



PstI (6)
SdaI (6)
 1 **CCTGCAGGTGAATCATTGCACAAGTAACATGAGAAAAGCAGAAAATGCAGGTCATACACGCACCCTGACCCAGACCAGCAGAGCTGACTGCAGATCCAT**
 PstI (92)

101 **ATCCAAGAGAAAAGACCCTGACGCCCAAGAAGTGAGACAAGCAAGGACTCTATAGAATCAATTAGCATAGAAGGGGCTTCCCAACAGTTTAACTTTCC**
 EcoRI (282)
 201 **TCTCATGCGATTACACTTGAACCAGGGCTCTTCTACACTCCTTTCACATTCGCGACTTACACGCAGAGGGAAAGAGAATTCATAAAGGGAATAT**

XmnI (317)
 301 **TTTTCTGCCTTTGAAGATATTTCACAAGATCGTTCACAGCCCAAGGCAAGTAAAACGACACAATCTGGCTCAACTCCAGGCTCGAACCCTACACATT**

401 **CAACGAGGCTATCTCAGACACGCTGTGGCACACGCCACGGGGAGCCAGAAACGCTGTGGTGGGGTGGCGAAGGTAATGCCTTTGGGAAGCAGCCATCTG**

501 **AGGTGGGAGGCCAGAAAACGAGAGGGAAGGCTCCAGGAAGATTACGGAGGGGAGATCGCGGCCCCAGAGCGATCAGAGTTGTCTGTCAACAGGCCGCG**

601 **AGAACGGGGGTAGGAGTGGGGATCGGGGAGAGAAAAAAGTATGCCTGTGTATTTGAGCGGAGGGCAGCAAGAGGCCTGTCCTCATGGAAGGTAA**

701 **ACGTGGAGTAGGCAGTTCCAGGAAAAGGGGTGAAGAGGCTTGGGGAGGGGAAGCGTCTGACCCAGGAAAACATGAAAGGGGAGTTGGGTCGCCT**

801 **AGATTAGAGGGGATCTCTCTCCCTGGGAAAATGGGGTGTGCAACGGTGTGTCAAGCGCGGAGGGGGTGAGAAGTGCCAGCATCTCTAAGAGCT**

901 **TGGGAGGGCCAGGCCACGCCAAGGAGAGCGAGCGGGGAGACGGAGGAGTGACCCTCCCTCCCTGGGGCCGATCGTGAGGTTCCGGTCTCTT**

XhoI (1086)
 1001 **TTCTGTCGACCTTACCTTGTCCCAGGCGCTGCCGGGGCTGGGCCGGCTGCGGCGCACGGCACTCCCGGAGGGGCGAGGACTCGAGTTAGGCCCA**

1101 **ACGCGGCCCCACGGCGTTCCTGCGCGGAAATGGCCGTACCCGTGAGGTGGGGTGGGGGCCAGAAAGCCGGAGCGAGCCAAGGCCGGGGAGGGGGGCG**

NotI (1289)
 1201 **AGGGCCAGGAAAGAGGGGGCCGGCACTACTGTGTTGGCGGACTGGCGGACTGGGCTGCGTGAGTCTCTGAGCGCAGGCGGGGCGGGCCGCCCTC**

1301 **CCCCGGCAGCGCGGCGGGCCGGCGGGCGGGCGGGCAGCTCAGTCCAGCGGAAACGCCACTGACCGCACGGGGATTCCAGCGCG**

1401 **CGCGCCAGGGACCCGGGACACGCCCTCCCGCCGGCATTGGCCTCCTCGCCACCGCCGACCATTGGCCACTCGCCGCAATCAGCGGA**

1501 **AGCCGCCGGGCGCGCTAGAGAAGAGGCTGTGCTTCGGCGCTCCGGTCTCTCAGAGAGCTCGGCTAGGtaggggagcggaaactctggtgggggggagg**

1601 **tgcggtgcactggggggaagggtggctagggggcgctctggtgcttgcggggttgcctttccggtggaagtcgggaacataatgtttgttacgttg**

