



150

EcoO109I (8)
PstI (7)
SdaI (7)

1 CCTGCAGGGCCTGAAATAACCTCTGAAAGAGGAACCTTGGTTAGGTACCTTCTGAGGCTGAAAGAACCAGCTGTGGAATGTGTGTGTCAGTTAGGGTGTGGAA

101 AGTCCCCAGGCTCCCCAGCAGGCAGAAGTATGCAAAGCATGCATCTCAATTAGTCAGCAACCAGGTGTGAAAGTCCCCAGGCTCCCCAGCAGGCAGAAG

201 TATGCAAAGCATGCATCTCAATTAGTCAGCAACCATAGTCCCACTAGTTCAGATGGCAAACATACACAAGGGATTAGTCAAACAATTTTTTGGCAAGA

NsiI (216) **SpeI (244)**

301 ATGCTATGAATTTTGAATCAGTTATGAACCAATGAAATACAAGATGAGTCTAGTTAATAATCTACAATTATTGGCTAAAGAAGTATATTAGTGTGAT

401 TTCCCTCTACTACTATCTTTTCTATCAACCCACAAAACCTTTGGCACCATGGGGGTTCTCATCATCATCATCATGGTATGGCTAGCATGACTGG

NcoI (450) **NheI (488)**

501 TGGACAGCAAATGGGTCGGATCTGTACGACGATGACGATAAGGTACCTAAGGATCAGCTTGGAGTTGATCCCGCTGTTTTACAACGTCGTGACTGGGAA

1►MetGlyGlySerHisHisHisHisHisHisGlyMetAlaSerMetThrGly

Bsu36I (549)
Acc65I (544)

601 AACCTGGCGTTACCCAACCTAATCGCCTTGCAGCACATCCCCCTTCGCCAGCTGGCGTAATAGCGAAGAGGCCGCCACCGATCGCCCTCCCAACAGT

17►yGlyGlnGlnMetGlyArgAspLeuTyrAspAspAspAspLysValProLysAspGlnLeuGlyValAspProValValLeuGlnArgArgAspTrpGlu

51►AsnProGlyValThrGlnLeuAsnArgLeuAlaAlaHisProProPheAlaSerTrpArgAsnSerGluGluAlaArgThrAspArgProSerGlnGlnL

FspI (704) **Bsu36I (786)**

701 TGCGCAGCCTGAATGGCGAATGGCGCTTTGCCTGGTTCCGGCACCAGAAGCGGTGCCGAAAGCTGGCTGGAGTGCATCTTCTGAGGCCGATACTGT

84►euArgSerLeuAsnGlyGluTrpArgPheAlaTrpPheProAlaProGluAlaValProGluSerTrpLeuGluCysAspLeuProGluAlaAspThrVa

801 CGTCGTCCCTCAAACCTGGCAGATGCACGGTTACGATGCCCATCTACACCAACGTAACCTATCCATTACGGTCAATCCGCCGTTTGTCCACGGAG

117►IValValProSerAsnTrpGlnMetHisGlyTyrAspAlaProIleTyrThrAsnValThrTyrProIleThrValAsnProProPheValProThrGlu

901 AATCCGACGGGTTGTTACTCGCTCACATTTAATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACCGGAATTATTTTTGATGGCGTTAACTCGCGCTTC

151►AsnProThrGlyCysTyrSerLeuThrPheAsnValAspGluSerTrpLeuGlnGluGlyGlnThrArgIleIlePheAspGlyValAsnSerAlaPheH

1001 ATCTGTGGTGCAACGGCGCTGGTGGTTACGGCCAGGACAGTCTGTTGCCGTCTGAATTTGACCTGAGCGCATTTTTACGCGCCGAGAAAACCGCT

184►isLeuTrpCysAsnGlyArgTrpValGlyTyrGlyGlnAspSerArgLeuProSerGluPheAspLeuSerAlaPheLeuArgAlaGlyGluAsnArgLe

AatII (1185)

1101 CGCGGTGATGGTGTGCTGGTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGATGAGCGGCATTTCCGTCGACTCTCGTTGCTGCATAAA

217►uAlaValMetValLeuArgTrpSerAspGlySerTyrLeuGluAspGlnAspMetTrpArgMetSerGlyIlePheArgAspValSerLeuLeuHisLys

1201 CCGACTACAAAATCAGCGATTTCCATGTTGCCACTCGCTTTAATGATGATTTACGCCGCGCTGACTGGAGGCTGAAGTTCAGATGTGCGCGAGTTGC

251►ProThrThrGlnIleSerAspPheHisValAlaThrArgPheAsnAspAspPheSerArgAlaValLeuGluAlaGluValGlnMetCysGlyGluLeuA

ClaI (1386)

1301 GTGACTACCTACGGTAACAGTTTCTTTATGGCAGGGTAAACGCAGGTCGCCAGCGGCACCGCCCTTCGGCGGTGAAATTATCGATGAGCGTGGTGG

284►rgAspTyrLeuArgValThrValSerLeuTrpGlnGlyGluThrGlnValAlaSerGlyThrAlaProPheGlyGlyGluIleIleAspGluArgGlyGly

