



150
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PstI (7)
SdaI (7)

1 CCTGCAGGGCCCACTAGTGCCTTGCATGCCGAAACTGTAGTTTCTCACCACCATCCAACGCATTCCGGATATTCAACCCCTCACAAATTTCTCTTTTG
101 CGAAAAGAAACGCCAAAAGAAAGGTGACGGCGAACGTAGCGCTGAAAGGACTCGTAACTGACCCGCGCTAGACGAGAAAAGGGTAAAGGACGCATT
201 GTCTTGGCTACCGTTTCCCTAGTACGGACTAAACGTTTCGTAGAAGCCGGAAGTGGTTCCCGGGACCTCTAGGAATGGACAGACGTGCTATGCGCCT
301 ACGTTTCATTGGACGGTTTTCTCAGGGACCAAGGCTTCCAGGCCAAAGGGTGGCCCGGTGTGTGAGGGCCCGGGACCCATCTGATTGGAGGAAAGCCG
401 CTGGACAAGCCCAATCGCAAGGAGCCACGCTTCGGGCATCGGGCACCACCTGGACAGTTCGATTGGCGGGCTGCGGTCCCCCCATGCTCTCCATT
501 GGGTGCAGAGAGTGCCTGGTGAGGCACGATTGGTGTAGTTCGTGTTTCCCGTCCCGCCCGCAAGCAGTGGGGTGAAGAGCGGCCGACCTGCGCGGGC
601 TTAGTGGGCGGACCGCGCTGCTGGAGGTGTGAGGAGCTTAGACTCGGGATTGGGGGGTGGAGGCGGCTCCTGAGACCGAAAAGACTTGGACTCGCCG

NcoI (710)

701 GCCACGCACCATGGGGGTTCTCATCATCATCATCATGTTATGGCTAGCATGACTGGTGACAGCAAATGGGTCGGGATCTGTACGACGATGACGAT
801 AAGTACCTAAGGATCAGCTTGGAGTTGATCCCGCTGTTTACAACGTCGTGACTGGGAAAACCTGGCGTTACCCAATTAATCGCCTGCAGCACATC
31 LysValProLysAspGlnLeuGlyValAspProValValLeuGlnArgArgAspTrpGluAsnProGluGlnValThrGluLeuAsnArgLeuAlaAlaHisP
901 CCCCTTTCGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGGCGAGCCTGAATGGCGAATGGCGCTTTCCTGGTTTCC
64 roProPheAlaSerTrpArgAsnSerGluGluAlaArgThrAspArgProSerGlnGlnLeuArgSerLeuAsnGlyGluTrpArgPheAlaTrpPhePr
1001 GGCACCAGAAGCGGTGCCGAAAGCTGGCTGGAGTGGCATCTTCTGAGGCCGATAGTGTGCTGCTCCCTCAAACCTGGCAGATGCACGGTTACGATGGC
97 oAlaProGluAlaValProGluSerTrpLeuGluCysAspLeuProGluAlaAspLeuValValValLeuArgTrpSerAsnTrpGlnMetHisGlyTyrAspAla
1101 CCCATCTACCCAACGTAACCTATCCCATACGGTCAATCCGCGTTCCTCCACGGAGAATCCGACGGGTTGTTACTCGCTCACATTTAATGTTGATG
131 Prol IeTyrThrAsnValThrTyrProl IeThrValAsnProProPheValProThrGluAsnProThrGlyCysTyrSerLeuThrPheAsnValAspG
1201 AAAGCTGGCTACAGGAAGGCCAGACGCGAATTTTTTGTATGGCGTTAACTGGCGTTCATCTGTGGTGCAACGGGCGCTGGGTCGGTTACGGCCAGGA
164 luSerTrpLeuGlnGluGlyGlnThrArgI IeI IePheAspGlyValAsnSerAlaPheHisLeuTrpCysAsnGlyArgTrpValGlyTyrGlyGlnAs
1301 CAGTCGTTTGGCGTCTGAATTTGACCTGAGCGCATTTTTACGGCCGGAGAAAACCGCCTCGCGGTGATGGTGTGCGTGGAGTGACGGCAGTTATCTG
197 pSerArgLeuProSerGluPheAspLeuSerAlaPheLeuArgAlaGlyGluAsnArgLeuAlaValMetValLeuArgTrpSerAspGlySerTyrLeu
1401 GAAGATCAGGATATGTGGCGGATGAGCGGCATTTTCCGTGACGTCTCGTGTGTCATAAACCGACTACAAAATCAGCGATTTCATGTTGCCACTCGCT
231 GluAspGlnAspMetTrpArgMetSerGlyI IePheArgAspValSerLeuLeuHisLysProThrThrGlnI IeSerAspPheHisValAlaThrArgP
1501 TTAATGATGATTCAGCCCGCTGTACTGGAGGCTGAAGTTCAGATGTGCGCGGAGTTGCGTGACTACCTACGGGTAACAGTTTCTTTATGGCAGGGTGA
264 heAsnAspPheSerArgAlaValLeuGluAlaGlnMetCysGluArgMetCysGluArgTrpLeuArgValThrValSerLeuTrpGlnGlyGln
1601 AACGCAGGTCCGACGGCCACCGCCCTTTCGGCGGTGAAATTCAGATGAGCGTGGTGGTTATGCCGATCCGCTCACACTAGCTCTGAACGTCGAAAAC
297 uThrGlnValAlaSerGlyThrAlaProPheGlyGlyGluI IeI IeAspGluArgGlyGlyTyrAlaAspArgValThrLeuArgLeuAsnValGluAsn
1701 CCGAAACTGTGGAGCGCGAAATCCCGAATCTCTATCGTGGCGTGGTGAACATGCACACCGCCGACGGCAGCGCTGATTGAAGCAGAAGCCTCGCATGTCG
331 ProLysLeuTrpSerAlaGluI IeProAsnLeuTyrArgAlaValValGluLeuHisThrAlaAspGlyThrLeuI IeGluAlaGluAlaCysAspValG
1801 GTTCCGCGAGGTGGGATGAAAATGGTCTGCTGCTGCTGAACGGCAAGCCGTTGCTGATTCGAGGCGTTAACCGTCACGAGCATCTCTGCTGCATG
364 lyPheArgGluValArgI IeGluAsnGlyLeuLeuLeuLeuAsnGlyLysProLeuLeuI IeArgGlyValAsnArgHisGluHisLeuTrpGlnHisGln
1901 TCAGGTCATGGATGAGCAGACGATGGTGCAGGATATCTGCTGATGAAGCAGAACTTTAACCGCGTGGCTGTTCCGATTATCCGAACCATCCGCTG
397 yGlnValMetAspGluGlnThrMetValGlnAspI IeLeuLeuMetLysGlnAsnAsnPheAsnAlaValArgCysSerHisTyrProAsnHisProLeu
2001 TGGTACACGCTGTGCGACCGCTACGGCCTGTATGTGGTGGATGAAGCCAATATTGAAACCCACGGCATGGTGCATGAATCGTCTGACCGATGATCCGC
431 TrpTyrThrLeuCysAspArgTyrGlyLeuTyrValValAspGluAlaAsnI IeGluThrHisGlyMetValProMetAsnArgLeuThrAspProA
2101 GCTGGCTACCCGCGATGAGCGAACCGCTAACCGAATGGTGCACCGCATCTGAATCACCAGGTGTGATCATCTGGTGGGGAATGAATCAGGCCA
464 rgTrpLeuProAlaMetSerGluArgValThrArgMetValGlnArgAspArgAsnHisProSerVal I IeI IeTrpSerLeuGlyAsnGluSerGlyHi
2201 CGCGCTAATCAGCAGCGCTGTATCGCTGGATCAAACTCTGTGATCCTTCCCGCCGGTGCAGTATGAAGCGGGCGAGCCGACACCGCCACCGAT
497 sGlyAlaAsnHisAspAlaLeuTyrArgTrpI IeLysSerValAspProSerArgProValGlnTyrGluGlyGlyAlaAspThrThrAlaThrAsp
2301 ATTATTTGCCGATACCGCGCGTGGATGAAGACCGCCCTCCCGCTGTGCGGAAATGCCATCAAAAAATGGTTTTCGCTACCTCGGAGAGACGC
531 I IeI IeCysProMetTyrAlaArgValAspGluAspGlnProPheProAlaValProLysTrpSerI IeLysLysTrpLeuSerProGlyGlnThrA
2401 GCCCGCTGATCCTTTGCGAATACGCCACGGATGGTAACAGTCTTGGCGGTTTCGCTAAATACTGGCAGGCGTTTTCGTCAATCCCCGTTTACAGGG
564 rgProLeuI IeLeuCysGluTyrAlaHisAlaMetGlyAsnSerLeuGlyGlyPheAlaLysTyrTrpGlnAlaPheArgGlnTyrProArgLeuGlnGln
2501 CGGCTTCGCTGGGACTGGGTGGATCAGTTCGCTGATTAATATGATGAAAACGGCAACCCGTTGGTGGCTTACGGCGGTGATTTGGCGATACGCCGAAC
597 yGlyPheAlaValTrpAlaValAspGlnSerLeuI IeLysTyrAspGluAsnGlyAsnProTrpSerAlaTyrGlyGlyPheGlyAspHisGlyAsn
2601 GATCGCCAGTTCTGTATGACCGCTTGGTCTTTGCGCAGCCGACCGCATCCAGCGCTGACGGAAGCAAAACACCAGCAGCAGTTTTTCCAGTTCCGTT
631 AspArgGlnPheCysMetAsnGlyLeuValPheAlaAspArgThrProHisProAlaLeuThrGluAlaLysHisGlnGlnGlnPhePheGlnPheArgL
2701 TATCCGGGCAAAACCATCGAAGTGACCAGCGAATACCTGTTCCGTCATAGCGATAACGAGCTCCTGCAGTGGATGGTGGCGCTGGATGTAAGCCGCTGGC
664 euSerGlyGlnThrI IeGluValThrSerGluTyrLeuPheArgHisSerAspAsnGluLeuHisTrpMetValAlaLeuAspGlyLysProLeuAl
2801 AAGCGGTGAAGTGCCTGATGCTCCACAAGTAAACAGTTGATGAACTGCCTGAACCTACCGCAGCCGAGAGCGCCGGGCAACTCTGGCTCACA
697 aSerGlyGluValProLeuAspValAlaProGlnGlyLysGlnLeuI IeGluLeuProGluLeuSerProGlnProGluSerAlaGlyGlnLeuTrpLeuThr
2901 GTACCGTAGTGAACCGAACCGACCGCATGGTCAAGCCGGGCACATCAGCGCTGGCAGCAGTGGCGTCTGGCGGAAAACCTCAGTGTGACGCTCC
731 ValArgValValGlnProAsnAlaThrAlaTrpSerGluAlaGlyHisI IeSerAlaTrpGlnGlnTrpArgLeuAlaGluAsnLeuSerValThrLeuP
3001 CCGCCGCTCCACGCCATCCCGCATCTGACCACCGCAATGGATTTTTGATCAGCTGGGTAATAAGCGTTGGCAATTAACCGCCAGTCAAGCTT
764 roAlaAlaSerHisAlaI IeProHisLeuThrThrSerGluMetAspPheCysI IeGluThrHisGlyAsnLysArgTrpGlnPheAsnArgGlnSerGlyPh
3101 TCTTTCACAGATGGATTGGCGATAAAAAACAATCGTGCAGCCGTCGCGGATCAGTTCCACCGTGCACCGCTGGATAACGACATTTGGCGTAAGTGAA
797 eLeuSerGlnMetTrpI IeGlyAspLysLysGlnLeuLeuThrProLeuArgAspGlnPheThrArgAlaProLeuAspAsnAspI IeGlyValSerGlu
3201 GCGACCCGATTGACCCTAACCGCTGGTTCGAACCGTGAAGCGCGCGGGCCATTACAGGCGAAGCAGCGTTGTTGCAGTGCACGGCAGATACACTG
831 AlaThrArgI IeAspProAsnAlaTrpValGluArgTrpLysAlaAlaGlyHisTyrGlnAlaGluAlaAlaLeuLeuGlnCysThrAlaAspThrLeuA
3301 CTGATCGGCTGATACGACCGCTACCGGTGGCAGCATCAGGGGAAAACCTTATTTATCAGCCGAAAACCTACCGGATTGATGGTAGTGGTCAAT
864 laAspAlaValLeuI IeThrThrAlaHisAlaTrpGlnHisGlnGlyLysThrLeuPheI IeSerArgLysThrTyrArgI IeAspGlySerGlyGlnMe
3401 GCGGATTACCGTTGATGTTGAAGTGGCGAGGATACACCGCATCCGGCGGGATTGGCTGAACTGCCAGCTGGCGCAGGTAGCAGAGCGGGTAACTGG
897 tAlaI IeThrValAspValGluValAlaSerAspThrProHisProAlaArgI IeGlyLeuAsnCysGlnLeuAlaGlnValAlaGluArgValAsnTrp
3501 CTCGGATTAGGCGCGAAGAAAATATCCCGACCGCCTTACTGCGCCTGTTTTGACCGCTGGGATCTGCCATTGTCAGACATGTATACCCCGTACGCT
931 LeuGlyLeuGlyProGlnGluAsnTyrProAspArgLeuThrAlaAlaCysPheAspArgTrpAspLeuProLeuSerAspMetTyrThrProTyrValP

