



150

EcoO109I (8)  
**PstI (7)**  
**SdaI (7)**      **Acc65I (44)**

1 CCTGCAGGGCCTGAAATAACCTCTGAAAGAGGAACCTTGGTTAGGTACCTTCTGAGGCTGAAAGAACCAGCTGTGGAATGTGTGCAGTTAGGGTGTGGAA

**NsiI (144)**

101 AGTCCCCAGGCTCCCAGCAGGCAGAAGTATGCAAAGCATGCATCTCAATTAGTCAGCAACCAGGTGTGAAAGTCCCAGGCTCCCAGCAGGCAGAAG

**NsiI (216)**      **SpeI (244)**

201 TATGCAAAGCATGCATCTCAATTAGTCAGCAACCATAGTCCCACTAGTTCCAGATGGCAAACATACACAAGGGATTAGTCAAACAATTTTTTGGCAAGA

301 ATGCTATGAATTTGTAATCACTTATGAACCAATGAAATACAAGATGAGTCTAGTTAATAATCTACAATTATTGGTAAAGAAGTATATTAGTGCTGAT

**NcoI (450)**      **NheI (488)**

401 TTCCTCTATCATACTATCTTTTCTATCAACCCACAAAACCTTTGGCACCATGGGGGTTCTCATCATCATCATCATGGTATGGCTAGCATGACTGG

1 MetGlyGlySerHisHisHisHisHisHisGlyMetAlaSerMetThrGly

**Bsu36I (549)**  
**Acc65I (544)**

501 TGGACAGCAATGGGTCGGATCTGTACGACGATGACGATAAGGTACCTAAGGATCAGCTTGGAGTTGATCCCGCTGTTTTACAACGTCGTGACTGGGAA

17 yGlyGlnGlnMetGlyArgAspLeuTyrAspAspAspAspLysValProLysAspGlnLeuGlyValAspProValValLeuGlnArgArgAspTrpGlu

601 AACCTGGCGTTACCCAACTTAATCGCCTTGCAGCACATCCCCCTTTCGCCAGCTGGCGTAATAGCGAAGAGGCCGCCACCGATCGCCCTCCCAACAGT

51 AsnProGlyValThrGlnLeuAsnArgLeuAlaAlaHisProProPheAlaSerTrpArgAsnSerGluGluAlaArgThrAspArgProSerGlnGlnL

**FspI (704)**      **Bsu36I (786)**

701 TGCGCAGCCTGAATGGCGAATGGCGCTTTGCCTGGTTTCCGGCACCAGAAGCGGTGCCGAAAGCTGGCTGGAGTGCATCTTCTGAGGCCGATACTGT

84 euArgSerLeuAsnGlyGluTrpArgPheAlaTrpPheProAlaProGluAlaValProGluSerTrpLeuGluCysAspLeuProGluAlaAspThrVa

801 CGTCGTCCCTCAAAGTGGCAGATGCACGGTTACGATGCGCCATCTACACCAACGTAACCTATCCATTACGGTCAATCCGCCGTTGTTCCACGGAG

117 lValValProSerAsnTrpGlnMetHisGlyTyrAspAlaProIleTyrThrAsnValThrTyrProIleThrValAsnProProPheValProThrGlu

901 AATCCGACGGGTTGTTACTCGCTCACATTTAATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACCGGAATATTTTTGATGGCGTTAACTCGCGCTTTC

151 AsnProThrGlyCysTyrSerLeuThrPheAsnValAspGluSerTrpLeuGlnGluGlyGlnThrArgIleIlePheAspGlyValAsnSerAlaPheH

1001 ATCTGTGGTGCAACGGCGCTGGTGGTACGGCCAGGACAGTCTGTTGCCGTCTGAATTTGACCTGAGCGCATTTTTACGCGCCGAGAAAACCGCT

184 isLeuTrpCysAsnGlyArgTrpValGlyTyrGlyGlnAspSerArgLeuProSerGluPheAspLeuSerAlaPheLeuArgAlaGlyGluAsnArgLe

**AatII (1185)**

1101 CGCGGTGATGGTGTGCTGGTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGATGAGCGGCATTTCCGCGTCTCGTTGCTGCATAAA

217 uAlaValMetValLeuArgTrpSerAspGlySerTyrLeuGluAspGlnAspMetTrpArgMetSerGlyIlePheArgAspValSerLeuLeuHisLys

1201 CCGACTACAAAATCAGCGATTTCCATGTTGCCACTCGCTTAAATGATGATTTACAGCCGCGTGTACTGGAGGCTGAAGTTCAGATGTGCGCGAGTTGC

251 ProThrThrGlnIleSerAspPheHisValAlaThrArgPheAsnAspAspPheSerArgAlaValLeuGluAlaGluValGlnMetCysGlyGluLeuA

**ClaI (1386)**

1301 GTGACTACCTACGGTAACAGTTTCTTTATGGCAGGGTAAACGCAGGTCGCCAGCGGCACCCGCCCTTTCGGCGGTGAAATTATCGATGAGCGTGGTGG

284 rgAspTyrLeuArgValThrValSerLeuTrpGlnGlyGluThrGlnValAlaSerGlyThrAlaProPheGlyGlyGluIleIleAspGluArgGlyGly

