAACTGGCTCGGATTAGGGCCGAAGAAAACCTATCCCGACCGCTTACTGCCCTGCTTT

915▶ leGlyLeuAsnCysGlnLeuAlaGlnValAlaGluArgValAsnTrpLeuGlyLeuGlyProGlnGluAsnTyrProAspArgLeuThrAlaAlaCysPh
Bst1107I (3431)
BspLU11I (3428) BsiWI (3439)
3401 TGACCGCTGGGATCTGCCATTGTCAGACATGTATACCCCGTACGTCTTCCCGAGCGAAAACGGTCTGCGCTGCGGGACGCGGAATTGAATTATGGCCCA

948▶ eAspArgTrpAspLeuProLeuSerAspMetTyrThrProTyrValPheProSerGluAsnGlyLeuArgCysGlyThrArgGluLeuAsnTyrGlyPro
3501 CACCAGTGGCGCGGCGACTTCCAGTTCACATCAGCCGCTACAGTCAACAGCAACTGATGGAACCAGCCATCGCCATCTGCTGCACGCGGAAGAAGGCA

982▶ HisGlnTrpArgGlyAspPheGlnPheAsnI leSerArgTyrSerGlnGlnGlnLeuMetGluThrSerHisArgHisLeuLeuHisAlaGluGluGlyT
NdeI (3626)
3601 CATGGCTGAATATCGACGGTTCCATATGGGGATTGGTGGCGACGACTCCTGGAGCCGTCAGTATCGGCGAATTACAGCTGAGCGCCGGTCGCTACCA

1015▶ hrTrpLeuAsnI leAspGlyPheHisMetGlyI leGlyGlyAspAspSerTrpSerProSerValSerAlaGluLeuGlnLeuSerAlaGlyArgTyrHi
NheI (3748)
EcoRI (3742)
3701 TTACCAGTTGGTCTGGTGTCAAAAATAATAATCTAGTCGAGAATTCGCTAGCTCGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAA

1048▶ sTyrGlnLeuValTrpCysGlnLys•••
3801 TGCAGTGAATAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGC

3901 AATAAACAAAGTTAAACAACAACAATTGCATTCTTTTATGTTTCAGGTTTCAGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAAACCTCTACAAATGTG

DraI (4010)
SwaI (4013)
4001 GTAGATCCATTTAAATGTTAATTAAGTACCATGACCAAAATCCCTTAACGTGAGTTTTCGTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGA

4101 TCTTCTTGAGATCCTTTTTTCTGCGCGTAATCTGCTGCTTGCAAAACAAAAAACACCCTACCAGCGGTGGTTTTGTTTCCGGATCAAGAGCTACCAA

4201 CTCTTTTTCCGAAGGTAAGTGGCTTCCAGCAGAGCGCAGATACAAATACTGTTCTTCTAGTGTAGCCGATGTTAGGCCACCACCTTCAAGAACTCTGTAGC

4301 ACCGCTACATACTCGCTCTGCTAATCTGTTACCAGTGGCTGCTGCCAGTGGCGATAAGTCTGTCTTACCAGGTTGGACTCAAGACGATAGTTACCG

4401 GATAAGGCGCAGCGGTGGGCTGAACGGGGGTTCTGTGCACACAGCCAGCTTGAGCGAACGACCTACCCGAAGTACCTACAGCGTGGAGCTAT

4501 GAGAAAGCGCCACGCTTCCCGAAGGGAGAAAGCGGGACAGGTATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGAAA

4601 CGCCTGGTATCTTTATAGTCCTGTGCGGGTTTCGCCACCTCTGACTTGAGCGTCGATTTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGGAAAAACGCC

4701 AGCAACGCGCCTTTTTACGGTTCCTGGCCTTTTGTGGCCTTTTGTCTACATGTTCTTAATTAAATTTTTCAAAGTAGTTGACAATTAATCATCGGCA

BspLU11I (4751)

AseI (4789)

4801 TAGTATATCGGCATAGTATAATACGACTCACTATAGGAGGGCCATCATGGCCAAGTTGACCAGTGCTGCCAGTGCTCACAGCCAGGGATGTGGCTGG

SfiI (4840) MscI (4851)

4900 AGCTGTTGAGTTCTGGACTGACAGTTGGGGTTCTCCAGAGATTTTGTGGAGGATGACTTTGCAGGTGTGGTCAGAGATGATGTCACCTGTTTCATCTCA

18▶ yAlaValGluPheTrpThrAspArgLeuGlyPheSerArgAspPheValGluAspAspPheAlaGlyValValArgAspAspValThrLeuPheI leSer

5000 GCAGTCCAGGACCAGGTGGTGCCTGACAACACCCTGGCTTGGGTGTGGGTGAGAGGACTGGATGAGCTGTATGCTGAGTGGAGTGAGGTGGTCTCCACCA

52▶ AlaValGlnAspGlnValValProAspAsnThrLeuAlaTrpValTrpValArgGlyLeuAspGluLeuTyrAlaGluTrpSerGluValValSerThrA

DraIII (5201)

5100 ACTTCAGGGATGCCAGTGGCCCTGCCATGACAGAGATTGGAGAGCAGCCCTGGGGGAGAGAGTTTGCCTGAGAGACCCAGCAGGCAACTGTGTGCACTT

85▶ snPheArgAspAlaSerGlyProAlaMetThrGluI leGlyGluGlnProTrpGlyArgGluPheAlaLeuArgAspProAlaGlyAsnCysValHisPh

SfiI (5249)

5200 TGTGGCAGAGGAGCAGGACTGAGGATAAGAATTGAGTTTCAGAAAAGGGGCGCTGAGTGGCCCTTTTTTCAACTTAATTAA

118▶ eValAlaGluGluGlnAsp•••