



SdaI (7) **SpeI (14)**

1 CCTGCAGGGCCACTAGTTCATGTCTTATATGGACTCATCTTTGCTATTGGACACACACTCAATGAACACCTACTACGGCTGCAAAGAGCCCGC
101 AGGCCTGAGGTGCCCCACCTCACCCTCTTCTATTTTTGTGTA AAAATCCAGCTTCTGTACCACCTCCAAGGAGGGGAGGAGGAGGAAGGCAGGT
201 TCCTCTAGGCTGAGCGAATGCCCTCTGTGGTCCCACGCCACTGATCGCTGCATGCCACCACCTGGGTACACACAGTCTGTGATTCCCGGAGCAGAAC
301 GGACCTGCCACCCGGTCTTGTGTCTACTCAGTGGACAGACCCAAGGCAAGAAAGGTGACAAGGACAGGGTCTTCCAGGCTGGCTTTGAGTTCCTA
401 GCACCGCCCCGCCCAATCTCTGTGGACATGGAGTCTTGGTCCCAGAGTCCCCAGCGGCTCCAGATGGTCTGGGAGGGCAGTTCAGCTGTGGCT
501 CGCATAGCAGACATAACAAGGACGGTGGGCCAGACCCAGGCTGTGTAGACCCAGCCCCCGCCCGCAGTGCCTAGGTACCCACTAACGCCCCAGG
601 CCTGGTCTTGGCTGGCGTGACTGTTACCCTCAAAAAGCAGGCAGCTCCAGGGTAAAAGGTGCCCTGCCTGTAGAGCCACCTTCTTCCAGGGCTGGC
701 GCTGGGTAGGTTTGTAGCCTTATCAGGGCCACCTCCAGCCACTGGACCCTGGCCCTGCCTGTCTGGGAGTGTGGTCTCGACTTCTAAGTGG
801 CCGCAAGCCACTGACTCCCCAACCCACACTCTACCTCTCAAGCCAGGTCTCTCCCTAGTGACCCACCAGCACATTTAGCTAGCTGAGCCCCACAG
901 CCAGAGTCTCAGGCCCTGCTTTCAGGGCAGTGTCTGAAGTCGCAAGGGGAGTACTGCCTGGCCACTCCATGCCCTCAAGAGCTCCTTCTGCA
1001 GGAGCGTACAGAACCAGGGCCTGGCACCCGTGCAGACCTGGCCACCCACCTGGCGCTCAGTGCCAAGAGATGTCCACACCTAGGATGTCCCGC
1101 GGTGGTGGGGGGCCGAGAGACGGGACGGCCGGGGCAGGCTGGCCATGCGGGGCCAACCAGGACTGCCAGCGTGGGGCCGGGGCCACGGCGC
1201 GCGCCCCAGCCCCGGGCCAGCACCACAAGGCGGCAACGCCAAAACCTCTCCCTCTCTCTTCTCAATCTCGCTCTCGCTCTTTTTTTTTTTCGCA
1301 AAAGGAGGGGAGAGGGGTAAAAAATGCTGCATGTGCGGCAAGCCGGTGTAGTGCAGCGCGGGGCCAATCAGCGTGCCTTCCGAAAGTTCCT

NotI (1415)

XhoI (1409)

1401 TTTATGGCTCGAGCGCGCGCCCTATAAAAACCCAGCGCGCAGCGCCACCACCGCGAGACCGCTCCGCCCGGAGCACAGAGCTCGC
1501 CTTTGCCGATCCGCCCGCTCCACACCCGCCGCAgt aagcccggccagccgaccggggcaggcggtcacggcccggccgagggcgccggcccc
1601 ttcgcccgtcgagagcccgcgtctgggcccagcggggggcgcatggggggggaaccggaccgcgtggggggcgcgggagaagcccctgggctccgga
1701 gatgggggacaccccacgccagttcggaggcgcgaggccgcgtcgggaggcgcgctccgggggtgcccgtctcggggcgggggcaaccggcggggtctt
1801 tgtctgagccgggctcttgccaatggggatcgagggtgggcgcgggagccccgccaggccccgggggctggggcgccattgcgcgctgcgcgctg
1901 gtcctttgggcgtaactgctgcgcgctgggaattggcgctaattgcgcgctgcgcgctgggactcaaggcgtaactgcgcgctgcttctggggccccg
2001 ggtgcccgggcctgggctggggcgaaggcgggctcggccggaagggtggggtcgcccggtcccggggcgcttgccgcaacttctgcccagccgctg
2101 gcccccagggtgtggcgcgtcgtgcgcgcgccgaccggcgctgttgaaccggggcggaggcgggctggcggccgggtgggagggggtggggc
2201 ctggcttctgcccgcgcggggagcctccgaccagtgttgccttttatggtaataacggcgccggccggcttcttctgccccaatctgggcg
2301 cgcgcccggcggccctggcgccctaaggactcggcgcgccggaagtggccaggcgggggcgacctcggtcacagcggccggctattctcgcagCTC

