



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

1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGCAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA
101 GAGAAAGTGGCGCGGGTAAACTGGAAAGTGATGTCGTGACTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

Psp1406I (203)
HindIII (245)

201 GTGAACGTTCTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGGCTCGCATCTCTCTTTCACGCGCCCGCCCTACCTGAGGCC
301 GCCATCCACGCGGGTTGAGTCGCGTTTCTGCCGCCCTCCCGCCTGTGGTGCCTCCTGAAGCTCGTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

NgoMI (441)
NaeI (441)

401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGTCAACTCTACGTCTTTGTTTCGTTT

NcoI (560)
BstEII (555)
KasI (535)
AgeI (552)

501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGGGCGCCTACCTGAGATCACCGGTACCATGGAGCTTCGGTCTACCAATGGGAGGTGATCATGCC
1Me tGl uLeuArgSer TyrGl nTrpGl uVal I l eMe tPr

SmaI (653)

601 TGCCCTGGAGGGCAAGAATATCATCATCTGGCTGCCACGGGTGCCGGGAAGACCCGGGCGGCTGCTTATGTGCCAAGCGGCACCTAGAGACTGTGGAT
13>oAl aLeuGl uGl yLysAsnI l eI l eI l eI l eTrpLeuP roThr Gl yAl aGl yLysThrArgAl aAl aAl aTyrValAl aLysArgHi sLeuGl uThr Val Asp

DraIII (733)
ApaLI (730)
BstEII (738)
SphI (767)

701 GGAGCCAAGGTGGTTGTATTGGTCAACAGGGTGACCTGGTGACCCAGCATGGTGAAGAGTTCAGGCGCATGCTGGATGGACGCTGGACCGTGACAACCC
47>Gl yAl aLysVal Val Val LeuVal AsnArgVal Hi sLeuVal Thr Gl nHi sGl yGl uGl uPheArgArgMe tLeuAspGl yA rgTrpThr Val Thr Thr L
801 TGAGTGGGACATGGACACAGTCTGGCTTTGGCCACCTGGCCCGGTGCCATGACCTGCTCATCTGCACAGCAGAGCTTCTGCAGATGGCACTGACCAG
80>euSer Gl yAspMe tGl yProArgAl aGl yPheGl yHi sLeuAl aArgCysHi sAspLeuLeuI l eCysThrAl aGl uLeuLeuGl nMe tAl aLeuThr Se

Thh11I (976)
BspHI (995)

901 CCCCAGGAGGAGGAGCAGCTGGAGTCACTGTCTTCTCCCTGATCGTGGTGGATGAGTGCCACCACACGCACAAGGACACCGTCTACAACGTCATCATG
113>r ProGl uGl uGl uHi sVal Gl uLeuThr Val PheSerLeuI l eVal Val AspGl uCysHi sHi sThr Hi sLysAspThr Val TyrAsnVal I l eMe t
1001 AGCCAGTACCTAGAACTTAAACTCCAGAGGGCAGCCGCTACCCAGGTGCTGGTCTCACAGCCTCCCAAGGCACTGGCGGGGCTCCAAACTCGATG
147>Ser Gl nTyrLeuGl uLeuLysLeuGl nArgAl aGl nProLeuP roGl nVal LeuGl yLeuThrAl aSer P roGl yThr Gl yGl yAl aSer LysLeuAspG

DraIII (1140)