1401 TTATGCCGATCGGTCACACTACGCTGTAACGTCGAAAACCCGAAACTGTGGAGCGCGAAATCCCGAATCTCTATCGTGGGTTGTTGAATGCACACC

317 yTyrAlaAspArgValThrLeuArgLeuAsnValGluAsnProLysLeuTrpSerAlaGluIleProAsnLeuTyrArgAlaValValGluLeuHisThr

1501 GCCGACGGCACGCTGATTGAAGCAGAAGCCTGCGATGTCGGTTTCCGCGAGGTGCGGATTGAAAATGGTCTGCTGCTGCTGAAACGGCAAGCGTTGCTGA

351 AlaAspGlyThrLeuIleGluAlaGluAlaCysAspValGlyPheArgGluValArgIleGluAsnGlyLeuLeuLeuLeuAsnGlyLysProLeuLeu

**EcoRV (1675)**

1601 TTCGAGCGTTAACCGTCACGAGCATCATCTCTGCATGGTCAGGTCATGGATGAGCAGACGATGGTGAGGATATCCTGCTGATGAAGCAGAACAACCT

384 leArgGlyValAsnArgHisGluHisHisProLeuHisGlyGlnValMetAspGluGlnThrMetValGlnAspIleLeuLeuMetLysGlnAsnAsnPh

**DraIII (1752)**      **SspI (1792)**

1701 TAACGCCGTGCGCTGTTTCGATTATCCGAACCATCCGCTGTGGTACACGCTGTGCGACCCTACGGCCTGTATGTGGTGGATGAAGCAATATTGAACCC

417 eAsnAlaValArgCysSerHisTyrProAsnHisProLeuTrpTyrThrLeuCysAspArgTyrGlyLeuTyrValValAspGluAlaAsnIleGluThr

**BsaBI (1888)**

1801 CACGGCATGGTCCAATGAATCGTCTGACCGATGATCCGCGCTGGCTACCGCGATGAGCGAACCGGTAACGCGAATGGTGCAGCGCGATCGTAATCACCC

451 HisGlyMetValProMetAsnArgLeuThrAspAspProArgTrpLeuProAlaMetSerGluArgValThrArgMetValGlnArgAspArgAsnHisP

1901 CGAGTGTGATCATCTGGTTCGCTGGGAATGAATCAGGCCACGGCGCTAATCAGACGCGCTGTATCGCTGGATCAAATCTGCTGATCCTCCCGCCCGT

484 roSerValIleIleTrpSerLeuGlyAsnGluSerGlyHisGlyAlaAsnHisAspAlaLeuTyrArgTrpIleLysSerValAspProSerArgProVa

**BssHII (2060)**

2001 GCAGTATGAAGCGCGGAGCCGACACACCGCCACCATATTATTTGCCGATGTACGCGCGTGGATGAAGACCAGCCCTCCCGGCTGTGCCGAAA

517 lGlnTyrGluGlyGlyGlyAlaAspThrThrAlaThrAspIleIleCysProMetTyrAlaArgValAspGluAspGlnProPheProAlaValProLys