1701 **ggagggaaaggggtggctggatcgagggggaggggccgcctcgcgcaaccggagggggaggagaagggagcggaaaatgctcgaaccggagcg**

1801 **agccattgctctcgcagagggaggagcgcttcggctagcctctgtcgcgattggcggtttctctcccgcgctgtgtaaacacaaaatggcgtatt**

1901 **ctggttggagtaaaactcctgtcagttacacgctgggagtagcagccgcttagcgactctcggttggccctgggtggggcggtaggtaggtgggg**

2001 **tgtagagatgctgggtgtcggggcggcggcctctcgcggggaggggagggtcagtgaaatggctctggcggggctctccaccctcccctt**

XhoI (2189)
 2101 **ccttcgggggagtcggtttaccgcgcctgcttgcacacctgattggctgtcgaagctgtgggaccgggcccctgctactggctcgagctctcac**

2201 **atgagcgaaacactgcgcggggagcggggggaggggggagggcggttggtacggtcctcccaggccgagcgcgcgagtgctggccccgcgcccc**

NotI (2370)
 2301 **tgcgcaactggcaggagcgcgctggaggcgggggaggggctgcccggccgagacttctggatggcgggcgccgaggtccgccccgggttcccaccgc**

2401 **ctgaagggcagagacaagcccgacctgtacagggcactctggggggtgggggagggcgggggctggctcggctggtttgtgggtgggagcctgttct**

2501 **caaaaaacggcgagcgaatcctgaggagctcggtggaggaggtggagagaagcgcacccttctgggagggggagggtgagcgaatac**

2601 **ctttatgggagttctttgtgcctcccctctgtaaggaccgcctggccctggaagaagccctcccctcttctcctcgcgtagctctgtcatcgcct**

2701 **ccatgtcgagtcgcttctcgattatgggggggattctttgcttagacaattgtactaaccttcttctctcttctcctgacagGTGTGAAACAGGAAG**

AgeI (2804) BspHI (2820)
 2801 **AGAACCGGTAGGAGGGCCATCATGAGCGTTCATCATCATCATCATCATGGTATGGCTAGCATGACTGGTGGACAGCAAATGGGTCCGGATCTGTACG**
 1►MetSerGlySerHisHisHisHisHisHisHisSlyMetAlaSerMetThrGlyGlyGlyNlyMetGlyArgAspLeuTyrA

Acc65I (2914)
 2901 **ACGATGACGATAAGGTACCTAAGGATCAGCTTGGAGTTGATCCCGCTGTTTTACAACGTCGTGACTGGGAAAACCTTCCCAACTTAATCGCCT**

27►spAspAspAspLysValProLysAspGlnLeuGlyValAspProValValLeuGlnArgArgAspTrpGlyuAsnProGlyValThrGlnLeuAsnArgLeu

3001 **TGCAGCACATCCCTTTTCGCCAGCTGGCGTAATAGCAGAGAGCCCGACCGATCGCCCTCCCAACAGTTGCGCAGCCTGAATGGCAGTGGCGCTTT**

60►uAlaAlaHisProProPheAlaSerTrpArgAsnSerGlyuGlyAlaArgThrAspArgProSerGlyNlyLeuArgSerLeuAsnGlyGlyuTrpArgPhe

3101 **GCCTGGTTCCGGCACCAGAAGCGGTGCGGAAAGCTGGCTGGAGTGCAGTCTTCTGAGGCCGATATGTGTCGTCGCCCTCAAACCTGGCAGATGCAGG**

94►AlaTrpPheProAlaProGlyuAlaValProGlyuSerTrpLeuGlyCysAspLeuProGlyuAlaAspThrValValValProSerAsnTrpGlyNlyMetHisSly

3201 **GTTACGATGCGCCATCTACACCAACGTAACTATCCATTACGGTCAATCCGCGTTTGTCCACGGAGAATCCGACGGGTTGTTACTCCTACATT**

127►IyTyrAspAlaProIleTyrThrAsnValThrTyrProIleThrValAsnProProPheValProThrGlyuAsnProThrGlyCysTyrSerLeuThrPh

