



PvuI (7)
SgfI (6)
MfeI (82)

1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGGCAGAGCGCACATCGCCACAGTCCCCGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGTGCCTA
101 GAGAAAGTGGCGCGGGTAAACTGGAAAGTGATGTCGTGTACTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

Psp1406I (203)
HindIII (245)
Bsu36I (291)

201 GTGAACGTTCTTTTTCGCAACGGGTTTGCCGCCAGAACACAGTGAAGCTTCGAGGGCTCGCATCTCTCCTTACGCGCCCGCCCTACCTGAGGCC
301 GCCATCCACGCGGGTTGAGTCGCGTTTCTGCCGCCCTCCCGCTGTGGTGCCTCCTGAAGCTCGTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

NgoMI (441)
NaeI (441)

401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCTAACTCTACGTCTTTGTTTCGTTT

NcoI (560)
BstEII (555)

501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGGGCCCTACCTGAGATCACCGGTACCATTGGAGCTGCGACCCTACCAGTGGGAAGTGATCTTACC
1▶MetGluLeuArgProTyrGlnTrpGluValIleLeuPr

XbaI (684)

601 TGCTCTGGAGGGCAAGAATATCATTATATGGCTGCCACGGGTGCTGGGAAGACCCGGGCAGCTGCCTTTGTAGCCAAGAGGCATCTAGAGACGGTAGAC
13▶oAlaLeuGluGlyLysAsnIleIleIleIleTrpLeuProThrGlyAlaGlyLysThrArgAlaAlaAlaPheValAlaLysArgHisLeuGluThrValAsp

701 AGAGGCAAGTGGTGGTACTGGTCAATAGGGTACACCTGGTGGACCCAGCAGCCGAGGAGTTCAGGCGCATGCTGGATAAACACTGGACTGTAAACACCC
47▶ArgGlyLysValValValLeuValAsnArgValHisLeuValSerGlnHisAlaGluGluPheArgArgMetLeuAspLysHisTrpThrValThrThrL

DraIII (733)
SphI (767)

801 TGAGTGGGACATGGGATCCCGAGCTGGCTTTGGCCTGATGGCTCGGAGCCACGACCTGCTCATCTGTACGGCAGAGTTGTTACAGTTGGCACTCAACAG
80▶euSerGlyAspMetGlySerArgAlaGlyPheGlyLeuMetAlaArgSerHisAspLeuLeuIleCysThrAlaGluLeuLeuGluLeuAlaLeuAsnSe

BamHI (814)

901 CTCTGAGGAGGATGAACACGTAGAGCTCAGAGAATTCTCGCTGATTGTGGTGGACGAGTGTACCACACCCACAAGGACACCGTCTACAACACCATCTTG
113▶rSerGluGluAspGluHisValGluLeuArgGluPheSerLeuIleValValAspGluCysHisHisThrHisLysAspThrValTyrAsnThrIleLeu

EcoRI (931)
PshAI (952)
Tth111I (976)

1001 AGCCGGTACCTAGAACAAGCTGAAGAAGGCAGAGCCCTCCCCAGGTCTGGGTCTCACAGCTCCCCAGGCACTGGAGGGGCCACCAAGCTCCAAG
147▶SerArgTyrLeuGluGlnLysLeuLysLysAlaGluProLeuProGlnValLeuGlyLeuThrAlaSerProGlyThrGlyYalThrLysLeuGlnG

Acc65I (1004)

1101 GGGCATTGATCACATCCTACAGCTTTGTGCGAATTTGGATACGTGCCACATCATGTCCGCAAGAATTGCTACTCCCAGCTGCTGATGCATAACCCAAA
180▶lyAlaIleAspHisIleLeuGluLeuCysAlaAsnLeuAspThrCysHisIleMetSerProLysAsnCysTyrSerGlnLeuLeuMetHisAsnProLy

BamHI (1239)