2101 TGGTCCATCAAAAAATGGCTTTCGCTACCTGGAGAGACGCGCCCGTGATCCTTTGCGAATACGCCACGCGATGGGTAACAGTCTTGGCGTTTCGCTA  
551▶ TrpSerI leLysLysTrpLeuSerLeuProGlyGluThrArgProLeuI leLeuCysGluTyrAlaHisAlaMetGlyAsnSerLeuGlyGlyPheAlaL  
2201 AACTACTGGCAGGCGTTTCGTCAGTATCCCCGTTTACAGGGCGGCTTCTGCTGGGACTGGGTGGATCAGTCGCTGATTAATATGATGAAAACGGCAACCC  
584▶ ysTyrTrpGlnAlaPheArgGlnTyrProArgLeuGlnGlyGlyPheValTrpAspTrpValAspGlnSerLeuI leLysTyrAspGluAsnGlyAsnPr  
Eco47III (2397)  
2301 GTGGTCGGCTTACGGCGGTGATTTTGGCGATACGCCAACGATCGCCAGTTCTGTATGAACGGTCTGGTCTTTGCCGACCGCACGCCATCCAGCGCTG  
617▶ oTrpSerAlaTyrGlyGlyAspPheGlyAspThrProAsnAspArgGlnPheCysMetAsnGlyLeuValPheAlaAspArgThrProHisProAlaLeu  
SacI (2502)  
2401 ACGGAAGCAAAACACCAGCAGCAGTTTTTCCAGTTCGGTTTATCCGGCAAACCATCGAAGTGACCAGCAATACCTGTTCCGTCATAGCGATAACGAGC  
651▶ ThrGluAlaLysHisGlnGlnGlnPhePheGlnPheArgLeuSerGlyGlnThrI leGluValThrSerGluTyrLeuPheArgHisSerAspAsnGluL  
2501 TCCTGCACTGGATGGTGGCGCTGGATGGTAAGCCGCTGGCAAAGCGGTGAAGTGCCCTCGGATGTCGCTCCACAAGGTAACAGTTGATTGAACTGCCTGA  
684▶ euLeuHisTrpMetValAlaLeuAspGlyLysProLeuAlaSerGlyGluValProLeuAspValAlaProGlnGlyLysGlnLeuI leGluLeuProGl  
2601 ACTACCGCAGCCGGAGAGCGCCGGCAACTCTGGCTCACAGTACGCGTAGTGCACCGAACGACCGACCGCATGGTCTCAGAACCCGGGCACATCAGCGCCTGG  
717▶ uLeuProGlnProGluSerAlaGlyGlnLeuTrpLeuThrValArgValValGlnProAsnAlaThrAlaTrpSerGluAlaGlyHisI leSerAlaTrp  
2701 CAGCAGTGGCGTCTGGCGGAAAACCTCAGTGTGACGCTCCCCGCGCGTCCACGCCATCCCGCATCTGACCACCAGCGAAATGGATTTTTGCATCGAGC  
751▶ GlnGlnTrpArgLeuAlaGluAsnLeuSerValThrLeuProAlaAlaSerHisAlaI leProHisLeuThrThrSerGluMetAspPheCysI leGluL  
2801 TGGGTAATAAGCGTTGGCAATTAACGCCAGTCAGGCTTCTTTACAGATGTGGATTGGCGATAAAAAACAACCTGCTGACGCCGCTGCGCGATCAGTT  
784▶ euGlyAsnLysArgTrpGlnPheAsnArgGlnSerGlyPheLeuSerGlnMetTrpI leGlyAspLysLysGlnLeuLeuThrProLeuArgAspGlnPh  
2901 CACCCGTGCACCGCTGGATAACGACATTGGCGTAAGTGAAGCGACCCGATTGACCTAACCGCTGGTCTGAAACGCTGGAAGCGCGGGCCATTACAG  
817▶ eThrArgAlaProLeuAspAsnAspI leGlyValSerGluAlaThrArgI leAspProAsnAlaTrpValGluArgTrpLysAlaAlaGlyHisTyrGln  
3001 GCCGAAGCAGCGTTGTTGCAGTGCACGGCAGATACACTTGTGATGCGGTGCTGATTACGACCGCTCAGCGTGGCAGCATCAGGGGAAAACCTTATTTA  
851▶ AlaGluAlaAlaLeuLeuGlnCysThrAlaAspThrLeuAlaAspAlaValLeuI leThrThrAlaHisAlaTrpGlnHisGlnGlyLysThrLeuPheI  
3101 TCAGCCGAAAACCTACCGGATTGATGGTAGTGGTCAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGATACCCGCATCCGGCGCGGATTGGCT  
884▶ leSerArgLysThrTyrArgI leAspGlySerGlyGlnMetAlaI leThrValAspValGluValAlaSerAspThrProHisProAlaArgI leGlyLe  
3201 GAACTGCCAGCTGGCGCAGGTAGCAGAGCGGTAACCTGGCTCGATTAGGGCCGCAAGAAAACCTATCCCGACCGCCTTACTGCCGCTGTTTTGACCGC  
917▶ uAsnCysGlnLeuAlaGlnValAlaGluArgValAsnTrpLeuGlyLeuGlyProGlnGluAsnTyrProAspArgLeuThrAlaAlaCysPheAspArg  
Bst1107I (3324)  
BspLU11I (3321) BsiWI (3332)  
3301 TGGGATCTGCCATTGTCCAGACATGTATACCCCGTACGCTTCCCGAGCGAAAACGGTCTGCGCTGCGGGACGCGGAATTGAATTATGGCCACACCCAGT  
951▶ TrpAspLeuProLeuSerAspMetTyrThrProTyrValPheProSerGluAsnGlyLeuArgCysGlyThrArgGluLeuAsnTyrGlyProHisGlnT  
3401 GGCGCGGCGACTTCCAGTTCACATCAGCCGCTACAGTCAACAGCAACTGATGGAAACCAGCCATCGCCATCTGCTGCACCGGAAGAAGGCACATGGCT  
984▶ rpArgGlyAspPheGlnPheAsnI leSerArgTyrSerGlnGlnGlnLeuMetGluThrSerHisArgHisLeuLeuHisAlaGluGluGlyThrTrpLe  
NdeI (3519)  
3501 GAATATCGACGGTTTCCATATGGGGATTGGTGGCGACGACTCCTGGAGCCCGTCAGTATCGGCGGAATTACAGCTGAGCGCCGGTCCGTACCATTACCAG  
1017▶ uAsnI leAspGlyPheHisMetGlyI leGlyGlyAspAspSerTrpSerProSerValSerAlaGluLeuGlnLeuSerAlaGlyArgTyrHisTyrGln  
NheI (3641)  
EcoRI (3635)  
3601 TTGGTCTGGTGTCAAAAATAAATCTAGTCGAGAATTTCGCTAGCTCGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTG  
1051▶ LeuValTrpCysGlnLys•••  
3701 AAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAAC  
MfeI (3815) DraI (3864)  
3801 AAGTTAAACAACAACAATTGCATTTCATTTTATGTTTCAGGTTTCAGGGGAGGTGTGGGAGTTTTTTAAAGCAAGTAAAACCTCTACAAATGTGGTAGATC  
DraI (3903)  
SwaI (3906)  
3901 CATTTAAATGTTAATTAAGTAGCCATGACCAAAATCCCTAACGTGAGTTTTCTGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTT  
4001 GAGATCCTTTTTTCTGCGCGTAATCTGCTGCTTGCACAAAAAAAACCACCGCTACCAGCGGTGGTTTGTTCGCCGATCAAGAGCTACCAACTCTTTT  
4101 TCCGAAGGTAAGTGGCTTCCAGCAGAGCGCAGATACCAATACTGTTCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAACTCTGTAGCACCGCCT  
4201 ACATACCTCGCTCTGCTAATCTGTTACCAGTGGCTGCTGCCAGTGGCGATAAGTCTGTCTTACCGGGTTGGACTCAAGACGATAGTTACCGGATAAGG  
4301 CGCAGCGGTTCGGCTGAACGGGGGTTCTGTGCACACAGCCAGCTTGGAGCGAACGACCTACACCGAACTGAGATACCTACAGCGTGAGCTATGAGAAA  
4401 CGCCACGCTTCCCGAAGGGAGAAAAGGCGGACAGGTATCCGGTAAGCGGCAGGGTTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGAAAACGCCTGG  
4501 TATCTTTATAGTCTGTGCGGTTTCGCCACCTCTGACTTGAGCGTGCATTTTTGTGATGCTGTCAGGGGGCGGAGCCTATGAAAAACGCCAGCAACG

4601 CGGCCTTTTACGGTTCCTGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTT <sup>BspLU11I (4644)</sup> AATTAATTTTCAAAGTAGTTGACAATTAATCATCGGCATAGTATA <sup>AseI (4682)</sup>  
 4701 TCGGCATAGTATAATACGACTCACTATA <sup>SfiI (4733)</sup> AGGAGGGCCATCAT <sup>MscI (4744)</sup> TGGCCAAGTTGACCAGTGCTGTCCCAGTGCTCACAGCCAGGGATGTGGCTGGAGCTGTTG  
 4801 AGTTCTGGACTGACAGTTGGGGTTCTCCAGAGATTTTGTGGAGGATGACTTTGCAGGTGGTCAGAGATGATGTCACCCTGTTTCATCTCAGCAGTCCA  
 21 ▶ luPheTrpThrAspArgLeuGlyPheSerArgAspPheValGluAspAspPheAlaGlyValValArgAspAspValThrLeuPheI leSerAlaValGI  
 4901 GGACCAGGTGGTGCCTGACAACACCCTGGCTTGGGTGGGTGAGAGGACTGGATGAGCTGTATGCTGAGTGGAGTGAGGTGGTCTCCACCAACTTCAGG  
 54 ▶ nAspGlnValValProAspAsnThrLeuAlaTrpValTrpValArgGlyLeuAspGluLeuTyrAlaGluTrpSerGluValValSerThrAsnPheArg  
 5001 GATGCCAGTGGCCCTGCCATGACAGAGATTGGAGAGCAGCCCTGGGGAGAGAGTTTGCCTGAGAGACCCAGCAGGCAACTGTGTGCACTTTGTGGCAG  
 88 ▶ AspAlaSerGlyProAlaMetThrGluI leGlyGluGlnProTrpGlyArgGluPheAlaLeuArgAspProAlaGlyAsnCysValHisPheValAlaG <sup>DraIII (5094)</sup>  
 5101 AGGAGCAGGACTGAGGATAAGAATTGAGTTTCAGAAAAGGGGCCTGAGTGGCCCTTTTTC AACTTAATTAA <sup>SfiI (5142)</sup>  
 121 ▶ luGluGlnAsp ••• <sup>EcoO109I (5142)</sup>