1101 GGGCCATCAACCAGCTCCTGCAGCTCTGTGCCAATTGGACACGTGGTGCATCATGTACCCCAAGTGTGCCCCAGCTGCAGGAGCACAGCCAACA
180>I yAl aI l eAsnHi sVal LeuGl nLeuCysAl aAsnLeuAspThr TrpCysI l eMe tSer P roGl nAsnCysCysP roGl nLeuGl nGl uHi sSer Gl nGl
1201 GCCTTGCAAAACAGTACAACCTCTGCCACAGGCGCAGCCAGGATCCGTTTGGGACTTGCTGAAGAAGTTCATGGACCAATCCATGACCACCTGGAGATG
213>nProCysLysGl nTyrAsnLeuCysHi sArgArgSer Gl nAspP roPheGl yAspLeuLysLysLeuMe tAspGl nI l eHi sAspHi sLeuGl uMe t
1301 CCTGAGTTGAGCCGAAATTTGGGACGCAAAATGTATGACGACAGTGGTGAAGCTGAGTGAGGCTGCGGCTTTGGCTGGGCTTCAGGAGCAACGGGTGT
247>ProGl uLeuSerArgLysPheGl yThr Gl nMe tTyrGl uGl nGl nVal Val LysLeuSer Gl uAl aAl aAl aLeuAl aGl yLeuGl nGl uGl nArgVal T

Thh11I (1444)
BsaBI (1483)

1401 ATGCGCTTACCTGAGGCGCTACAATGACGCGCTGCTCATCCATGACACCGTCCGCGCGCTGGATGCCTTGGCTGCGCTGCAGGATTTCTATCACAGGGA
280>yrAl aLeuHi sLeuArgArgTyrAsnAspAl aLeuLeuI l eHi sAspThr Val ArgAl aVal AspAl aLeuAl aAl aLeuGl nAspPheTyrHi sArgGl

NgoMI (1535)
NaeI (1535)

1501 GCACGTCACTAAAACCCAGATCCTGTGTGCCGAGCGCCGGCTGTGCCCTGTTTCGATGACCGCAAGAATGAGCTGGCCCACTTGGCAACTCATGGCCCA
313>uHi sVal ThrLysThr Gl nI l eLeuCysAl aGl uArgArgLeuLeuAl aLeuPheAspAspArgLysAsnGl uLeuAl aHi sLeuAl aThr Hi sGl yPro
1601 GAGAAATCCAAAACCTGGAGATGCTGGAAAAGATCTGCAAAAGCAGTTCAGTAGCTTAACAGCCCTCGGGGTATCATCTTCAACCCGACCCGCCAAAGCG
347>Gl uAsnP roLysLeuGl uMe tLeuGl uLysI l eLeuGl nArgGl nPheSer Ser SerAsnSer P roArgGl yI l eI l ePheThr ArgThr ArgGl nSer A

Bsp120I (1757)

1701 CACACTCCCTCTGCTCTGGCTCCAGCAGCAGCAGGGCCTGCAGACTGTGGACATCCGGGCCAGCTACTGATTGGGGCTGGGAACAGCAGCCAGAGCAC
380>I aHi sSerLeuLeuLeuTrpLeuGl nGl nGl nGl nGl yLeuGl nThr Val AspI l eArgAl aGl nLeuLeuI l eGl yAl aGl yAsnSer Ser Gl nSer Th

BstXI (1871)

1801 CCACATGACCCAGAGGGACCAGCAAGAAGTGATCCAGAAGTTCGAAGATGGAACCTTGAACCTTCTGGTGGCCACGAGTGTGGCGGAGGAGGGGCTGGAC
413>rHi sMe tThr Gl nArgAspGl nGl nGl uVal I l eGl nLysPheGl nAspGl yThr LeuAsnLeuLeuValAl aThr Ser ValAl aGl uGl uGl yLeuAsp

SmaI (1976)
MluI (1997)
NcoI (1952)
SrfI (1975)
Bst1107I (1993)