1201 GCCCTGCAAGCAGTATGACCTCTGCCAAAGCGCGCACAGGATCCTTTGGGGACTTGATAAAAAAGCTTATGAACCAATCCACCAACAACTAGAGATG
213▶sProCysLysGluTyrAspLeuCysGluArgArgAlaGlnAspProPheGlyAspLeuIleLysLysLeuMetAsnGlnIleHisSglNglNLeuGluMet

1301 CCTGACTTGAAGCAACAATTTGGAACCCAGATGTATGAGCAGCAAGTGGTACAGTTGTGCAAGGATGCGGCAGAGGCTGGACTCCAGGAACAGCGGGTGT
247▶ProAspLeuLysGlnGlnPheGlyThrGlnMetTyrGluGlnGlnValValGlnLeuCysLysAspAlaAlaGluuAlaGlyLeuGlnGluGlnArgValT

BspLU11I (1472)

1401 ATGCGCTGCATTTGCGCGCTACAATGATGCGCTATTTATCCACGATACTGTCGTGCCCGGGACGCCCTTGACATGTTGCAAGATTTTTACGACAGAGA
280▶yrAlaLeuHisLeuArgArgTyrAsnAspAlaLeuPheIleHisAspThrValArgAlaArgAspAlaLeuAspMetLeuGlnAspPheTyrAspArgG

NheI (1581)

1501 ACGCACCACAAAAACACAGATGGTGCCTGCTGAAAGCTGGCTGCTGAAGCTGTTTGTGACCCATAAAAAATGTGCTGGCCAGCTAGCAGCTCGGGGCTCT
313▶uArgThrThrLysThrGlnMetValArgAlaGluSerTrpLeuLeuLysLeuPheAspAspHisLysAsnValLeuGlyGlnLeuAlaAlaArgGlyPro

MscI (1656)

1601 GAGAACCCGAAGTTGGAGATGCTGGAAAGGATCTTACTGAAGCAGTTTGGGAGTCTTGGCCACACTCGGGGTATCATCTTACCAGAACCCTGACAGCTG
347▶GluAsnProLysLeuGluMetLeuGluArgIleLeuLeuLysGlnPheGlySerProGlyHisThrArgGlyIleIlePheThrArgThrArgGlnThrA

BsaBI (1764)

1701 CTTCTCCCTCTGCTCTGGCTTCGGCAGCAGCCTTGCTACAGACTGTGGGCATCAAGCCGAGATGCTGATCGGAGCAGGGAACACAAGCCAGAGCAC
380▶IaSerSerLeuLeuLeuTrpLeuArgGlnGlnProCysLeuGlnThrValGlyIleLysProGlnMetLeuIleGlyAlaGlyAsnThrSerGlnSerTh

BstXI (1871)
MscI (1868)
EcoRV (1897)

1801 ACACATGACCCAGAAAGACCAGCAGGAAGTGATCCAGGAGTTCAGGGATGGTATCCTGAGCCTTCTAGTGGCCACAAGTGTGGCAGAGGAGGGGCTGGAT
413▶rHisMetThrGlnLysAspGlnGlnGluValIleGluGlnuPheArgAspGlyIleLeuSerLeuLeuValAlaThrSerValAlaGluGluGlyLeuAsp

NcoI (1952)

1901 ATCGCTCAGTGAATGTGGTGGTGCCTATGGGCTCCTGACCAATGAGATCTCCATGGTCCAGGCCCGGGGTCGTGCTCGAGCTGGTCTGAGTGTACT
447▶IleAlaGlnCysAsnValValValArgTyrGlyLeuLeuThrAsnGluIleSerMetValGlnAlaArgGlyArgAlaArgAlaGlyGlnSerValTyrS

BglII (1946)
XhoI (1976)

2001 CCTTCTGGCTACAGAGGCGAGTCGGGAGATGAAGCGGGAGCTAACCAATGAGGCTCTGGAGGTGCTGATGGAGAAGGCTGTGGCTGCTGTACAGAAGAT
480▶erPheLeuAlaThrGluGlySerArgGluMetLysArgGluLeuThrAsnGluAlaLeuGluuValLeuMetGluLysAlaValAlaAlaValGlnLysMe