NotI (1589)

NeoI (2403)

2401 ACCATGGGGGTTCTCATCATCATCATCATGGTATGGCTAGCATGACTGGTGGACAGAAATGGGTCGGGATCTGTACGACGATGACGATAAGGTAC
2501 CTAAGGATCAGCTGGAGTTGATCCCGTCTTTACAACGTCGTGACTGGGAAAACCCCTGGCGTTACCCAACCTAATCGCCTTGCAGCACATCCCGCTTT
33> roLysAspGlnLeuGlyValAspProValValLeuGlnArgArgAspTrpGluAsnProGlyValThrGlnLeuAsnArgLeuAlaAlaHisProProPh
2601 CGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCCGCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGCTTTGCTGGTTCCGGCACA
66> eAlaSerTrpArgAsnSerGluGluAlaArgThrAspArgProSerGlnGlnLeuArgSerLeuAsnGlyGluTrpArgPheAlaTrpPheProAlaPro
2701 GAAGCGTGGCGAAAGCTGGCTGGAGTGGATCTCTCTGAGGCCGATACTGTCTGCTCCCTCAAACCTGGCAGATGCACGGTTACGATGCCCCATCT
100> GluAlaValProGluSerTrpLeuGluCysAspLeuProGluAlaAspThrValValValProSerAsnTrpGlnMetHisGlyTyrAspAlaProIleT
2801 ACACCAACGTAACCTATCCATTACGGTCAATCCGCGTTTGTTCACGGAGAACCCGACGGGTTGTTACTCGCTCACATTTAATGTTGATGAAAGCTG
133> yrThrAsnValThrTyrProIleThrValAsnProProPheValProThrGluAsnProThrGluAsnProThrGlyCysTyrSerLeuThrPheAsnValAspGluSerTr
2901 GCTACAGGAAGGCAGACGCGAATTATTTTTGATGGCGTAACTCGCGCTTTCATCTGTGGTGAACGGGCGCTGGGTGGTTACGGCCAGGACAGTCTG
166> pLeuGlnGluGlyGlnThrArgIleIlePheAspGlyValAsnSerAlaPheHisLeuTrpCysAsnGlyArgTrpValGlyTyrGlyGlnAspSerArg
3001 TTGCGTCTGAATTTGACCTGAGCGCATTTTACCGCGCCGAGAAAACCGCCTCGCGGTGATGGTGTGCGTTGGAGTGACGGCAGTTATCTGGAAGATC
200> LeuProSerGluPheAspLeuSerAlaPheLeuArgAlaGlyGluAsnArgLeuAlaValMetValLeuArgTrpSerAspGlySerTyrLeuGluAspG
3101 AGGATATGTGGCGGATGACCGCATTTCCGTGACGTCTCGTTGCTATAAACCCGACTACACAAATCAGCGATTCCATGTGGCCACTCGCTTAATGA
233> InAspMetTrpArgMetSerGlyIlePheArgAspValSerLeuLeuHisLysProThrThrGlnIleSerAspPheHisValAlaThrArgPheAsnAs
3201 TGATTTACGCCCGCTGACTGGAGGCTGAAGTTCAGATGTGCGCGAGTTGCGTGACTACCTACGGTAACAGTTCTTTATGGCAGGTTGAAACGCAG
266> pAspPheSerArgAlaValLeuGluAlaGluValGlnMetCysGlyGluLeuArgAspTyrLeuArgValThrValSerLeuTrpGlnGlyGluThrGln
3301 AGTCCAGCGCGCTTTCGGCGTGAATATCGATGAGCGGTGGTTATGCCGATCGCGTACACTACGCTGACCGTCAACCGTCAACCGTCAACCGTCAAC
300> ValAlaSerGlyThrAlaProPheGlyGlyGluIleIleAspGluArgGlyGlyTyrAlaAspArgValThrLeuArgLeuAsnValGluAsnProLysL
3401 TGTGGAGCGCGAAATCCGAATCTCTATCGTGGTGGTGAAGTGCACACCGCCGACGGCAGCGTATTGAAGCAGAAGCCTGCGATGTCGGTTCCG
333> euTrpSerAlaGluIleProAsnLeuTyrArgAlaValValGluLeuHisThrAlaAspGlyThrLeuIleGluAlaGluAlaCysAspValGlyPheAr
3501 CGAGGTGGGATGAAAATGCTGCTGCTGCTGAACGGCAAGCCGTTGCTGATTGAGGCGTTAACCGTACGAGCATCATCTCTGCATGGTCAGGTC
366> gGluValArgIleGluAsnGlyLeuLeuLeuLeuAsnGlyLysProLeuLeuIleArgGlyValAsnArgHisGluHisHisProLeuHisGlyGlnVal

