



PstI (7)  
SdaI (7) SpeI (14)

1 CCTGCAGGGCCACTAGTCGCCAGAGACTACAATTCCCAGCATTCTTGAGACTAGCGCGTTGCATGCCGGAAACTGTAGTTTCTCACCACCATCCAAACG  
101 CACTCCGGATATTC AACCCCTC ACAAATTTCTCTTTTGGCAAAGAAACGCCAAAAGAAAGGTGACGGCGAACGTAGCGCTGAAAGGGCTCGTAACGTG  
201 ACCCACGTCGTAGACGGGAAAAGGGTATAAACCAATTGTCTTGGCTACGGTTTCCCCTAGTCACGGAAACAAACGTTCTCTAAGAGCCGGAAGTGTTCC  
301 CCGGGACCTCTAGGAAAGGACAGACGTGCTATGCGCCTACATTTCATTGGACGGTTTTCTCTAGAGACCAAGGCTTCCAGGCCAAGGGGTGGCCCGTGT  
401 GTGAGGGGCCCGCGGAGCCATTTGATTGGAGAAAAGCTGCTGGACAAACCAATCGAAAGGAGCCACGCTTCGGGCATCGGGCACCGCACCTGGACAGTT  
501 CCGATTGGCGAGTTGCGGTCCCCCCTGCGTCCCCATTGGGTGCAGAGAGTGGTGGTGAGGCACGATTGGTGGGTTGCTGTTTCCCGTCCCCCGCCG  
601 CAAGCTGTGGGGTGAAGCGGCCGACCTGCGCGCGTTTGTAGTGGCGGACCCGCTGCTGGAGGTGTGAGGACCTGAGACTCCGGTTGGGGGGTGG

BspHI (749)

701 AGGGCGCTCTGCGACCGAAAAGGACTTGGCACTCTCCGGCCACGCATCATGAGCGGTTCTCATCATCATCATCATGGTATGGCTAGCATGACTGGT  
801 GGACAGCAAATGGGTGGGATCTGTACGACGATGACGATAAGGTACCTAAGGATCAGTTGGAGTTGATCCCGTCGTTTACACCGTCGCTGGGAAA  
18 GlyGlnGlnMetGlyArgAspLeuTyrAspAspAspAspLysValProLysAspGlnLeuGlyValAspProValValLeuGlnArgArgAspTrpGluA  
901 ACCCTGGCGTTACCCAACCTTAATCGCCTTGCAGCACATCCCCCTTTCGCGAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCCCTTCCAACAGTT  
51 snProGlyValThrGlnLeuAsnArgLeuAlaAlaHisProProPheAlaSerTrpArgAsnSerGluGluAlaArgThrAspArgProSerGlnGlnLe  
1001 GCGCAGCCTGAATGGCGAATGGCGCTTTCGCTGGTTTCCGGCACCAGAAGCGGTGCCGAAAGCTGGCTGGAGTGGGATCTTCTGAGGCGGATACTGTG  
84 uArgSerLeuAsnGlyGluTrpArgPheAlaTrpPheProAlaProGluAlaValProSerTrpLeuGluCysAspLeuGluAlaAspLeuTrpGluA  
1101 GTCGTCCCCTCAAACCTGGCAGATGCACGGTTACGATGCGCCACTACACCAACGTAACCTATCCCATTACGGTCAATCCGCGGTTTGTCCACGGAGA  
118 ValValProSerAsnTrpGlnMetHisGlyTyrAspAlaProIeTyrThrAsnValThrTyrProIeThrValAsnProProPheValProThrGluA  
1201 ATCCGACGGGTTGTACTCGCTCACATTAATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACGCGAATATTTTTGATGGCGTTAACTCGGCGTTTCA  
151 snProThrGlyCysTyrSerLeuThrPheAsnValAspGluSerTrpLeuGlnGluGlyGlnThrArgIleIlePheAspGlyValAsnSerAlaPheHi  
1301 TCTGTGGTGAACGGCGCTGGGTGCGTTACGGCCAGGACAGTCTGTTGCGCTCTGAATTTGACCTGAGCGCATTTTTACGGCGCGGAGAAAACCGCCTC  
184 sLeuTrpCysAsnGlyArgTrpValGlyTyrGlyGlnAspSerArgLeuProSerGluPheAspLeuSerAlaPheLeuArgAlaGlyGluAsnArgLeu  
1401 GCGGTGATGGTGTGCGTTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGATGAGCGGCATTTTCCGTGACGCTCTCGTTGCTGCATAAAC  
218 AlaValMetValLeuArgTrpSerAspGlySerTyrLeuGluAspGlnAspMetTrpArgMetSerGlyIlePheArgAspValSerLeuLeuHisLysP  
1501 CGACTACAAAATCAGCGATTTCCATGTTGCCACTCGCTTAAATGATGATTTACGCCGCGCTGACTGGAGGCTGAAGTTAGATGTGCGGCGAGTGGC  
251 roThrThrGlnIleSerAspPheHisValAlaThrArgPheAsnAspPheSerAlaValLeuGluAlaGluAlaValGlnMetCysGlyGluLeuAr  
1601 TGACTACCTACGGTAACAGTTTCTTTATGGCAGGGTGAACCGCAGGTCCGACCGCGGACCGCGCCTTTCGGCGGTGAAATTCGATGAGCGTGGTGGT  
284 gAspTyrLeuArgValThrValSerLeuTrpGlnGlyGluThrGlnValAlaSerGlyThrAlaProPheGlyGlyGluIleIleAspGluArgGlyGly  
1701 TATGCCGATCGCGTACACTACGCTCTGAACGTCGAAAACCCGAAACTGTGGAGCGCGGAAATCCCGAATCTCTATCGTGGCGTGGTTGAACTGCACACCG  
318 TyrAlaAspArgValThrLeuArgLeuAsnValGluAsnProLysLeuTrpSerAlaGluIleProAsnLeuTyrArgAlaValValGluLeuHisThrA  
1801 CCGACCGCAGCTGATGAAGCAGAAGCCTGCGATTCGCTTCCGCGAGGTGGCGGATGAAAATGGTCTGCTGCTGAACCGCAAGCCGTTGCTGAT  
351 laAspGlyThrLeuIleGluAlaGluAlaCysAspValGlyPheArgGluValArgIleGluAsnGlyLeuLeuLeuLeuLysProLeuMetI  
1901 TCGAGCGGTTAACCGTCACGAGCATCATCCTCTGCATGGTCAAGTCTATGGATGAGCAGACGATGGTGCAGGATATCTGCTGATGAGCAGAAACACTTT  
384 eArgGlyValAsnArgHisGluHisHisProLeuHisGlyGlnValMetAspGluGlnThrMetValGlnAspIleLeuLeuMetLysGlnAsnAsnPhe  
2001 AACGCCGTGGCTGTTCCGATTTCCGAACCATCCGCTGTGGTACACGCTGTGGACCGCTACGGCCTGTATGTGGTGGATGAAGCCAATATTGAAACCC  
418 AsnAlaValArgCysSerHisTyrProAsnHisProLeuTrpTyrThrLeuCysAspArgTyrGlyLeuTyrValValAspGluAlaAsnIleGluThrH  
2101 ACGCATGGTGCCAAATCGTCTGACCGATGATCCGCGTGGCTACCGCGGATGAGCGAACCGTAACCGGAATGGTGCAGCGCATCGTAATCACCC  
451 isGlyMetValProMetAsnArgLeuThrAspAspProArgTrpLeuProAlaMetSerGluArgValThrArgMetValGlnArgAspArgAsnHisPr  
2201 GAGTGTGATCATCTGGTCTGGGAAATGAATCAGGCCACGGCGCTAATCACGACGGCTGTATCGTGGATCAAATCTGTGATCCTTCCGCCCCGGTG  
484 oSerValIleIleTrpSerLeuGlyAsnGluSerGlyHisGlyAlaAsnHisAspAlaLeuTyrArgTrpIleLysSerValAspProSerArgProVal  
2301 CAGTATGAAGGGCGGAGCCGACACCCAGCCAGCATATTATTTCCCGGATGACCGCGCGTGGATGAAGACCAGCCCTTCCGGCTGTGCGGAAAT  
518 GlnTyrGluGlyGlyAlaAspThrThrAlaThrAspAlleIleCysProMetTyrAlaArgValAspGluAspGlnProPheProAlaValProLysT  
2401 GGTCCATCAAAAATGGCTTTCGCTACCTGGAGAGACCGCCCGCTGATCCTTTGCGAATACGCCACCGGATGGTAAACAGTCTTGGCGGTTTCGCTAA  
551 rpSerIleLysLysTrpLeuSerLeuProGlyGluThrArgProLeuIleLeuCysGluTyrAlaHisAlaMetGlyAsnSerLeuGlyGlyPheAlaLy  
2501 ATACTGGCAGGCGTTTCGCTAGTATCCCCGTTACAGGGCGGCTTCGCTGGGACTGGGTGGATCAGTCCGCTGATTAATATGATGAAAACGGCAACCCG  
584 sTyrTrpGlnAlaLeuTrpArgLeuProArgLeuGlyPheValTrpAspGlnSerLeuIleLysTyrAspGluAsnGlyAsnGlnPro  
2601 TGGTCCGCTTACGGCGGTGATTTGGCGATACGCCGAACGATCGCCAGTCTGTATGAAACCGTCTGGTCTTTGCGGACCGCACCGCATCCAGCGCTGA  
618 TrpSerAlaTyrGlyGlyAspPheGlyAspThrProAsnAspArgGlnPheCysMetAsnGlyLeuValPheAlaAspArgThrProHisProAlaLeuT  
2701 CGGAAGCAAAACACCAGCAGCAGTTTTTCCAGTTCGGTTTATCCGGGCAAACCATCGAAGTGACCAGCGAATACCTGTTCCGTCATAGCGATAACGAGCT  
651 hrGluAlaLysHisGlnGlnGlnPhePheGlnPheArgLeuSerGlyGlnThrIleGluValThrSerGluTyrLeuPheArgHisSerAspAsnGluLe  
2801 CCTGCACTGGATGGTGGCGCTGGATAGCGCTGGCAAGCGGTGAAGTCCCTGATGATGCGTCCACAAAGGTAACAGTTGATTGAAGTGCCTGAA  
684 uLeuHisTrpMetValAlaLeuAspGlyLysProLeuAlaSerGlyGluValProLeuAspValAlaProGlnGlyLysGlnLeuIleGluLeuProGlu  
2901 CTACCGCAGCCGAGAGCGCGGGCAACTCTGGCTCACAGTACGGTAGTGCACCGAACCGGACCGCATGGTCAAGAGCCGGGCACATCAGCGCTGGC  
718 LeuProGlnProGluSerAlaGlyGlnLeuTrpLeuThrValArgValValGlnProAsnAlaThrAlaTrpSerGluAlaGlyHisIleSerAlaTrpG  
3001 AGCAGTGGCGCTGCGCGGAAAACCTCAGTGTGACGCTCCCCGCGGCTCCCACGCGATCCCCGATCTGACCACCAGCGAAATGGATTTTGCATCGAGCT  
751 InGlnTrpArgLeuAlaLeuAsnLeuValThrLeuAlaAlaGlnSerHisAlaIleProHisLeuThrThrSerGluMetAspPheCysIleGluLeu  
3101 GGTAATAAGCGTTGGCAATTTAACCGCCAGTCAAGCTTTCTTTACAGATGTGGATTGGCGATAAAAAACAACTGCTGACGCGCTGCGCGCATCAGTTC  
784 uGlyAsnLysArgTrpGlnPheAsnArgGlnSerGlyPheLeuSerGlnMetTrpIleGlyAspLysLysGlnLeuLeuThrProLeuArgAspGlnPhe  
3201 ACCCGTGCACCGCTGGATAACGACATTTGGCGTAAGTGAAGCGACCCGATTGACCCTAACCGCTGGTTCGAACGCTGGAAGGCGGGCGGCCATTACAGG  
818 ThrArgAlaProLeuAspAsnAspIleGlyValSerGluAlaThrArgIleAspProAsnAlaTrpValGluArgTrpLysAlaAlaGlyHisTyrGlnA  
3301 CCGAAGCAGCGTTGTTGAGTGCACGGCAGATACACTGTGATGCGGTGCTGATTACGACCGCTCACCGGTGGCAGCATCAGGGGAAAACCTTATTTAT  
851 laGluAlaAlaLeuLeuGlnCysThrAlaAspThrLeuAlaAspAlaValLeuIleThrThrAlaHisAlaTrpGlnHisGlnGlyLysThrLeuPheI  
3401 CAGCCGAAAACCTACCGGATTTGATGGTAGTGGTCAAATGGCGATTACCGTTGATGTTGAAGTGGCGAGGATACACCGCATCCGGCGGATTGGCGCTG  
884 eSerArgLysThrTyrArgIleAspGlySerGlyGlnMetAlaIleThrValAspValGluValAlaSerAspThrProHisProAlaArgIleGlyLeu  
3501 AACTGCCAGCTGGCGCAGGTAGCAGAGCGGTAACCTGGCTCGGATTAGGGCCGCAAGAAAACCTATCCGACCGCCTTACTGCGCGCTGTTTGGACCGCT  
918 AsnCysGlnLeuAlaGlnValAlaGluArgValAsnTrpLeuGlyLeuGlyProGlnGluAsnTyrProAspArgLeuThrAlaAlaCysPheAspArgT