1401 TTATGCCGATCGCTCACACTACGCTGAAACGTGAAAACCCGAAACTGTGGAGCGCGAAATCCCAATCTCTATCGTGGGTGGTTGAATGCACACC

317►yTyrAlaAspArgValThrLeuArgLeuAsnValGluAsnProLysLeuTrpSerAlaGluIleProAsnLeuTyrArgAlaValValGluLeuHisThr

1501 GCCGACGGCAGCTGATTGAAGCAGAAGCCTGCGATGTCGGTTCCGCGAGGTGCGGATTGAAAATGGTCTGCTGCTGCTGAACGGCAAGCCGTTGCTGA

351►AlaAspGlyThrLeuIleGluAlaGluAlaCysAspValGlyPheArgGluValArgIleGluAsnGlyLeuLeuLeuLeuAsnGlyLysProLeuLeu

EcoRV (1675)

1601 TTCGAGCGTAAACCGTCACGAGCATCATCTCTGCATGGTCAGGTCATGGATGAGCAGACGATGGTGAGGATATCCTGCTGATGAAGCAGAACAACCT

384►IleArgGlyValAsnArgHisGluHisHisProLeuHisGlyGlnValMetAspGluGlnThrMetValGlnAspIleLeuLeuMetLysGlnAsnAsnPh

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

1701 TAACGCCGTGCGCTGTTTCGATTATCCGAACCATCCGCTGTGGTACACGCTGTGCGACCCTACGGCCTGTATGTGGTGGATGAAGCAATATTGAACCC

417►eAsnAlaValArgCysSerHisTyrProAsnHisProLeuTrpTyrThrLeuCysAspArgTyrGlyLeuTyrValValAspGluAlaAsnIleGluThr

BsaBI (1888)

1801 CACGGCATGGTCCAATGAATCGTCTGACCGATGATCCGCGCTGGCTACCGCGATGAGCGAACCGGTAACGCGAATGGTGCAGCGCGATCGTAATCACC

451►HisGlyMetValProMetAsnArgLeuThrAspAspProArgTrpLeuProAlaMetSerGluArgValThrArgMetValGlnArgAspArgAsnHisP

1901 CGAGTGTGATCATCTGGTCGCTGGGAATGAATCAGGCCACGGCGCTAATCACGACGCGCTGTATCGCTGGATCAAATCTGTCGATCCTCCCGCCCGT

484►roSerValIleIleTrpSerLeuGlyAsnGluSerGlyHisGlyAlaAsnHisAspAlaLeuTyrArgTrpIleLysSerValAspProSerArgProVa

BssHIII (2060)

2001 GCAGTATGAAGCGCGGAGCCGACACCACCGCCACCGATATTATTTGCCCGATGTACGCGCGCTGGATGAAGACCAGCCCTCCCGGCTGTGCCGAAA

517►IGlnTyrGluGlyGlyGlyAlaAspThrThrAlaThrAspIleIleCysProMetTyrAlaArgValAspGluAspGlnProPheProAlaValProLys