3601 ATGGATGAGCAGACGATGGTGCAGGATATCCTGCTGATGAAGCAGAACAACCTTTAACGCCGTGCGCTGTTCCGATTATCCGAACCATCCGCTGTGGTACA
400 MetAspGluGlnThrMetValGlnAspIleLeuLeuMetLysGlnAsnAsnPheAsnAlaValArgCysSerHisTyrProAsnHisProLeuTrpTyrT
3701 CCGTGTGCGACCCGCTACGGCCTGTATGTGGTGGATGAAGCAATATTGAAACCCACGGCATGGTGCCAATGAATCGTCTGACCCGATGATCCGGCTGGCT
433 hrLeuCysAspArgTyrGluLeuValValAspGluAlaAsnIleGluThrHisGlyMetValProMetAsnArgMetValThrAlaThrAspIleIleC
3801 ACCGGCGATGAGCGAACCGGTAACCGGAATGGTGCAGCGGATCGTAATCACCCGAGTGTGATCATCTGGTCGCTGGGGAATGAATCAGGCCACGGCGCT
466 uProAlaMetSerGluArgValThrArgMetValGlnArgAspArgAsnHisProSerValIleIleTrpSerLeuGlyAsnGluSerGlyHisGlyAla
3901 AATCACGACGGCTGTATCGCTGGATCAAATCTGTCTGATCCTTCCCGCCGGTGCAGTATGAAGCGCGGAGCCGACACCAGGCCACCGATATTATTT
500 AsnHisAspAlaLeuTyrArgTrpIleLysSerValAspProSerHisArgProValGlnTyrGluGlyGlyGlyAlaAspThrThrAlaThrAspIleIleC
4001 GCCCGATGTACGCGCGCTGGATGAAGACCAGCCCTTCCCGCTGTGCCAAATGGTCCATCAAAAAATGGCTTTCGCTACCTGGAGAGACGCGCCCGCT
533 ysProMetTyrAlaArgValAspGluAspGlnProPheProAlaValProLysTrpSerIleLysLysTrpLeuSerLeuProGlyGluThrArgProLe
4101 GATCCTTTGCGAATACGCCACGCGATGGGTAAACAGTCTTGGCGGTTTCGCTAAATACTGGCAGGCGCTTTCGTCAGTATCCCGCTTACAGGGCGGCTTC
566 ulLeuLeuGluGlyGlyAlaHisAlaMetGlyAsnSerLeuGlyGlyPheAlaLysTyrTrpGlnAlaPheArgGlnTyrProArgLeuGlnGlyPhe
4201 GTCTGGGACTGGGTGGATCAGTCTGCTGATTAATATGATGAAAAACGGCAACCCGTGGTGGCTTACGGCGGTGATTTGGCGATACGCCGAACGATCGCC
600 ValTrpAspTrpValAspGlnSerLeuIleLysTyrAspGluAsnGlyAsnProTrpSerAlaTyrGlyGlyAspPheGlyAspThrProAsnAspArgG
4301 AGTTCTGTATGAACGGTCTGGCTTTTGGCCAGCCAGCCGCATCCAGCGCTGACGGAAAGCAAAACACCAGCAGCAGTTTTTCCAGTTCGGTTTATCCGG
633 InPheCysMetAsnGlyLeuValPheAlaAspArgThrProHisProAlaLeuThrGluAlaLysHisGlnGlnGlnPhePheGlnPheArgLeuSerG
4401 GCAAACCATCGAAGTGACCAGGAAATACCTGTTCCTCATAGCGATAACGAGCTCCTGCAGTGGATGGTGGCGCTGGATGGTAAGCGCTGGCAAGCGGT
666 yGlnThrIleGluValThrSerGluTyrLeuPheArgHisSerAspAsnGluLeuLeuHisTrpMetValAlaLeuAspGlyLysProLeuAlaSerGly
4501 GAAGTGCCTCTGGATGTCTGCCACAAGGTAACAGTGTGATGAACTGCCTGAACTACCGCAGCCGGAGAGCGCCGGCAACTCTGGCTCACAGTACGGC
700 GluValProLeuAspValAlaProGlnGlyLysGlnLeuIleGluLeuProGluLeuProGlnProGluSerAlaGlyGlnLeuTrpLeuThrValArgV
4601 TAGTGCAACCGAACCGCACCGATGGTCAGAAGCCGGGCACATCAGCGCTGGCAGCAGTGGCGTCTGGCGGAAAACCTCAGTGTGACGCTCCCCCGC
733 alValGlnProAsnAlaThrAlaTrpSerGluAlaGlyHisIleSerAlaTrpGlnGlnTrpArgLeuAlaGluAsnLeuSerValThrLeuProAlaAl
4701 GTCCACGCCATCCCGCATCTGACCACCAGCGAAATGGATTTTTGCATCGAGCTGGGTAATAAGCGTTGGCAATTTAACGCCAGTCAAGCTTCTTTTCA
766 aSerHisAlaIleProHisLeuThrThrSerGluMetAspPheCysIleGluLeuGlyAsnLysArgTrpGlnPheAsnArgGlnSerGlyPheLeuSer
4801 CAGATGTGGATTGGCGATAAAAAACAACCTGTGACGCCGCTGGCGGATCAGTTCACCCGTGCACCGCTGGATAACGCATTTGGCGTAAGTGAAGCGACCC
800 GlnMetTrpIleGlyAspLysLysGlnLeuLeuThrProLeuArgAspGlnPheThrArgAlaProLeuAspAsnAspIleGlyValSerGluAlaThrA
4901 GCATTGACCTAACGCCCTGGGTGCAACGCTGGAAGCGCGGGCCATTACCAGGCCGAAGCAGCGTGTGTGAGTGCACGGCAGATACACTTGTGTATGC
833 rglAspProAsnAlaTrpValGluArgTrpLysAlaAlaGlyHisTyrGlnAlaGluAlaAlaLeuLeuGlnCysThrAlaAspThrLeuAlaAspAl
5001 GGTGCTGATTACGACCGCTCAGCGTGGCAGCATCAGGGGAAAACCTTATTTATCAGCCGAAAACCTACCGGATTGATGGTAGTGGTCAAATGGCGATT
866 aValLeuIleThrThrAlaHisAlaTrpGlnHisGlnGlyLysThrLeuPheIleSerArgLysThrTyrArgIleAspGlySerGlyGlnMetAlaIle
5101 ACCGTTGATGTTGAAGTGGCGAGCGATACACCGCATCCGGCGGATTTGGCCTGAACTGCCAGCTGGCGCAGGTAGCAGAGCGGGTAAACTGGCTCGGAT
900 ThrValAspValGluValAlaSerAspThrProHisProAlaArgIleGlyLeuAsnCysGlnLeuAlaGlnValAlaGluArgValAsnTrpLeuGlyL
5201 TAGGGCCGCAAGAAAACCTATCCCGACCGCTTACTGCCCTGTTTTGACCGCTGGGATCTGCCATTGTACAGATGTATACCCCGTACGCTTCCCGAG
933 euGlyProGlnGluAsnTyrProAspArgLeuThrAlaAlaCysPheAspArgTrpAspLeuProLeuSerAspMetTyrThrProTyrValPheProSe
5301 CGAAAACGGTCTGCGCTGGGACCGCGCAATTGAATATGGCCACACCAAGTGGCGGCGACTTCCAGTTCACACTCAGCCGCTACAGCTCAACAGCAA
966 rGluAsnGlyLeuArgCysGlyThrArgGluLeuAsnTyrGlyProHisGlnTrpArgGlyAspPheGlnPheAsnIleSerArgTyrSerGlnGlnGln
5401 CTGATGAAAACCGCATCGCCATCTGCTGCACGGGAAGAAGGCACATGGCTGAATATCGACGTTTCCATATGGGATTGGTGGCGACGACTCTGGA
1000 LeuMetGluThrSerHisArgHisLeuLeuHisAlaGluGluGlyThrTrpLeuAsnIleAspGlyPheHisMetGlyIleGlyGlyAspAspSerTrpS