3601 GGGATCTGCCATTGT CAGACATGTATACCCCGTACGTCTCCCGAGCGAAAACGGTCTGCGCTGCGGACGCGCGAATTGAATTATGGCCACACCAGTG  
951▶ rpAspLeuProLeuSerAspMetTyrThrProTyrValPheProSerGluAsnGlyLeuArgCysGlyThrArgGluLeuAsnTyrGlyProHisGlnTr  
3701 GCGGGCGACTTCCAGTTCAACATCAGCCGCTACAGTCAACAGCAACTGATGAAACCAGCCATCGCCATCTGCTGCACGCGGAAGAAGGCACATGGCTG  
984▶ pArgGlyAspPheGlnPheAsnIeSerArgTyrSerGlnGlnGlnLeuMetGluThrSerHisArgHisLeuLeuHisAlaGluGluGlyThrTrpLeu  
3801 AATATCGACGGTTTCCATATGGGGATTGGTGGCGCAGACTCCTGGAGCCCGTCAGTATCGGCGGAATTACAGCTGAGCGCGGTGCTACCATTACCAGT  
1018▶ AsnIeAspGlyPheHisMetGlyIleGlyGlyAspAspSerTrpSerProSerValSerAlaGluLeuGlnLeuSerAlaGlyArgTyrHisTyrGlnL

