



EcoRI (23)

EcoRV (17)

NotI (2) SalI (9) XbaI (19) SdaI (38) SpeI (45)

1 GCGGCCGCGTACGATATCTAGAATTCGGATCCTGCAGGGCCCACTAGTTGATTTCTTCATCCCTGGCACAC
75 GTCCAGGCAGTGTGAATCCATCTCTGCTACAGGGGAAAACAAATAACATTTGAGTCCAGTGAGACCGGGGAGC
149 AGAAGTAAAGGGAAGTGATAACCCCCAGAGCCCGGAAGCCTCTGGAGGCTGAGACCTCGCCCCCTTGCGTGAT

BbrPI (266)

223 AGGGCCTACGGAGCCACATGACCAAGGCACTGTCGCTCCGCACGTGTGAGAGTGCAGGGCCCCAAGATGGCTG
297 CCAGGCCTCGAGGCCTGACTCTTCTATGTCACTTCCGTACCGGCGAGAAAGGCGGGCCCTCCAGCCAATGAGGC
371 TCGGGGCGGGCCTTACCTTGATAGGCACTCGAGTTATCCAATGGTGCCTGCGGGCCGGAGCGACTAGGAACT

SfiI (479)

445 AACGTCATGCCGAGTTGCTGAGCGCCGGCAGGCGGGGCCGGGCGCCAAACCAATGCGATGGCCGGGGCGGAG

NcoI (573)

519 TCGGGCGCTCTATAAGTTGTCGATAGGCGGGCACTCCGCCCTAGTTTCTAAGGACCATGGTTCTGGGGCCCTGC
1 MetValLeuGlyProCys
593 ATGCTGCTGCTGCTGCTGCTGCTGGGCTGAGGCTACAGCTCTCCCTGGGCATCATCCAGTTGAGGAGGAGAA
7 MetLeuLeuLeuLeuLeuLeuLeuGlyLeuArgLeuGlnLeuSerLeuGlyIleIleProValGluGluAs
667 CCCGACTTCTGGAACCGCGAGGCAGCCGAGGCCCTGGGTGCCGCAAGAAGCTGCAGCCTGCACAGACAGCCG
31 nProAspPheTrpAsnArgGluAlaAlaGluAlaLeuGlyAlaAlaLysLysLeuGlnProAlaGlnThrAlaA
741 CCAAGAACCTCATCATCTTCTGGCGATGGGATGGGGGTGTCTACGGTGACAGCTGCCAGGATCCTAAAAGGG
56 lAlaLysAsnLeuIleIlePheLeuGlyAspGlyMetGlyValSerThrValThrAlaAlaArgIleLeuLysGly

NdeI (868)

