



SgfI (11) AgeI (90)
1 GGATCTGCGATCGCTCCGGTCCCGTCAGTGGGCAGAGCGCACATCGCCACAGTCCCCGAGAAGTTGGGGGAGGGGTCGGCAATTGAACCGGTGCCTA
101 GAGAAGTGGCGGGGTAACCTGGAAAGTGATGCTGCTACTGGCTCCGCTTTTTCCGAGGGTGGGGGAGAACCGTATATAAGTGCAGTAGTCGCC

HindIII (246) Bsu36I (293)
201 GTGAACGTTCTTTTTCGAACGGGTTTCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTACGCGCCCGCCGCTACCTACCTGAGGCC
301 GCCATCCACGCGGTTGAGTCGCGTTTCCGCCCTCCCGCTGTGGTGCTCTGAACTCGCTCCGCGCTAGTGAAGTTTAAAGCTCAGGTCGAGACC
401 GGGCCTTTGTCGGCGCTCCCTTGGAGCCTACCTAGACTCAGCCGGCTCCACGCTTTCCTGACCCTGCTTCTCAACTCTACGCTTTGTTTCGTTT

AgeI (553)
501 TCTGTTCTGCGCGTTACAGATCCAAGCTGTGACCGGCGCTACCTGAGATCACCAGTAGAGGGCCATCATGACCAAAGACAAAGAACCTATTGTTAAA
1▶MetThrLysAspLysGluProIleValLys
601 AGCTTCCATTTTGTTCCTTATGATCATAATAGTTGGAACAGAATCCAGTTCCTCCGACGAAATGAATTTGCAGTAGACAAGTCAAAAAGAGGTCTTA
11▶SerPheHisPheValCysLeuMetIleIleIleValGlyThrArgIleGlnPheSerAspGlyAsnGluPheAlaValAspLysSerLysArgGlyLeuI
701 TTCATGTTCCAAAAGACCTACCGCTGAAAACCAAAGTCTTAGATATGCTCAGAACTACATCGCTGAGCTTCAGGTCCTGACATGAGCTTTCTATCAGA
44▶IleHisValProLysAspLeuProLeuLysThrLysValIleuAspMetSerGlnAsnTyrIleAlaGluLeuGlnValSerAspMetSerPheLeuSerGln
801 GTTGACAGTTTTGAGACTTCCATAACAGAATCCAGCTACTTGATTTAAGTGTTCAGGTTCAACAGGATTTAGAATATTTGGATTTATCTCATAAT
77▶uLeuThrValLeuArgLeuSerHisAsnArgIleGlnLeuLeuAspLeuSerValPheLysPheAsnGlnAspLeuGluTyrLeuAspLeuSerHisAsn

EcoRV (914) BglII (948)
901 CAGTTGCAAAAAGATATCCTGCCATCCTATTGTGAGTTTCAGGCATTTAGATCTCTCAATCAATGATTTCAAGGCCCTGCCATCTGTAAGGAATTTGGCA
111▶GlnLeuGlnLysIleSerCysHisProIleValSerPheArgHisLeuAspLeuSerPheAsnAspPheLysAlaLeuProIleCysLysGluPheGlyAla
1001 ACTTATCACAACCTGAATTTCTGGGATTGAGTGCTATGAAGCTCAAAAATTAGATTTGCTGCCAATTTGCTCACTTGCATCAAGTTATATCTCTTGGGA
144▶snLeuSerGlnLeuAsnPheLeuGlyLeuSerAlaMetLysLeuGlnLysLeuAspLeuLeuProIleAlaHisLeuHisLeuSerTyrIleLeuLeuAsn
1101 TTTAAGAAATTTATATATAAAGAAATGAGACAGAAAGTCTACAAATCTGAATGCAAAAACCTTACCTTGTTCACCCAACTAGTTTATTCGCT
177▶pLeuArgAsnTyrTyrIleLysGluAsnGluThrGluSerLeuGlnIleLeuAsnAlaLysThrLeuHisLeuValPheHisProThrSerLeuPheAla

PshAI (126)
1201 ATCCAAGTGAACATATCAGTTAATACTTTAGGGTGCTTACAACCTGACTAATATTAATGAATGATGACAACCTGCAACTGTTTCATTAATTTTATCAG
211▶IleGlnValAsnIleSerValAsnThrLeuGlyCysLeuGlnLeuThrAsnIleLysLeuAsnAspAspAsnCysGlnValPheIleLysPheLeuSerG
1301 AACTCACCAGAGGTTCAACCTTACTGAATTTACCCTCAACCACATAGAAAAGCAGCTTGGAAATGCCTGGTCAGAGTCTTCAATTTCTTTGGCCAAAACC
244▶IleuLeuThrArgGlySerThrLeuLeuAsnPheThrLeuAsnHisIleGluThrThrTrpLysCysLeuValArgValPheGlnPheLeuTrpProLysPr
1401 TGTGGAATCTCAATATTTACAATTTAACAATAAATTGAAAGCATTCTGGAAGAAGATTTTACTTATTCAAAACAGCATTGAAAAGCTTGCATGACATGAA
277▶oValGluTyrLeuAsnIleTyrAsnLeuThrIleIleGluSerIleArgGluGluuAspPheThrTyrSerLysThrThrLeuLysAlaLeuThrIleGlu
1501 CATATCAGAACCAAGTTTTCTGTTTTACAGACAGCTTTGTACACCGTGTTCCTGAGATGAACATTTATGATGTTAACATTTTCAGATACACCTTTTA
311▶HisIleThrAsnGlnValPheLeuPheSerGlnThrAlaLeuTyrThrValPheSerGluMetAsnIleMetMetLeuThrIleSerAspThrProPheI
1601 TACACATGCTGTGTCATGCAACCAAGCACATTCAGTTTGAACCTTACCAGAACGTTTTTCACAGATGATGATTTTGAATAATGTTCCAGCTTCCAGTAGT
344▶IleHisMetLeuCysProHisAlaProSerThrPheLysPheLeuAsnPheThrGlnAsnValPheThrAspSerIlePheGluLysCysSerThrLeuVal
1701 TAAATGGAGACACTTATCTTACAAAAGAAATGGATTTAAAGACCTTTCAAAGTAGGCTCATGACGAAGGATATGCCTTCTTTGGAAATCTGGATGTT
377▶IlysLeuGluThrLeuIleLeuGlnLysAsnGluLeuLysAspLeuPheLysValGlyLeuMetThrLysAspMetProSerLeuGluIleLeuAspVal
1801 AGTCGAATCTTGGAACTGGTAGACATAAAGAAACCTGCAATCTTGAAGTGTGAGACTACCTGAGAAAGTTAATGTTGCTTCAAATGCTTCCACTTCTG
411▶SerTrpAsnSerLeuGluSerGlyArgHisLysGluAsnCysThrTrpValGluSerIleValValLeuAsnLeuSerSerAsnMetLeuThrAspSerV
1901 TTTTCAGATGTTTACCCTCCAGGATCAAGGTTACTGATCTTACAGCAATAAATAAAGAGCGTTCCTAAAACAGTCGTAACCTGGAAGCTTTGCAAGA
444▶alPheArgCysLeuProProArgIleLysValLeuAspLeuHisSerAsnTyrIleLysSerValProLysGlnValValLysLeuGluAlaLeuGlnGln
2001 ACTCAATGTTGCTTCTTAACTGACCTTCTGGAATGCTGAGCTTCCAGGCTTGGAGCTTACCCAGGCTTTCTGTATTGATCATTGATCAACAATGCTTCCACCCA
477▶uLeuAsnValAlaPheAsnSerLeuThrAspLeuProGlyCysGlySerPheSerSerLeuSerValLeuIleIleAspHisAsnSerValSerHisPro
2101 TCGGCTGATTTCTCCAGAGCTGCCAGAAGATGAGGTCAATAAAGCAGGGGACAATCCATTCCAATGTACCTGTGAGCTAAGAGAATTTGCAAAAATA
511▶SerAlaAspPhePheGlnSerCysGlnLysMetArgSerIleLysAlaGlyAspAsnProPheGlnCysThrCysGluLeuArgGluPheValLysAsnI
2201 TAGACGAATCTCAAGTGAAGTGTAGAGGCTGGCCTGATCTTGAAGTGTGAGACTACCTGAGAAAGTTAATAGAGGAAGCCCACTAAGGCTTCCACTG
544▶IleAspGlnValSerSerGluValLeuGluGlyTrpProAspSerTyrLysCysAspTyrProGluSerTyrArgGlySerProLeuLysAspPheHisMe
2301 GTCTGAATATCCTGCAACATACTCTGCTGATCGTCACCATCGGTGCCACCATGCTGGTGTGGCTGTGACTGTGACCTCCCTCTGCATCTACTTGGAT
577▶tSerGluuLeuSerCysAsnIleThrLeuLeuIleValThrIleGlyAlaThrMetLeuValLeuAlaValThrValThrSerLeuCysIleCyrLeuAsp
2401 CTGCCCTGGTATCTCAGGATGGTGCAGTGGACAGCAGCTCGCGCAGGGCAGGAAACATACCTTAGAAGAACTCAAGAAGAACCTTCAGTTTCATG
611▶LeuProTrpTyrLeuArgMetValCysGlnTrpThrGlnThrArgArgAlaArgAsnIleProLeuGluGluLeuGlnArgAsnLeuGlnPheHisAla