EcoRI (3934)

3901 TGGTCTGGTGTCAAAAATAATAATCTAGTCGAGAATTCGCTAGCTCGACATGATAAGATACATTGATGAGTTTGGACAAACCACAAC TAGAATGCAGTGA  
1051▶ euValTrpCysGlnLys•••

4001 AAAAAATGCTTTATTTCGTGAAATTTGTGATGCTATTGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACA

4101 AGTTAACAAACA AATTCATTCATTTTATGTTTCAGGTT CAGGGGGAGGTGTGGGAGGTTTTTTAAAGCAAGTAAAACCTCTACAAATGTGGTAGATCC

PacI (4215)

4201 ATTTAAATGTTAATTA AACTAGCCATGACCAAAATCCCTTAACGTGAGTTTTTCGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTG

4301 AGATCCTTTTTTTCTGCGCGTAATCTGCTGCTTGCAAACAAAAAACCCGCTACCAGCGGTGTTTGTGTTGCCGGATCAAGAGCTACCAACTCTTTTT

4401 CCGAAGGTA AACTGGCTTCAGCAGAGCGCAGATACAAATACTGTTCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAACTCTGTAGCACC GCCTA

4501 CATACTCGCTCTGCTAATCCTGTTACCAGTGCTGCTGCCAGTGGCGATAAGTCGTGCTTACC GGTTGGACTCAAGACGATAGTTACCGGATAAGGC

4601 GCAGCGTCGGGCTGAACGGGGGTTCTGTGCACAGCCAGCTTGGAGCGAACGACCTACACCGAACTGAGATACCTACAGCGTGAGCTATGAGAAAGC

4701 GCCACGTTCCCGAAGGGAGAAAGCGGCAGGTATCCGTTAAGCGGCAGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGAAACGCCTGGT

4801 ATCTTTATAGTCTGTCCGGTTTCGCCACCTGACTTGAGCGTCGATTTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGAAAAACGCCAGCAACGC

PacI (4955)

4901 GGCCTTTTACGGTTCCTGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTTAATTA AATTTTCAAAGTAGTTGACAATTAATCATCGGCATAGTATAT

5001 CGGCATAGTATAATACGACTCACTATAAGGAGGGCCATCATGGCCAAGTTGACCAGTGTGTCCAGTGTCCAGCCAGGGATGTGGCTGGAGCTGTTGA

1▶ MetAlaLysLeuThrSerAlaValProValLeuThrAlaArgAspValAlaGlyAlaValGI

5101 GTTCTGGACTGACAGTTGGGTTCTCCAGAGATTTTGTGGAGGATGACTTTGCAGGTGTGGTCAGAGATGATGTCACCCTGTTATCTCAGCAGTCCAG

5201 GACCAGGTGGTGCCTGACAACCCCTGGCTTGGGTGTGGGTGAGAGGACTGGATGAGCTGTATGCTGAGTGGAGTGAGGTGGTCTCCACCAACTTCAGGG

55▶ AspGlnValValProAspAsnThrLeuAlaTrpValTrpValArgGlyLeuAspGluLeuTyrAlaGluTrpSerGluValValSerThrAsnPheArgA

5301 ATGCCAGTGGCCCTGCCATGACAGAGATTGGAGAGCAGCCCTGGGGAGAGAGTTTGCCTGAGAGCCAGCAGGCAACTGTGTGCACTTTGTGGCAGA

88▶ spAlaSerGlyProAlaMetThrGluIleGlyGluGlnProTrpGlyArgGluPheAlaLeuArgAspProAlaGlyAsnCysValHisPheValAlaGI

PacI (5471)

5401 GGAGCAGGACTGAGGATAAGAATTGAGTTTCAGAAAAGGGGCTGAGTGGCCCTTTTTTCAACTTAATTAA

121▶ uGluGlnAsp•••