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 TCCTGCACTGGATGGTGGCGCTGGATGTAAGCCGCTGGCAAAGCGGTGAAGTGCCCTCGGATGTCGCTCCACAAGGTAACAGTTGATTGAACTGCCTGA
684▶ euLeuHisTrpMetValAlaLeuAspGlyLysProLeuAlaSerGlyGluValProLeuAspValAlaProGlnGlyLysGlnLeuI leGluLeuProGl
2601 ACTACCGCAGCCGGAGAGCGCCGGCAACTCTGGCTCACAGTACGCGTAGTGCACCGAACGACCGACCGCATGGTCAGAACCCGGGCACATCAGCGCTGG
717▶ uLeuProGlnProGluSerAlaGlyGlnLeuTrpLeuThrValArgValValGlnProAsnAlaThrAlaTrpSerGluAlaGlyHisI leSerAlaTrp
2701 CAGCAGTGGCGTCTGGCGGAAAACCTCAGTGTGACGCTCCCCGCGCTCCACGCCATCCCGCATCTGACCACCAGCGAAATGGATTTTTGCATCGAGC
751▶ GlnGlnTrpArgLeuAlaGluAsnLeuSerValThrLeuProAlaAlaSerHisAlaI leProHisLeuThrThrSerGluMetAspPheCysI leGluL
2801 TGGGTAATAAGCGTTGGCAATTAACGCCAGTCAGGCTTCTTTACAGATGTGGATTGGCGATAAAAAACAACCTGCTGACGCCGCTGCGCGATCAGTT
784▶ euGlyAsnLysArgTrpGlnPheAsnArgGlnSerGlyPheLeuSerGlnMetTrpI leGlyAspLysLysGlnLeuLeuThrProLeuArgAspGlnPh
2901 CACCCGTGCAACCGCTGGATAACGACATTGGCGTAAGTGAAGCGACCCGATTGACCTAACCGCTGGTTCGAACGCTGGAAGCGCGGGCCATTACAG
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 GGCGCGGCACTTCCAGTTCACATCAGCCGCTACAGTCAACAGCAACTGATGGAACACGCGCATCGCCATCTGCTGCACCGGAAGAAGGCACATGGCT
984▶ rpArgGlyAspPheGlnPheAsnI leSerArgTyrSerGlnGlnGlnLeuMetGluThrSerHisArgHisLeuLeuHisAlaGluGluGlyThrTrpLe
NdeI (3519)
3501 GAATATCGACGGTTTCCATATGGGATTGGTGGCGACGACTCCTGGAGCCCGTACGATCGCGGAATTACAGCTGAGCGCCGGTCCCTACCATTACCAG
1017▶ uAsnI leAspGlyPheHisMetGlyI leGlyGlyAspAspSerTrpSerProSerValSerAlaGluLeuGlnLeuSerAlaGlyArgTyrHisTyrGln
NheI (3641)
EcoRI (3635)
3601 TTGGTCTGGTGTCAAAAATAAATCTAGTCGAGAATTCGCTAGCTCGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTG
1051▶ LeuValTrpCysGlnLys•••
3701 AAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAAC
MfeI (3815) DraI (3864)
3801 AAGTTAAACAACAACAATTGCATTTCATTTTATGTTTCAGGTTTCAGGGGAGGTGTGGGAGTTTTTTAAAGCAAGTAAAACCTCTACAAATGTGGTAGATC
DraI (3903)
SwaI (3906)
3901 CATTTAAATGTTAATTAAGTAGCCATGACCAAAATCCCTAACGTGAGTTTTCTGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTT
4001 GAGATCCTTTTTTCTGCGCGTAATCTGCTGCTTGCAAAACAAAAAACACCGCTACCAGCGGTGGTTTGTTCGCCGATCAAGAGCTACCAACTCTTTT
4101 TCCGAAGGTAAGTGGCTTCCAGCAGAGCGCAGATACCAATACTGTTCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAACTCTGTAGCACCGCCT
4201 ACATACCTCGCTCTGCTAATCTGTTACCAGTGGCTGCTGCCAGTGGCGATAAGTCTGTCTTACCGGTTGGACTCAAGACGATAGTTACCGGATAAGG
4301 CGCAGCGGTTCGGCTGAACGGGGGTTCTGTGCACACAGCCAGCTTGGAGCGAACGACCTACACCGAAGTACAGCTGAGCTATGAGAAAAG
4401 CGCCACGCTTCCCGAAGGGAGAAAAGGCGGACAGGTATCCGGTAAGCGGCAGGGTTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGAAAACGCCTGG
4501 TATCTTTATAGTCTGTGCGGTTTCGCCACCTCTGACTTGAGCGTGCATTTTTGTGATGCTGTCAGGGGGCGGAGCCTATGAAAAACGCCAGCAACG

4601 CGGCCTTTTACGGTTCCTGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTT **BspLU11I (4644)** AATTAATTTTCAAAGTAGTTGACAATTAATCATCGGCATAGTATA **AseI (4682)**
 4701 TCGGCATAGTATAATACGACTCACTATAGGAGGGCCATCATGGCCAAGTTGACCAGTGCTGTCCCAGTGCTCACAGCCAGGGATGTGGCTGGAGCTGTTG **SfiI (4733)** **MscI (4744)** 1▶MetAlaLysLeuThrSerAlaValProValLeuThrAlaArgAspValAlaGlyAlaValG
 4801 AGTTCTGGACTGACAGTTGGGTTCTCCAGAGATTTTGTGGAGGATGACTTTCAGGTGTGGTCAGAGATGATGTCACCCTGTTTCATCTCAGCAGTCCA
 21▶luPheTrpThrAspArgLeuGlyPheSerArgAspPheValGluAspAspPheAlaGlyValValArgAspAspValThrLeuPheIleSerAlaValGI
 4901 GGACCAGGTGCTGCCTGACAACACCCTGGCTTGGGTGTGGTGAGAGACTGGATGAGCTGTATGCTGAGTGGAGTGAGGTGGTCTCCACCAACTTCAGG
 54▶nAspGlnValValProAspAsnThrLeuAlaTrpValTrpValArgGlyLeuAspGluLeuTyrAlaGluTrpSerGluValValSerThrAsnPheArg
 5001 GATGCCAGTGGCCCTGCCATGACAGAGATTGGAGAGCAGCCCTGGGGAGAGAGTTTGCCTGAGAGACCCAGCAGGCAACTGTGTGCACTTTGTGGCAG
 88▶AspAlaSerGlyProAlaMetThrGluIleGlyGluGlnProTrpGlyArgGluPheAlaLeuArgAspProAlaGlyAsnCysValHisPheValAlaG **DraIII (5094)**
 5101 AGGAGCAGGACTGAGGATAAGAATTGAGTTTCAGAAAAGGGGCCTGAGTGGCCCTTTTTC AACTTAATTAA **SfiI (5142)**
 121▶luGluGlnAsp••• **EcoO109I (5142)**