815 CAGAAGAAGGACAAACTGGGGCCTGAGATACCCTGGCTATGGACCCTTCCCATATGTGGCTCTGTCCAAGAC
81 Gl nLysLysAspLysLeuGlyProGluIleProLeuAlaMetAspArgPheProTyrValAlaLeuSerLysTh
889 ATACAATGTAGACAAACATGTGCCAGACAGTGGAGCCACAGCCACGGCCTACCTGTGCGGGGTCAAGGGCAACT
105 rTyrAsnValAspLysHisValProAspSerGlyAlaThrAlaThrAlaTyrLeuCysGlyValLysGlyAsnP
963 TCCAGACCATTGGCTTGAGTGCAGCCGCCGCTTTAACCAGTGCAACACGACACGCGGCAACGAGGTTCATCTCC
130 heGlnThrIleGlyLeuSerAlaAlaAlaArgPheAsnGlnCysAsnThrThrArgGlyAsnGluValIleSer
1037 GTGATGAATCGGGCCAAGAAAGCAGGGAAGTCACTGGGAGTGGTAACCACCACACGAGTGCAGCACGCCTCGCC
155 ValMetAsnArgAlaLysLysAlaGlyLysSerValGlyValValThrThrThrArgValGlnHisAlaSerPr
1111 AGCCGGCACCTACGCCACACGGTGAACCGCAACTGGTACTCGGACGCCGACGTGCCTGCCTCGCCCCGCCAGG
179 oAlaGlyThrTyrAlaHisThrValAsnArgAsnTrpTyrSerAspAlaAspValProAlaSerAlaArgGlnG
1185 AGGGGTGCCAGGACATCGCTACGCAGCTCATCTCCAACATGGACATTGATGTGATCCTGGGTGGAGGCCGAAAG
204 l uGlyCysGlnAspIleAlaThrGlnLeuIleSerAsnMetAspIleAspValIleLeuGlyGlyGlyArgLys
1259 TACATGTTTCGCATGGGAACCCAGACCCTGAGTACCAGATGACTACAGCCAAGGTGGGACCAGGCTGGACGG
229 TyrMetPheArgMetGlyThrProAspProGluTyrProAspAspTyrSerGlnGlyGlyThrArgLeuAspGly
1333 GAAGAATCTGGTGCAGGAATGGCTGGCGAAGCGCCAGGGTGGCCGGTATGTGTGGAACCGCACTGAGCTCATGC
253 yLysAsnLeuValGlnGluTrpLeuAlaLysArgGlnGlyAlaArgTyrValTrpAsnArgThrGluLeuMetG
1407 AGGCTTCCCTGGACCCGTCTGTGACCCATCTCATGGGTCTCTTTGAGCCTGGAGACATGAAATACGAGATCCAC
278 l nAlaSerLeuAspProSerValThrHisLeuMetGlyLeuPheGluProGlyAspMetLysTyrGluIleHis

SacII (

1481 CGAGACTCCACACTGGACCCCTCCCTGATGGAGATGACAGAGGCTGCCTGCGCCTGCTGAGCAGGAACCCCCG
303 ArgAspSerThrLeuAspProSerLeuMetGluMetThrGluAlaAlaLeuArgLeuLeuSerArgAsnProAr
1555 CGGCTTCTTCTCTTCTCGTGGAGGGTGGTGCATCGACCACGGTCATCACGAAAGCAGGGCTTACCGGGCACTGA
327 gGlyPhePheLeuPheValGluGlyGlyArgIleAspHisGlyHisHisGluSerArgAlaTyrArgAlaLeuT
1629 CTGAGACGATCATGTTTCGACGACGCCATTGAGAGGGCGGGCCAGCTCACCAGCGAGGAGACACGCTGAGCCTC
352 hrGluThrIleMetPheAspAspAlaIleGluArgAlaGlyGlnLeuThrSerGluGluAspThrLeuSerLeu
1703 GTCACTGCCGACCACTCCACGTCTTCTCCTTCGAGGCTACCCCTGCGAGGGAGCTCCATCTTCGGGCTGGC
377 ValThrAlaAspHisSerHisValPheSerPheGlyGlyTyrProLeuArgGlySerSerIlePheGlyLeuAl
1777 CCCTGGCAAGGCCCGGACAGGAAGGCCTACACGGTCTCTCTATAACGAAACGGTCCAGGCTATGTGCTCAAGG
401 aProGlyLysAlaArgAspArgLysAlaTyrThrValLeuLeuTyrGlyAsnGlyProGlyTyrValLeuLysA
1851 ACGGCGCCCGCCGGATGTTACCGAGAGCGAGAGCGGGAGCCCCGAGTATCGGCAGCAGTCAGCAGTGCCCTG
426 spGlyAlaArgProAspValThrGluSerGluSerGlySerProGluTyrArgGlnGlnSerAlaValProLeu
1925 GACGAAGAGACCCACGAGGCGAGGACGTGGCGGTGTTTCGCGCGCGGCCCGCAGGCGCACCTGGTTCACGGCGT
451 AspGluGluThrHisAlaGlyGlyAspValAlaValPheAlaArgGlyProGlnAlaHisLeuValHisGlyVa

1999 GCAGGAGCAGACCTTCATAGCGCACGTCATGGCCTTCGCCGCTGCCTGGAGCCCTACACCGCTGCGACCTGG
475▶ | Gl nGl uGl nThr PheI l eAl aHi sVal MetAl aPheAl aAl aCysLeuGl uP roTyrThr Al aCysAspLeuA
NheI (2139)