3301 **TAATGTTGATGAAAGCTGCTACAGGAAGGCCAGACGCGAATATTTTTGATGGCGTTAACTCGCGTTTCTATCTGTGGTGAACGGGCGCTGGGTCGGT**

160►eAsnValAspGlyuSerTrpLeuGlyNlyGlyGlyNThrArgIleIlePheAspGlyValAsnSerAlaPheHisLeuTrpCysAsnGlyArgTrpValGly

3401 TACGCCAGGACAGTCGTTTCCGCTCTGAATTTGACCTGAGCGCATTTTTACGCGCCGGAGAAAACCGCTCGCGGTGATGGTCTGCGTTGGAGTGACG
194 TyrGI yGI nAspSer ArgLeuP roSer GI uPheAspLeuSer Al aPheLeuArgAl aGI yGI uAsnArgLeuAl aVal MeTVal LeuArgTrpSer AspG
3501 GCAGTTATCTGGAAGATCAGGATATGTGGCGGATGAGCGGCATTTTCCGTGACGTCTCGTTGCTGCATAAACCGACTACACAATCAGCGATTTCCATGT
227 I ySer TyrLeuGI uAspGI nAspMet TrpArgMet Ser GI y I ePheArgAspVal Ser LeuLeuHi sLysP roThr Thr GI nI eSer AspPheHi sVa
3601 TCCACTCGCTTAAATGATGATTTACGCCGCTGTACTGGAGGCTGAAGTTTCAGATGTGCGCGGAGTTGCGTGACTACCTACGGGTAAACGTTCTTTA
260 I Al aThr ArgPheAsnAspAspPheSer ArgAl aVal LeuGI uAl aGI uVal GI nMetCysGI yGI uLeuArgAspTyrLeuArgVal Thr Val Ser Leu
3701 TGGCAGGGTAAACGACAGTCCGCGAGCGCACCGCCCTTTCCGCGGTGAAATTATCGATGAGCGTGGTGGTTATGCCGATCGCGTACACTACGCTCTGA
294 TrpGI nGI yGI uThr GI nVal Al aSer GI yThr Al aProPheGI yGI yGI uI eI eAspGI uArgGI yGI yTyrAl aAspArgVal Thr LeuArgLeuA
3801 ACGTCGAAAACCCGAACTGTGGAGCGCCGAAATCCCGAATCTCTATCGTGCCTGGTGGTGAAGTGCACACCGCCGACGGCAGCTGATTGAAGCAGAAGC
327 snVal GI uAsnProLysLeuTrpSer Al aGI uI eP roAsnLeuTyrArgAl aVal Val GI uLeuHi sThr Al aAspGI yThr LeuI eGI uAl aGI uAl
3901 CTGCGATGTCGGTTTCCGCGAGGTGCGGATTGAAAATGGTCTGCTGCTGCTGAACGGCAAGCCGTTGCTGATTGAGGGCTTAACCGTCACGAGCATCAT
360 aCysAspVal GI yPheArgGI uVal A rgl I eGI uAsnGI yLeuLeuLeuLeuAsnGI yLysP roLeuLeuI eArgGI yVal AsnArgHi sGI uHi sHi s

EcoRV (4045)