1901 ATCCACATTGCAATGTGGTGGTGCCTTATGGGCTCTTGACCAATGAAATCTCCATGGTCCAGGCCAGGGGCCGTGCCCGGGCCGATCAGAGTGATACG
447>I l eProHi sCysAsnVal Val Val ArgTyrGl yLeuLeuThrAsnGl uI l eSer Me tVal Gl nAl aArgGl yArgAl aArgAl aAspGl nSer Val TyrA
2001 CGTTTGTAGCAACTGAAGGTAGCCGGGAGCTGAAGCGGGAGCTGATCAACGAGGCGCTGGAGACGCTGATGGAGCAGGCACTGGCTGCTGCAGAAAAT
480>I aPheValAl aThr Gl uGl ySerArgGl uLeuLysArgGl uLeuI l eAsnGl uAl aLeuGl uThrLeuMe tGl uGl nAl aValAl aAl aVal Gl nLysMe
2101 GGACCAGGCGGAGTACCAGGCCAAGATCCGGATCTGCAGCAGGACGCTTGACCAAGCGGGCGCCAGGCAGCCAGCGGGAGAACCAGCGGCAGCAG
513>tAspGl nAl aGl uTyrGl nAl aLysI l eArgAspLeuGl nGl nAl aAl aLeuThr LysArgAl aAl aGl nAl aAl aGl nArgGl uAsnGl nArgGl nGl n

NcoI (2253)

2201 TTCCAGTGGAGCAGCTGCAGCTACTCTGCATCAACTGCATGGTGGCTGTGGCCATGGCAGCGACCTGCGGAAGGTGGAGGGCACCCACCATGTCAATG
547>PheProVal Gl uHi sVal Gl nLeuLeuCysI l eAsnCysMe tValAl aVal Gl yHi sGl ySerAspLeuArgLysVal Gl uGl yThr Hi sHi sVal AsnV
2301 TGAACCCCAACTTCTCGAACTACTATAATGTCTCCAGGATCTGTGGTGCATCAACAAAGTCTTCAAGGACTGGAAGCCTGGGGGTGCATCAGCTGCAG
580>aI AsnP roAsnP heSerAsnTyrTyrAsnVal SerArgAspP roVal Val I l eAsnLysVal PheLysAspTrpLysP roGl yGl yVal I l eSer CysAr

SphI (2471)

2401 GAACTGTGGGAGGTCTGGGCTGCAGATGATCTACAAGTCAGTGAAGTGCAGTGCCTCAAAGTCCGACAGCTGCTGCTGGAGACCCCTCAGGGGCGG
613>gAsnCysGl yGl uVal TrpGl yLeuGl nMe tI l eTyrLysSer Val LysLeuP roVal LeuLysValArgSer Me tLeuLeuGl uThr ProGl nGl yArg
2501 ATCCAGGCCAAAAGTGGTCCCGCTGCCCTTCTCCGTGCCTGACTTTGACTTCTGCAGCATGTGCCGAGAAGTGTGCGGACCTCTCCCTGGACTGAC
647>I l eGl nAl aLysLysTrpSerArgVal P roPheSer Val P roAspPheAspPheLeuGl nHi sCysAl aGl uAsnLeuSerAspLeuSerLeuAsp•••

NheI (2612)
 2601 CACCTCATTGCTGCTAGCTGCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAAATGCAGTGAAAAAATGCTTTATTTGTGAAA

HpaI (2750) MfeI (2761)
 2701 TTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAAGTTAAACAACAACAAATTGCATTCATTTTATGTTTCAGGTTACAGGGGAGGT

EcoRI (2846)
 2801 GTGGGAGGTTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGAATCTAAAATACAGCATAGCAAACTTTAACCTCCAAATCAAGCCTCTACTT
 2901 GAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTGCCAATGTGCATTAGCTGTTGCAGCCTCACCTCTTTCATGGAGTTAAGAT

SspI (3085) SmaI (3099)
 3001 ATAGTGTATTTTCCAAGGTTTGAAGTACTGCTCTTCATTCTTTATGTTTTAAATGCACTGACCTCCACATTCCTTTTATAGTAAAATATTCAGAAAATAA
 3101 TTTAAATACATCATTGCAATGAAAATAAATGTTTTTATTAGCGAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTA
 3201 GGGAAACAAGGAACCTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCCTGGTGTACTTGAGGGGGATGAGTTCCTCAATGGTGGT

BstXI (3389)
 3301 TTTGACCAGCTTGCCATTCAATGAGCACAAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTCTGCACATGCCACAGGGGCTGACCACCTGATG
 126 LysValLeuLysGlyAsnMetGluLeuValPheCysAspProAlaTyrAspSerIleLeuGluArgCysMetGlyCysProSerValValArgIleS
 3401 GATCTGCCACCTCATCAGAGTAGGGTGCCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCGTTGCTCACAGCAGCCCAATGGCAATGGCTTCAG
 92 erArgAspValGluAspSerTyrProHisArgValAlaValIleThrAspPheAspLysGlnGlyAsnSerValAlaSerGlyIleAlaIleAlaGluAl

StuI (3524)
 3501 CACAGACAGTGACCTGCCAATGTAGGCCTCAATGTGGACAGCAGAGATGATCTCCCCAGTCTTGGTCTGATGGCCGCCGACATGGTGTCTGTTGTC
 59 aCysValThrValArgGlyIleTyrAlaGluIleHisValAlaSerIleIleGluGlyThrLysThrArgIleAlaAlaGlyValHisHisLysAsnAsp

BspHI (3674) XmnI (3666)
 3601 CTCATAGAGCATGGTGTCTTCTCAGTGGCGACCTCCACCAGCTCCAGATCCTGCTGAGAGATGTTGAAGTCTTCATGATGGCCCTCTATAGTGAGTC
 26 GluTyrLeuMetThrIleLysGluThrAlaValGluValLeuGluLeuAspGlnGlnSerIleAsnPheThrLysMet

AseI (3732)
 3701 GTATTATACTATGCCGATATACTATGCCGATGATTAATTGCAAAACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTCACTAAACGAGCTCTGCTT

SpeI (3887)
 3801 ATATAGACCTCCACCGTACACGCTACCGCCATTTGCGTCAATGGGCGGAGTTGTTACGACATTTTGGAAAGTCCCGTTGATTTACTAGTCAAAAC
 3900 AAACCTCCATTGACGTCAATGGGGTGGAGACTTGAAATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTAAGTCCAAAACCGCATCATCATGG

SnaBI (4015)
 4000 TAATAGCGATGACTAATACGTAGATGTACTGCCAAGTAGGAAAGTCCCATAAGGTCATGTACTGGGCATAATGCCAGGCGGGCCATTTACCGTCATTGAC

NdeI (4120)
 4100 GTCAATAGGGGGCTACTTGGCATATGATACACTTGATGTACTGCCAAGTGGGCGAGTTTACCGTAAATACTCCACCCATTGACGTCAATGAAAGTCCCT

SdaI (4298)
 4200 ATTGGCGTACTATGGGAACATACGTCATTATTGACGTCAATGGGCGGGGCTGTTGGCGGTGACCCAGGCGGGCCATTTACCGTAAGTTATGTAACGC

PacI (4306) BspLU11I (4316)
 4300 CTG CAG GTT AA TTAAGAACATGTGAGCAAAAGGCCAGAAAAGCCAGGAACCGTAAAAAGCCGCGTTGCTGGCGTTTTCCATAGGCTCCGCCCC
 4398 CTGACGAGCATCACAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTTCCCTGGAAGCTCCCTCGTGCG
 4498 CTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGT

ApaLI (4630)
 4598 TCGGTGTAGGTGCTTTCGCTCAAGCTGGGCTGTGTGCACGAACCCCCGTTACGCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACC
 4698 CGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTCTTGAAGTGGTGGCC
 4798 TAACTACGGCTACACTAGAAGAAGCAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAAACA
 4898 ACCACCGCTGGTAGCGGTGGTTTTTTTTGTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTG

EagI (5066) PacI (5046) SmaI (5055) NotI (5065)
 4998 ACGCTCAGTGAACGAAAACCTCACGTTAAGGGATTTTGGTCTAGTGTAAATTAACATTTAAATCAGCGGCCCAATAAAATATCTTTATTTTATTA
 5098 CATCTGTGTGTTGGTTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAACAAAACGAAACAAAACAACTAGCAAATAGGCTGTCCCGAGTG
 5198 CAAGTGCAGGTGCCAGAACATTTCTCTATCGAA