EcoRI (5588)

5501 GCCCGTCAGTATCGGCGAATTACAGCTGAGCGCCGGTTCGCTACCATACCAGTTGGTCTGGTGTCAAAAAATAAATCTAGTCCGAGAATTCGCTAGCTC
1033 erProSerValSerAlaGluLeuGlnLeuSerAlaGlyArgTyrHisTyrGlnLeuValTrpCysGlnLys•••
5601 GACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAAATGCAGTGAATAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTG

5701 TGAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGTTAACAACAACAATTGCATTATTTATGTTTCAGGTTACAGGG

PacI (5869)

SwaI (5859)

5801 GAGGTGTGGGAGGTTTTTTAAAGCAAGTAAAACCTCTACAAATGTGGTAGATCCATTTAAATGTTAATTAAGTACGATGACCAAAATCCCTTAACGTGA

5901 GTTTTCGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCCTTTTTTCTGCGCGTAATCTGCTGCTTCAAAACAAAAAA

6001 CCACCGCTACCAGCGGTGGTTTGTGGCGGATCAAGAGCTACCAACTCTTTTTCCGAAGGTAACCTGGCTTACGAGAGCGCAGATACCAAACTACTGTT

6101 TTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAACTCTGTAGCACCCTACATACCTCGCTCTGCTAATCCTGTTACCAGTGGCTGCTGCCAGTGG

6201 CGATAAGTCTGTCTTACCGGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCGGCTGGGCTGAACGGGGGGTTCGTGCACACAGCCAGCTTG

6301 GAGCGAACACCTACACCGAACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCCGAAGGGAGAAAGCGGACAGGTATCCGGTAAGCC

6401 GCAGGGTCCGAACAGGAGAGCGCAGGAGGGAGCTTCCAGGGGAAACGCTGGTATCTTTATAGTCTGTGCGGTTTCGCCACCTCTGACTTGAGCGTGC

6501 ATTTTGTGATGCTCTCAGGGGGCGGAGCCTATGAAAAACGCCAGCAACGGCGCTTTTTACGGTTCCTGGCCTTTTGTGGCCTTTTGTGCATG

PacI (6609)

6601 TCTTAATTAATTTTCAAAAGTAGTTGACAATTAATCATCGGCATAGTATAATACGACTCACTATAGGAGGGCCATCATGGCCAA

MetAlaLys

6701 GTTGACCACTGCTGCCAGTCTCACAGCCAGGGATGTGGCTGGAGCTGTGAGTTCTGGACTGACAGGTTGGGGTCTCCAGAGATTTGTGGAGGAT

6801 GACTTTGCAAGTGTGGTTCAGAGATGATGTACCCCTGTCATCTCAGCAGTCCAGGACCAAGTGGTGCCTGACAACACCCCTGGCTTGGGTGTGGGTGAGAG

6901 GACTGGATGAGCTGTATGCTGAGTGGAGTGGTCTCCACCACTTCCAGGATGCCAGTGGCCCTGCCATGACAGAGATTGGAGAGCAGCCCTGGGG

7001 GAGAGACTTTGCCCTGAGAGACCCAGCAGCAACTGTGTGCACTTTGTGGCAGAGGAGCAGGACTGAGGATAAGAATTGAGTTTCAGAAAAGGGGCGCTG

103 yArgGluPheAlaLeuArgAspProAlaGlyAsnCysValHisPheValAlaGluGluGlnAsp•••

PacI (7125)

7101 AGTGGCCCTTTTTTCAACTTAATTA