4001 CCTCTGCATGGTCAGGTCATGGATGAGCAGACGATGGTGCAGGATATCTGCTGATGAAGCAGAACAACCTTAAACGCCGTGCGCTGTTCCGATTATCCGA
394 ProLeuHi sGI yGI nVal MeTAspGI uGI nThr MeTVal GI nAspI I eLeuLeuMeT LysGI nAsnAsnPheAsnAl aVal A rgCysSer Hi sTyrProA
4101 ACCATCCGCTGTGGTACAGCTGTGCGACCGCTACGGCTGTATGTGGTGGATGAAGCAATATTGAAACCCACGGCATGGTGCCAAATGAATCGTCTGAC
427 snHi sP uThr ArpTrpTyrLeuI eLeuCysAspGI uTyrAl aHi sAl aMeTVal yAsnSer LeuGI yGI yPheAl aLysTyrGI uGI nGI nPheArgGI nTyrP ro
4201 CGATGATCCGCGCTGGTACCGCGATGAGCGAACGCGTAACCGAATGGTGCAGCGCATCGTAATACCCGAGTGTGATCATCTGGTCCGCTGGGGAAT
460 rAspAspP roArgTrpLeuP roAl aMeT Ser GI uArgVal Thr ArgMeTVal GI nArgAspArgAsnHi sP roSer Val I eI eI eTrpSer LeuGI yAsn
4301 GAATCAGGCCACGGCTAATCACGACGCGCTGTATCGTGGATCAAATCTGCTGATCCTTCCCGCCCGTGCAGTATGAAGGCGCGGAGCCGACACCA
494 GI uSer GI yHi sGI yGI uVal P roLeuAspVal Al aP roGI nGI yLysGI nLeuI eGI uLeuArgP roVal GI nTyrGI uGI nGI nPheArgGI nTyrP ro
4401 CGGCCACCGATATTATTTGCCGATGTACGCGCGCTGGATGAAGACCAGCCCTTCCCGCTGTGCCGAAATGGTCCATCAAAAAATGGCTTTCGCTACC
527 hrAl aThrAspI I eI eCysProMeT TyrAl aArgVal AspGI uAspGI nP roPheProAl aVal P roLysTrpSer I I eLysLysTrpLeuSer LeuP ro
4501 TGGAGAGACGCGCCGCTGATCCTTTGCGAATACGCCACCGCATGGTAACAGTCTTGGCGGTTTCGCTAAATACTGGCAGCGGTTTCGTCAGTATCCC
560 oGI uTyrGI uThr ArpTrpTyrLeuI eLeuCysGI uTyrAl aHi sAl aMeTVal yAsnSer LeuGI yGI yPheAl aLysTyrGI uGI nGI nPheArgGI nTyrP ro
4601 CGTTTACAGGGCGGCTTCTGCTGGGACTGGTGGATCAGTCGCTGATTAATATGATGAAAACGGCAACCCGTTGGTGGCTTACGGCGGTGATTTTGGCG
594 ArgLeuGI nGI yGI yPheVal TrpAspTrpVal AspGI nSer LeuI eLysTyrAspGI uAsnGI yAsnP roTrpSer Al aTyrGI yGI yAspPheGI yA
4701 ATACCGCAACGATCGCCAGTCTGTATGAACGGTCTGGTCTTTGCCAGCCGACGCCGATCCAGCGTGCAGGAAGCAAAACACCAGCAGCAGTTTTT
627 spThr P roAsnAspArgGI nPheCysMeTAsnGI yLeuVal P heAl aAspArgTrpP roHi sP roAl aLeuThr GI uAl aLysHi sGI nGI nPheP
4801 CCAGTCCGTTTATCCGGCAAACCATCGAAGTGACCAGCGAATACCTGTTCCGTCATAGCGATAACGAGCTCCTGCACTGGATGGTGGCGCTGGATGGT
660 eGI nPheArgLeuSer GI yGI nThr I I eGI uVal Thr Ser GI uTyrLeuPheArgHi sSerAspAsnGI uLeuLeuHi sTrpMeTVal Al aLeuAspGI y
4901 AAGCCGCTGGCAAGCGGTGAAGTGCCTTGGATGTGCTCCACAAGTAAACAGTTGATTGAACTGCCTGAACTACCGCAGCCGGAGAGCGCCGGGCAAC
694 LysP roLeuAl aSer GI yGI uVal P roLeuAspVal Al aP roGI nGI yLysGI nLeuI eGI uLeuP roGI uLeuP roGI uSer Al aGI yGI nL
5001 TCTGGCTCACAGTACGCGTAGTGCAACCGAACCGACCGCATGGTCAGAGCGGGCACATCAGCGCTGGCAGCAGTGGCTGTGGCGAAAACCTCAG
727 euTrpLeuThr Val A rgVal Val GI nP roAsnAl aThr Al aTrpSer GI uAl aGI yHi sI I eSer Al aTrpGI nGI nTrpArgLeuAl aGI uAsnLeuSe
5101 TGTGACGCTCCCCCGCGTCCCACGCCATCCCGCATCTGACCACCAGCGAAATGGATTTTGCATCGAGCTGGTAATAAGCGTTGGCAATTTAACCGC
760 rVal Thr LeuP roAl aAl aSer Hi sAl aI eP roHi sLeuThr Thr GI uMeTAspPheCysI eGI uLeuGI yAsnLysArgTrpGI nPheAsnArg
5201 CAGTCAGGCTTTCTTTCACAGATGTGGATTGGCGATAAAAAACAACCTGCTGACGCGCTGCGGATCAGTTACCCGTCACCCTGGATAACGACATTG
794 GI nSer GI yPheLeuSer GI nMeTTrpI I eGI yAspLysLysGI nLeuLeuThr P roLeuArgAspGI nPheThr ArgAl aP roLeuAspAsnAspI I eG
5301 GCGTAAGTGAAGCGACCCGATGACCTAACCCCTGGTTCGAAACGCTGGAAGCGCGGGCCATTACCAGGCCAAGCAGCGTTGTTGAGTGCACGGC
827 I yVal Ser GI uAl aThr ArgI eAspP roAsnAl aTrpVal GI uArgTrpLysAl aAl aGI yHi sTyrGI nAl aGI uAl aLeuLeuGI nCysThr Al
5401 AGATACACTTGTGATGCGGTGCTGATTACGACCGCTCACGCGTGGCAGCATCAGGGGAAAACCTTATTTATCAGCCGGAAAACCTACCGGATTGATGGT
860 aAspThr LeuAl aAspAl aVal LeuI eThr Thr Al aHi sAl aTrpGI nHi sGI nGI yLysThr LeuPheI eSer ArgLysThr TyrArgI eAspGI y
5501 AGTGGTCAAATGGCGATTACCGTTGATGTTGAAGTGGCAGCGATACCCGATCCGCGCGGATTGGCTGAACTGCCAGCTGGCGAGGTAGCAGAGC
894 Ser GI yGI nMeTAl aI eThr Val AspVal GI uVal Al aSerAspThr P roHi sP roAl aArgI eGI yLeuAsnCysGI nLeuAl aGI nVal Al aGI uA

BspLU11I (5691)

5601 GGGTAACTGGCTCGGATTAGGGCCGCAAGAAAATATCCCGACCGCCTTACTGCCGCTGTTTTGACCGCTGGGATCTGCCATTGTGACAGCATGTATAC
927 r gVal AsnTrpLeuGI yLeuGI yProGI nGI uAsnTyrP roAspArgLeuThr Al aAl aCysPheAspArgTrpAspLeuP roLeuSerAspMeT TyrTh
5701 CCCGTACGTCTTCCCGAGCGAAAACGGTCTGCGCTGCGGGACGCGCGAATTAATGATGGCCACACCAAGTGGCGCGGCGACTTCCAGTTCAACATCAGC
960 r P roTyrVal PheP roSer GI uAsnGI yLeuArgCysGI yThr ArgGI uLeuAsnTyrGI yProHi sGI nTrpArgGI yAspPheGI nPheAsnI eSer
5801 CGCTACAGTCAACAGCAACTGATGAAACACGACCTCGCCATCTGCTGCACGCGGAAGAGGCACATGGCTGAATATCGACGGTTCCATATGGGGATTG
994 ArgTyrSer GI nGI nLeuMeTGI uThr Ser Hi sArgHi sArgHi sAl aGI uGI uGI yThr TrpLeuAsnI eAspGI yPheHi sMeTGI yI eG
5901 GTGGCGACGACTCCTGGAGCCGTCAGTATCGCGGAAATACAGCTGAGCGCGGCTGCTACCATTACAGTTGGTCTGGGTGTCAAAATAATAATCTAG
1027 I yGI yAspAspSer TrpSer ProSer Val Ser Al aGI uLeuGI nLeuSer Al aGI yArgTyrHi sTyrGI nLeuVal TrpCysGI nLys●●●

EcoRI (6005)

6001 TCGAGAATTCGCTAGCTCGACATGATAAGATACATTGATGAGTTTGGACAAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTG
6101 ATGCTATTGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAAGTTAACACAACAATTGCATTCATTTT

SwaI (6276)

6201 ATGTTTCAGGTTTCAGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAAACCTCTACAATGTGGTAGATCCATTTAAATGTTAATTAACAGCCATGAC
6301 CAAAATCCCTTAACGTGAGTTTTCTGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGGATCCTTTTTTCTGCGCGTAATCTGC
6401 TGCTTGCAAACAAAAAACACCCTACCAGCGGTGTTTGTGGCCGATCAAGAGCTACCAACTCTTTTCCGAAGGTAACCTGGCTTACGACAGAGCGC
6501 AGATACCAAATACTGTTCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAACTCTGTAGCACCAGCTACATACCTCGCTGCTAATCCTGTTACC
6601 AGTGGCTGCTGCCAGTGGCGATAAGTCTGTCTTACCGGTTGGACTCAAGACGATAGTTACCGGATAAAGCGCAGCGGTGGGCTGAACGGGGGTTCC
6701 TGACACAGCCAGCTTGGAGCGAACGACCTACACCGAACTGAGATACTACAGCGTGAAGTATGAGAAAGCGCCACGCTTCCCGAAGGGAGAAAGCGG
6801 ACAGGTATCCGGTAAAGCGGAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGAAAACCGCTGGTATCTTTATAGTCTGTGCGGTTTCGCCA
6901 CCTCTGACTTGAGCGTGCATTTTTGTGATGCTGTCAGGGGGCGGAGCCTATGGAAAACGCCAGCAACCGCGCTTTTTACGGTTCTGGCCTTTTGC

BspLUII (7014)

AseI (7052)

7001 TGGCCTTTTGCTCACATGTTCTTAATTAATTTTCAAAGTAGTTGACAATTAATCATCGGCATAGTATATCGGCATAGTATAATACGACTCACTATAG
7101 GAGGGCCATCATGGCCAAGTTGACCAAGTGTGCCAGTGTCTCCAGTGTCTCACAGCCAGGGATGTGGCTGGAGCTGTTGAGTTCTGGACTGACAGGTTGGGGTTCTCC
1▶MetAl aLysLeuThr SerAl aValProVal LeuThrAl aArgAspValAl aGlyAl aVal Gl uPheTrpThrAspArgLeuGl yPheSer
7201 AGAGATTTTGTGGAGGATGACTTTGCAGGTGTGGTCAGAGATGATGTCACCTGTTCATCTCAGCAGTCCAGGACCAGGTGGTGCCTGACAAACCCCTGG
31▶ArgAspPheVal Gl uAspAspPheAl aGlyVal Val ArgAspAspVal Thr LeuPhe l l eSerAl aVal Gl nAspGl nVal Val ProAspAsnThr LeuA
7301 CTTGGTGTGGGTGAGAGGACTGGATGAGCTGTATGCTGAGTGGAGTGAGGTGGTCTCCACCAACTTCAGGGATGCCAGTGGCCCTGCCATGACAGAGAT
64▶l aTrpVal TrpVal ArgGl yLeuAspGl uLeuTyrAl aGl uTrpSer Gl uVal Val Ser ThrAsnPheArgAspAl aSer Gl yProAl aMetThr Gl u l l
7401 TGGAGAGCAGCCCTGGGGGAGAGATTTGCCCTGAGAGACCCAGCAGGCAACTGTGTGCACTTTGTGGCAGAGGAGCAGGACTGAGGATAAGAATTGAGT
97▶eGl yGl uGl nProTrpGl yArgGl uPheAl aLeuArgAspProAl aGl yAsnCysVal Hi sPheVal Al aGl uGl uGl nAsp●●●
7501 TTCAGAAAAGGGGCCTGAGTGGCCCTTTTTCACCTAATTA