Acc65I (2550)
2501 CTTTTATTTTCATATAGTGAACATGATTCTGCCTGGGTGAAAAGTGAATTTGGTACCTTACCTAGAAAAAGAGATATACAGATTTGTCTTCATGAGAGAAA
644▶IaPheIleSerTyrSerGluHisAspSerAlaTrpValLysSerGluLeuValProTyrLeuGluLysGluAspIleGlnIleCysLeuHisGluArgAs
2601 CTTTGTCCCTGGCAAGAGCATTGTGAAAATATCATCAACTGCATTGAGAAGAGTTACAAGTCCATCTTTGTTTTGTCTCCCAACTTTGTCCAGAGTGAG
677▶nPheValProGlyLysSerIleValGluAsnIleIleAsnCysIleGluLysSerTyrLysSerIlePheValLeuSerProAsnPheValGlnSerGlu
2701 TGGTGCCATTACGAATCTATTTTGGCCATCACAATCTCTTTCATGAAGGATCTAATAACTTAATCTCATCTTACTGAAACCCATCCACAGAACAGCA
711▶TrpCysHisTyrGluLeuTyrPheAlaHisLysAsnLeuPheHisGluGlySerAsnAsnLeuIleLeuIleLeuLeuGluProIleProGlnAsnSerI
2801 TTCCCAACAAGTACCACAAGCTGAAGGCTCTCATGACGACGCGGACTTATTTGAGTGGCCCAAGGAGAAAAGCAAACGTGGGCTCTTTGGGCTAACAT
744▶IleProAsnLysTyrHisLysLeuLysAlaLeuMetThrGlnArgThrTyrLeuGlnTrpProLysGluLysSerLysArgGlyLeuPheTrpAlaAsnIle
2901 TAGAGCCGCTTTAATATGAAATTAACACTAGTCACTGAAAACATGATGTGAAATCTCTGTACAAGGtaagtcactgactgtctatgctgggaag
777▶eArgAlaAlaPheAsnMetLysLeuThrLeuValThrGluAsnAsnAspValLysSerLeuTyrLys

Asel (3060)
3001 gtgggcaggagatggggcagtgaggaaagtggcactatgaaccACTAGTTTGACAATTAATCATAAAGCATAGTATAATCAACTACTATAGcaatt
3101 gtaactaaccttcttctcttctcctcctcagagGAGGAGCCATCATGGCCGTATGGAGATCGAGTGGCCATCACCGGCACCCTGAACGGCGTGGAGTT

3201 CGAGCTGGTGGCGGGGAGAGGGCACCCCCGAGCAGGGCCGCATGACCAACAAGATGAAGAGCACAAAGGCGCCCTGACCTTCAGCCCTACCTGCTG
3301 AGCCACGTGATGGGCTACGGCTTCTACCACTTCGGCACCTACCCAGCGGTACGAGAACCCTTCTGCACGCCATCAACAACGGCGGCTACCAACA
3401 CCCGATCGAGAAGTACGAGGACGGCGGCTGCTGACGTGAGCTTACGTACCCTACGAGCGCGCGCTGATCGCGCACTCAAGGTGATGGGCAC

BsaBI (3587)
3501 CGGCTTCCCCGAGGACAGCGTGATCTTACCACAAAGATCATCCGACGAAACGCCACCGTGGAGCACCTGCACCCTATGGCGGATAACGATCTGGATGGC
3601 AGCTTACCCGACCTTCAGCTGCGGACGGCGGCTACTACAGCTCCGTGGTGGACAGCCACATGCACCTCAAGAGCGCCATCCACCCAGCATCTGCG
3701 AGAACGGGGCCCCATGTCGCTTCCGCCGTGGAGGAGTACACAGAACACCCGAGCTGGGCATCGTGGAGTACCAGCACGCCCTCAAGACCCCGGA

NheI (3815)
3801 TGCAGATGCCTAAAGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGACAAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTATTTGTGA

HpaI (3955)
3901 AATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGTTAAACAACAACATTCATTATTTATGTTTCAGGTTACGGGGGAG

4001 GTGTGGGAGGTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGAATCTAAAATACAGCATAGCAAACCTTTAACCTCCAATCAAGCCTCTAC
4101 TTGAATCCTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGACGCTCACCTTCTTTCATGGAGTTAAG
4201 ATATAGTGATTTTTCCCAAGGTTTGAAGTAGCTCTTCATTTCTTTATGTTTTAAATGCAGTACCTCCACATTCCCTTTTTAGTAAAAATTCAGAAAT

Swal (4305)
4301 AATTTAAATACATCATTGCAATGAAAATAAATGTTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACT
4401 TAGGGAACAAAGAACCTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCCTGGTGTACTTGAGGGGGATGAGTTCCTCAATGGTG
4501 GTTTTGACCAGCTTGCCATTCATCTCAATGAGCACAAAGCAGTCAGGAGCATAGTCAGAGATGAGCTCTGCACATGCCACAGGGGCTGACCACCCTGA
126 hr LysVal LeuLysGlyAsnMetGluLeuValPheCysAspProAlaTyrAspSerLeuLeuGluArgCysMetGlyCysProSerValValArgIle
4601 TGGATCTGCCACCTCATCAGAGTAGGGGTGCCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCCGTTGCTCACAGCAGACCAATGGCAATGGCTTC
93 eSerArgAspValGluAspSerTyrProHisArgValAlaValIleThrAspPheAspLysGlnGlyAsnSerValAlaSerGlyIleAlaIleAlaGlu
4701 AGCACAGACAGTGACCTGCCAATGTAGGCCTCAATGTGGACAGCAGAGATGATCTCCAGCTTGGTCTGATGCCGCCCCGACATGGTCTTGTG
60 AlaCysValThrValArgGlyIleTyrAlaGluIleHisValAlaSerIleIleGluGlyThrLysThrArgIleAlaAlaGlyValHisHisLysAsnA
4801 TCCTCATAGAGCATGGTGTCTTCTCAGTGGCGACCTCCACCAGCTCCAGATCCTGCTGAGAGATGTTGAAGGCTTTCATGATGGCCCTCTATAGTGAG
26 spGluTyrLeuMetThrIleLysGluThrAlaValGluValLeuGluLeuAspGlnGlnSerIleAsnPheThrLysMet
BspHI (4877)

AseI (4936)
4901 TCGTATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTTCACATAACGAGCTCTGC
5001 TTATATAGACCTCCCACCGTACACGCCTACCGCCATTTGCGTCAATGGGGGGAGTTGTTACGACATTTTGGAAAGTCCCCTGTTGATTTACTAGTCAAAA
5101 CAAACTCCCATTGACGTCAATGGGGTGGAGACTTGGAAATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATG
5201 GTAATAGCGATGACTAATACGTAGATGTACTGCCAAGTAGGAAAGTCCATAAGGTCATGTACTGGGCATAATGCCAGGCGGGCCATTTACCGTCATTGA

NdeI (5324)
5301 CGTCAATAGGGGCGTACTTGGCATATGATACACTTGATGTACTGCCAAGTGGGCGAGTTACCGTAAATACTCCACCATTGACGTCAATGGAAAGTCCC
5401 TATTGGCGTTACTATGGGAACATACGTCATTATTGACGTCAATGGGCGGGGTCGTTGGGCGGTCAGCCAGGCGGGCCATTTACCGTAAAGTTATGTAACG

PacI (5513)
SdaI (5506) BspLU11I (5519)
5501 CCTGCAGGTTAATTAAGAACATGTGAGCAAAGGCCAGCAAAGGCCAGGAACCGTAAAAAGGCCGCTTGTGGCGTTTTTCCATAGGCTCCGCCCCCC
5601 TGACGAGCATCAAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAGATACCAGGCGTTTTCCCTGGAAGCTCCCTCGTGCGC
5701 TCTCCTGTTCCGACCTGCCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTCACGCTGTAGGTATCTCAGTT
5801 CGGTGTAGGTCGTTCCGCTCAAGCTGGGCTGTGTGCACGAACCCCCGTTCCAGCCGACCGCTGCGCTTATCCGGTAACTATCGTCTTGAGTCCAACCC
5901 GGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTCTTGAAGTGGTGGCCT
6001 AACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAACAAA
6101 CCACCGCTGGTAGCGGTGGTTTTTTTGTGTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTACGGGGTCTGA
6201 CGCTCAGTGGAACGAAAACCTCACGTTAAGGGATTTTGGTATGGCTAGTTAATTAACATTTAAATCAGCGGCCAATAAAAATATCTTTATTTTCATTAC
PacI (6253) Swal (6261) NotI (6269)
6301 ATCTGTGTGTTGTTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAACAAAACGAAACAAAACAACTAGCAAATAGGCTGTCCCCAGTGC
6401 AAGTGCAGGTGCCAGAACATTTCTATCGAA