2101 GGACCCTGATGAGTTCAAGGCCAAGATCCGGGACTTGCAGCAAGCATCTAGTTAAGCGGCAGCACGCGGCCCATCGGGAGATCCAGCAGGGGCGAG
513▶tAspProAspGluPheLysAlaLysIleArgAspLeuGlnGlnAlaSerLeuValLysArgAlaAlaArgAlaAlaHisArgGluIleGluGlnGlyGln

BbrPI (2212)

2201 TTCCTACCGGAGCACGTGCAACTTCTCTGCATCAACTGTATGGTGGCCGTGGGCTACGGGAGTGACCTGCGGAAAGTGGAGGGCACCCACCACGTCAATG
547▶PheLeuProGluHisValGlnLeuLeuCysIleAsnCysMetValAlaValGlyTyrGlySerAspLeuArgLysValGluGlyThrHisHisValAsnV

2301 TGAACCCCAACTTCTCGGTCTACTATACCACCTCCAGAACCTGTGGTCATTAACAAGTCTTTAAGGACTGGAGACCTGGAGGAACCATCAGGTGCAG
580▶alAsnProAsnPheSerValTyrTyrThrThrSerGlnAsnProValValIleAsnLysValPheLysAspTrpArgProGlyGlyThrIleArgCysSe

2401 TAACTGTGGGGAGGTCTGGGGCTTCCAGATGATCTACAAATCAGTGACCTTGCCAGTGCTCAAAATCGGAAGCATGCTACTGGAAACACCTCGAGGGAAAG
 613▶rAsnCysGlyGl uVal TrpGlyPheGlnMetIleTyrLysSerValThrLeuProValLeuLysIleGlySerMetLeuLeuGluThrProArgGlyLys
 PstI (2471) XhoI (2489)
 PstI (2554)
 SdaI (2553)
 EcoRV (2548)
 2501 ATCCAGGCCAAAAAGTGGTCCCGGGTGCCTTTCTCCATACCAGTCTTCGATATCTGCAGGACTGCACACAAAGCCTGTCTGAGCTCTCCCTGGACTGAC
 647▶IleGlnAlaLysLysTrpSerArgValProPheSerIleProValPheAspIleLeuGlnAspCysThrGlnSerLeuSerGluLeuSerLeuAsp●●●
 SpeI (2613)
 2601 CCCCTTGACTGACTAGTCTCTAGCTCGACATGATAAGATACATTGATGAGTTTGACAAACCACAAC TAGAATGCAGTGAAAAAATGCTTTATTTGTG
 HpaI (2782) MfeI (2793)
 2701 AAATTTGTGATGCTATTGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGTTAAACAACAATTGC
 EcoRI (2878)
 2801 ATTCATTTTATGTTTCAGGTTCCAGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGAATTCTAAAATACAGCATAGC
 2901 AAAACTTTAACTCCAAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTT
 3001 GCAGCCTCACCTTCTTTCATGGAGTTTAAAGATATAGTGTATTTTCCCAAGTTTGAAC TAGCTCTTCATTTCTTTATGTTTTAAATGCACTGACCTCCCA
 SspI (3117) SmaI (3131)
 3101 CATTCCCTTTTGTAGTAAAATATTCAGAAATAATTTAAATACATCATTGCAATGAAAATAAATGTTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTT
 3201 CATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAAGGAACCTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCTCGGTG
 141▶●●●AsnArgThrT
 3301 TACTTGAGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCCATTCATCTCAATGAGCACAAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTC
 136▶yrLysLeuProIleLeuGluGluIleThrThrLysValLeuLysGlyAsnMetGluIleLeuValPheCysAspProAlaTyrAspSerIleLeuGluAr
 BstXI (3421)
 3401 TGCACATGCCACAGGGGTGACCACCTGATGGATCTGTCACCTCATCAGAGTAGGGGTGCCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCCGTT
 103▶gCysMetGlyCysProSerValValArgIleSerArgAspValGluAspSerTyrProHisArgValAlaValIleThrAspPheAspLysGlnGlyAsn
 StuI (3556)
 3501 GCTCACAGCAGACCAATGGCAATGGCTTCAGCACAGACAGTACCCTGCCAATGTAGGCTCAATGTGGACAGCAGAGATGATCTCCCCAGTCTTGGTC
 70▶SerValAlaSerGlyIleAlaIleAlaGluAlaCysValThrValArgGlyIleTyrAlaGluIleHisValAlaSerIleIleGluGlyThrLysThrA
 XmnI (3698)
 3601 CTGATGGCCGCCCGACATGGTGTGTTGCTCATAGAGCATGGTGATCTTCTCAGTGGCGACCTCCACCAGCTCCAGATCCTGCTGAGAGATGTTGA
 36▶rglIleAlaAlaGlyValHisHisLysAsnAspGluTyrLeuMetThrIleLysGluThrAlaValGluValLeuGluLeuAspGluGlnSerIleAsnPh
 BspHI (3706) AseI (3764)
 3701 AGGTCTTCATGATGGCCCTCTATAGTGAGTCGTATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACAGCGTGGATGGCGTCTCCAGC
 3▶eThrLysMet
 3801 TATCTGACGGTTCCTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCTACCGCCATTTGCGTCAATGGGGCGGAGTTGTTACGACATTT
 SpeI (3919)
 3901 TGGAAAGTCCCGTTGATTTACTAGTCAAAACAACTCCATTGACGTC AATGGGGTGGAGACTTGGAAATCCCGTGAGTCAAACCGCTATCCACGCC
 SnaBI (4047)
 4000 ATTGATGTA CTGCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGTA CTGCCAAGTAGGAAAGTCCCATAGGTCATGTA CTGGGCA
 NdeI (4152)
 4100 TAATGCCAGGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCGTACTTGGCATATGATACACTTGATGTA CTGCCAAGTGGGCGAGTTTACCGTAAAT
 4200 ACTCCACCATTGACGTCAATGGAAAGTCCCTATTGGCGTTACTATGGGAACATACGTCAATTATTGACGTCAATGGGCGGGGCTGTTGGGCGGTGACCC
 PstI (4331) SdaI (4330) PacI (4338) BspLU11I (4348)
 4300 AGGCGGGCCATTTACCGTAA GTTATGTAACGCCTGCAGGTTAA TTAAGAACATGTGAGCAAAGGCCAGCAAAGGCCAGGAACCGTAAAAAGGCCCG
 4398 GTTGCTGGCGTTTTTCCATAGGCTCCGCCCTGACGAGCATCAAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAGATAC
 4498 CAGGCGTTTTCCCTGGAAGCTCCCTCGTGCCTCTCTGTTCCGACCCTGCCGTTACCGGATACCTGTCCGCTTTCTCCCTCGGGAAGCGTGCCG
 ApaLI (4662)
 4598 TTTCTCATAGCTCAGCTGATAGGTATCTCAGTTCGGTGTAGGTCGTTCTCCAGCTGGGCTGTGTGCACGAACCCCCGTTAGCCCGACCGCTGCGC
 4698 CTTATCCGGTAACTATCGTCTTGTAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTA
 4798 GCGGTGCTACAGAGTCTTGAAGTGGTGGCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAA
 4898 AAAGAGTTGGTAGCTCTTGTATCCGGCAAACAACACCCTGTTAGCGGTGGTTTTTTTTGTTTGAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCA
 PacI (5078) SmaI (5087)
 4998 AGAAGATCCTTTGATCTTTTCTACGGGCTGACGCTCAGTGGAAACGAAAACCTCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATC A
 EagI (5098)
 NotI (5097)
 5098 CGGCGCAATAAAATATCTTTATTTTATTACATCTGTGTGGTTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAAACAAAACGAAACA
 5198 AAACAAACTAGCAAATAGGCTGTCCCAAGTGAAGTGCAGGTGCCAGAACATTTCTCTATCGAA