3601 TCCCGAGCGAAAACGGTCTGCGCTGCGGGACGCGGAATTGAATTATGGCCACACCAGTGGCGCGGACTTCCAGTTCAACATCAGCCGCTACAGTCA
 964▶ heProSerGluAsnGlyLeuArgCysGlyThrArgGluLeuAsnTyrGlyProHisGlnTrpArgGlyAspPheGlnPheAsnI leSerArgTyrSerGI
 3701 ACAGCAACTGATGAAAACAGCCATCGCCATCTGCTGCACGGGAAGAAGGCACATGGTGAATATCGACGGTTTCCATATGGGATTGGTGGCGACGAC
 997▶ nGlnGlnLeuMetGluThrSerHisArgHisLeuLeuHisAlaGluGluGlyThrTrpLeuAsnI leAspGlyPheHisMetGlyI leGlyGlyAspAsp
EcoRI (3895)

3801 TCCTGGAGCCCCAGTATCGGCGGAATTACAGCTGAGCGCCGGTCTACCATTACCAGTTGGTCTGGTGTCAAAAATAATAATCTAGTCGAGAATTCCG
 1031▶ SerTrpSerProSerValSerAlaGluLeuGlnLeuSerAlaGlyArgTyrHisTyrGlnLeuValTrpCysGlnLys•••

3901 CTAGCTCGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCT
 4001 TTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGTTAACAACAACAATTGCATTCAATTTTATGTTTCAGGT

PacI (4176)

4101 TCAGGGGAGGTGTGGGAGGTTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTAGATCCATTTAAATGTTAATTAAGTCCATGACCAAAATCCCTT
 4201 AACGTGAGTTTTTCGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCCTTTTTTCTGCGCGTAATCTGCTGCTTGCAAAAC
 4301 AAAAAAACACCCGTACCAGCGGTGTTTGTGTTGCCGATCAAGAGCTACCAACTCTTTTTCCGAAGGTAACCTGGCTTCAGCAGAGCCGAGATACCAAAAT
 4401 ACTGTTCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAACTCTGTAGCACCGCTACATACCTCGCTCTGCTAATCCTGTTACCAGTGGCTGCTG
 4501 CCAGTGGCGATAAGTCTGTCTTACCAGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCGGTGGGCTGAAACGGGGGTTTCGTGCACACAGCC
 4601 CAGCTTGGAGCGAACGACCTACACCGAACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCCGAAGGGAGAAAGGCGGACAGGTATCCG
 4701 GTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGAAACGCCTGGTATCTTTATAGTCTGTGCGGTTTCGCCACCTCTGACTTG
 4801 AGCGTCGATTTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGAAAAACGCCAGCAACGCGGCCTTTTTACGGTTCCTGCCCTTTTGTGCGCTTTTTCG

PacI (4916)

4901 TCACATGTTCTTAATTAATTTTCAAAAGTAGTTGACAATTAATCATCGGCATAGTATATCGGCATAGTATAATACGACTCACTATAGGAGGGCCATCA
1▶M

5001 TGGCCAAGTTGACCAGTGTGTCCAGTGCTCACAGCCAGGGATGTGGCTGGAGCTGTTGAGTCTGGACTGACAGGTTGGGGTTCTCCAGAGATTTTGT
 1▶ etAlaLysLeuThrSerAlaValProValLeuThrAlaArgAspValAlaGlyAlaValGluPheTrpThrAspArgLeuGlyPheSerArgAspPheVa
 5101 GGAGGATGACTTTGCAGGTGTGGTCAGAGATGATGTACCCTGTTTCATCTCAGCAGTCCAGGACCAGGTGGTGCCTGACAACACCCTGGCTTGGGTGTGG
 34▶ lGluAspAspPheAlaGlyValValArgAspAspValThrLeuPheI leSerAlaValGlnAspGlnValValProAspAsnThrLeuAlaTrpValTrp
 5201 GTGAGAGGACTGGATGAGCTGTATGCTGAGTGGAGTGAGGTGGTCTCCACCAACTTCAGGGATGCCAGTGGCCCTGCCATGACAGAGATTGGAGAGCAGC
 68▶ ValArgGlyLeuAspGluLeuTyrAlaGluTrpSerGluValValSerThrAsnPheArgAspAlaSerGlyProAlaMetThrGluI leGlyGluGlnP
 5301 CCTGGGGGAGAGATTTGCCCTGAGAGACCCAGCAGGCAACTGTGTGCACTTGTGGCAGAGGAGCAGGACTGAGGATAAGGATTTGTAACAAAAACCCC
 101▶ roTrpGlyArgGluPheAlaLeuArgAspProAlaGlyAsnCysValHisPheValAlaGluGluGlnAsp•••

PacI (5425)

5401 CCCCCGGCGGGTTTTTTGTAAATTAA