2073 CGCCCCCGCCGGCACCACCGACGCCGCGCACCCGGGGCGGTCCCGGTCCAAGCGTCTGGATTGAAAGCTAGCTG
500▶ | aProProAl aGl yThr ThrAspAl aAl aHi sP roGl yA rgSer ArgSer LysArgLeuAsp●●●

2147 GCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTATTT
MfeI (2288)

2221 GTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGTTAACAACAACAATTGC
2295 ATTCATTTTATGTTTCAGGTTTCAGGGGGAGGTGTGGGAGGTTTTTTAAAGCAAGTAAAACCTCTACAAATGTGG
2369 TATGGAATTAATTCTAAAATACAGCATAGCAAAACTTTAACCTCCAATCAAGCCTCTACTTGAATCCTTTTCT
▶

2443 GAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTTCTTTC
2517 ATGGAGTTTAAGATATAGTGTATTTTCCAAGGTTTGAAGTACTCTTCATTTCTTTATGTTTTAAATGCACTG
2591 ACCTCCACATTCCCTTTTTAGTAAAATATTCAGAAATAATTTAAATACATCATTGCAATGAAAATAAATGTTT
2665 TTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTGTAGTGGACTTAGGGAACAA
2739 AGGAACCTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTATCCTCAGTCCTGCTCCTGCCACA
125▶ ●●●AspGl nGl uGl uAl aVal P

2813 AAGTGCACGCAGTTGCCGGCCGGTTCGCGCAGGGCGAAGTCCCGCCCCACGGCTGCTCGCCGATCTCGGTCAT
117▶ heHi sVal CysAsnGl yAl aProAspArgLeuAl aPheGl uArgGl yTrpProGl nGl uGl yI l eGl uThr Met
2887 GGCCGGCCCGGAGGCGTCCCGGAAGTTCGTGGACACGACCTCCGACCACTCGGCGTACAGCTCGTCCAGGCCG
93▶ Al aProGl ySer Al aAspArgPheAsnThr Ser Val Val Gl uSer TrpGl uAl aTyrLeuGl uAspLeuGl yA r
2961 GCACCCACACCCAGGCCAGGGTGTGTCCGGCACCACCTGGTCTGGACCGCGCTGATGAACAGGGTCACGTCC
68▶ gVal TrpVal TrpAl aLeuThrAsnAspP roVal Val Gl nAspGl nVal Al aSer I l ePheLeuThr Val AspA
SgrAI (3046)

3035 TCCCGGACCACACCGGCGAAGTCGTCCTCCACGAAGTCCCGGGAGAACCCGAGCCGGTCCGGTCCAGAACTCGAC
43▶ spArgVal Val Gl yAl aPheAspAspGl uVal PheAspArgSer PheGl yLeuArgAspThr TrpPheGl uVal
3109 CGTCCGGCGACGTCGCGCGCGGTGAGCACCAGGACCGCACTGGTCAACTTGGCCATGATGGCTCCTCCTGTCA
19▶ Al aGl yAl aVal AspArgAl aThr LeuVal P roVal Al aSer Thr LeuLysAl aMet ◀

MfeI (3209)

3183 GGAGAGGAAAGAGAAGAAGGTTAGTACAATTGCTATAGTGAGTTGTATTATACTATGCAGATATACTATGCCAA
3257 TGATTAATTGTCAAAGTAGGGCTGCAGGTTAATTAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACC
▶

3331 GTAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGACGCTCA
3405 AGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTTCCCCTGGAAGCTCCCTCGTGCGCTC
3479 TCCTGTTCCGACCCTGCCGTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATA
3553 GCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCGTT
3627 CAGCCCAGCCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACT
3701 GGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGC
3775 CTAACACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGA
3849 GTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTTGTTTGCAAGCAGCAGATTAC
3923 GCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAAC
3997 CACGTAAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATCA