

**Bsp120I (7)**  
**PstI (7)**  
**SdaI (7)**      **SpeI (14)**  
1 **CCTGCAGGGCCACTAGTGCCTGGAGAGCATGGGGAGACCCGGGACCTGCTGGGTTTCTCTGTACAAAGGAAAATAATCCCCCTGGTGTGACAGACC**

**SmaI (43)**  
101 **CAAGGACAGAACACAGCAGAGGTCAGCACTGGGGAAGACAGGTTGTCTCCAGGGGATGGGGTCCATCCACCTTGCCGAAAAGATTTGTCTGAGGAAC**

**BbrPI (298)**  
201 **TGAAAATAGAAGGGAAAAAGAGGAGGGACAAAAGAGGCAGAAATGAGAGGGGAGGGGACAGAGGACACCTGAATAAAGACCACCCATGACCCACGTG**

**EcoNI (321)**  
**ScaI (313)**      **AvrII (322)**  
301 **ATGCTGAGAAGTACTCTGCCCTAGGAAGAGACTCAGGGCAGAGGGAGGAAGGACAGCAGACAGCAGTACAGCAGCCTTGACAAAACGTTCTCTGGAA**

**NcoI (446)**      **NheI (484)**  
401 **CTCAAGCTTTCTCCACAGAGGAGGACAGAGCAGACAGCAGAGACCATGGGGGTTCTCATCATCATCATCATGGTATGGCTAGCATGACTGGTGA**  
MetGlyGlySerHisHisHisHisHisHisGlyMetAlaSerMetThrGlyGly

**Bsu36I (545)**  
**Acc65I (540)**  
501 **CAGCAAATGGGTCGGGATCTGTACGACGATGACGATAAGGTACCTAAGGATCAGCTTGGAGTTGATCCCGTCGTTTTACAACGTCGTGACTGGGAAAACC**  
19> GlnGlnMetGlyArgAspLeuTyrAspAspAspLysValProLysAspGlnLeuGlyValAspProValValLeuGlnArgArgAspTrpGluAspP

**FspI (700)**  
601 **CTGGCGTTACCAACTTAATCGCCTTGACGACATCCCCCTTCCGACGCTGGCGTAATAGCGAAGAGGCCGACCGATCGCCCTTCCAACAGTTGGC**  
52> roGlyValThrGlnLeuAsnArgLeuAlaAlaHisProProPheAlaSerTrpArgAsnSerGluGluAlaArgThrAspArgProSerGlnGlnLeuAr

**Bsu36I (782)**  
701 **CAGCCTGAATGGCGAATGGCGCTTTCCTGGCACCAGAAGCGGTGCCGAAAGCTGGCTGGAGTGCATCTTCTGAGGCCGATACTGTCGTC**  
85> gSerLeuAsnGlyGluTrpArgPheAlaTrpPheProAlaProGluAlaValProGluSerTrpLeuGluCysAspLeuProGluAlaSerTrpValVal

801 **GTCCCTCAAACCTGGCAGATGCACGGTTACGATGCGCCATCTACACCAACGTAACCTATCCATTACGGTCAATCCGCGCTTGTCCACGGAGAATC**  
119> ValProSerAsnTrpGlnMetHisGlyTyrAspAlaProI leTyrThrAsnValThrTyrProI leThrValAsnProProPheValProThrGluAsnP

901 **CGACGGTGTACTCGCTCACATTTAATGTTGATGAAAGCTGGCTACAGGAAGCCAGACGCGAATATTTTTGATGGCGTAACTCGGCTTTCATCT**  
152> roThrGlyCysTyrSerLeuThrPheAsnValAspGluSerTrpLeuGlnGluGlyGlnThrArgI leI lePheAspGlyValAsnSerAlaPheHisLe

1001 **GTGGTCAACGGGCGTGGGTCGGTACGGCCAGGACAGTCGTTGCCGTCTGAATTTGACCTGAGCGCATTTTTACGCGCCGAGAAAACCGCTCCGG**  
185> uTrpCysAsnGlyArgTrpValGlyTyrGlyGlnAspSerArgLeuProSerGluPheAspLeuSerAlaPheLeuArgAlaGlyGluAsnArgLeuAla

**AatII (1181)**  
1101 **GTGATGGTGTGCTGCGTTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGATGAGCGGCATTTCCGTGACGTCTCGTTGCTGCATAAACCGA**  
219> ValMetValLeuArgTrpSerAspGlySerTyrLeuGluAspGlnAspMetTrpArgMetSerGlyI lePheArgAspValSerLeuLeuHisLysProT

1201 **CTACAAATCAGCGATTTCCATGTTGCCACTCGCTTAATGATGATTTACGCCGCTGTACTGGAGGCTGAAGTTCAGATGTGCGGCGAGTTGCGTGA**  
252> hrThrGlnI leSerAspPheHisValAlaThrArgPheAsnAspAspPheSerArgAlaValLeuGluAlaGluValGlnMetCysGlyGluLeuArgAs

**ClaI (1382)**  
1301 **CTACCTACGGGTAACAGTTTCTTATGGCAGGGTGAACGCAGGTGCCAGCGGCACCGCGCTTTCGGCGGTGAAATTATCGATGAGCGTGGTGGTTAT**  
285> pTyrLeuArgValThrValSerLeuTrpGlnGlyGluThrGlnValAlaSerGlyThrAlaProPheGlyGlyGluI leI leAspGluArgGlyGlyTyr

1401 **GCCGATCGCGTCACTACGTCTGAACGTCGAAAACCGAAACTGTGGAGCGCGAAATCCCGAATCTCTATCGTGGTGGTGAACGTGCACACCGCCG**  
319> AlaAspArgValThrLeuArgLeuAsnValGluAsnProLysLeuTrpSerAlaGluI leProAsnLeuTyrArgAlaValValGluLeuHisThrAlaA

1501 **ACGGCAGCTGATTGAAGCAGAAGCCTGCGATGTCGGTTCGGCGAGGTGCGGATTGAAATGGTCTGCTGCTGCTGAACGGCAAGCCGTTGCTGATTG**  
352> spGlyThrLeuI leGluAlaGluAlaCysAspValGlyPheArgGluValArgI leGluAsnGlyLeuLeuLeuLeuAsnGlyLysProLeuLeuI leAr

**EcoRV (1671)**  
1601 **AGGCGTTAACCGTCACGAGCATCATCTCTGCATGGTCAGGTCATGGATGAGCAGACGATGGTGCAGGATATCCTGCTGATGAAGCAGAACAACCTTAAAC**  
385> gGlyValAsnArgHisGluHisHisProLeuHisGlyGlnValMetAspGluGlnThrMetValGlnAspI leLeuLeuMetLysGlnAsnAsnPheAsn

**DraIII (1748)**      **SspI (1788)**  
1701 **GCCGTGCGCTGTTCCGATTATCCGAACCATCCGCTGTGGTACACGCTGTGCGACCGCTACGGCTGTATGGTGGATGAAGCCAATATTGAAACCCACG**  
419> AlaValArgCysSerHisTyrProAsnHisProLeuTrpTyrThrLeuCysAspArgTyrGlyLeuTyrValValAspGluAlaAsnI leGluThrHisG

**BsaBI (1884)**  
1801 **GATGGTCCAATGAATCGTCTGACCGATGATCCGCGCTGGCTACCGCGATGAGCGAACCGGTAACCGAATGGTGCAGCGGATCGTAATCACCCGAG**  
452> lyMetValProMetAsnArgLeuThrAspAspProArgTrpLeuProAlaMetSerGluArgValThrArgMetValGlnArgAspArgAsnHisProSe

1901 **TGTGATCATCTGGTCGCTGGGAATGAATCAGGCCACGGCGTAATCAGACGCGCTGTATCGCTGGATCAAATCTGTCGATCTTCCCGCCGGTGCAG**  
485> rValI leI leTrpSerLeuGlyAsnGluSerGlyHisGlyAlaAsnHisAspAlaLeuTyrArgTrpI leLysSerValAspProSerArgProValGln

**BssHIII (2056)**  
2001 **TATGAAGCGGGGAGCCGACACCACGCCACCGATATTATTTGCCGATGTACGCGCGCTGGATGAAGACCAGCCCTTCCCGCTGTGCCAAATGGT**  
519> TyrGluGlyGlyGlyAlaAspThrThrAlaThrAspI leI leCysProMetTyrAlaArgValAspGluAspGlnProPheProAlaValProLysTrpS

2101 **CCATCAAAAATGGCTTTCGCTACCTGGAGAGACGCGCCGCTGATCTTTGCGAATACGCCACCGGATGGTAAACAGTCTTGGCGGTTTCGCTAAATA**  
552> erI leLysLysTrpLeuSerLeuProGlyGluThrArgProLeuI leLeuCysGlyTyrAlaHisAlaMetGlyAsnSerLeuGlyPheAlaLysTy

2201 **CTGGCAGCGTTTCGTCAGTATCCCCGTTTACAGGGCGGCTTCGCTGGACTGGGTGGATCAGTCGCTGATTAATATGATGAAAACGGCAACCCGTTG**  
585> rTrpGlnAlaPheArgGlnTyrProArgLeuGlnGlyGlyPheValTrpAspTrpValAspGlnSerLeuI leLysTyrAspGluAsnGlyAsnProTrp

**Eco47III (2393)**  
2301 **TCGGCTTACGGCGTGATTTTGGCGATACGCCAAGCATCGCCAGTTCTGTATGAACGGTCTGGTCTTTGCCAGCCGACGCCGATCCAGCGCTGACGG**  
619> SerAlaTyrGlyGlyAspPheGlyAspThrProAsnAspArgGlnPheCysMetAsnGlyLeuValPheAlaAspArgThrProHisProAlaLeuThrG

**SacI (2498)**  
2401 **AAGCAAAACACCAGCAGAGTTTTTCCAGTTCGGTTTATCCGGGCAAACCATCGAAGTGACCAGCGAATACCTGTTCCGTCATAGCGATAACGAGTCTCT**  
652> luAlaLysHisGlnGlnGlnPhePheGlnPheArgLeuSerGlyGlnThrI leGluValThrSerGluTyrLeuPheArgHisSerAspAsnGluLeuLe

2501 **GCACTGGATGGTGGCGCTGGATGGTAAGCCGCTGGCAAGCGGTGAAGTGCCTTGGATGTCGCTCCACAAGGTAACAGTTGATTGAACCTGCAACTA**  
685> uHisTrpMetValAlaLeuAspGlyLysProLeuAlaSerGlyGluValProLeuAspValAlaProGlnGlyLysGlnLeuI leGluLeuProGluLeu

2601 **CCGACCGGAGAGCGCCGGCAACTCTGGCTCACAGTACCGTAGTGAACCGAACCGCAGCCGATGGTCAAGCCGGGCACATCAGCGCTGGCAGC**  
719> ProGlnProGluSerAlaGlyGlnLeuTrpLeuThrValArgValValGlnProAsnAlaThrAlaTrpSerGluAlaGlyHisI leSerAlaTrpGlnG

2701 **AGTGGCTCTGGCGAAAACCTCAGTGTGACGCTCCCGCGCGTCCACGCCATCCCGATCTGACCACGCGAAATGGATTTTGCATCGAGCTGGG**  
752> InTrpArgLeuAlaGluAsnLeuSerValThrLeuProAlaAlaSerHisAlaI leProHisLeuThrThrSerGluMetAspPheCysI leGluLeuG

2801 TAATAAGCGTTGGCAATTTAACCCGACGTGAGCTTTCTTTACAGATGTGGATTGGCGATAAAAAACAACTGCTGACGCCGTGCGCGATCAGTTCACC  
785▶ yAsnLysArgTrpGlnPheAsnArgGlnSerGlyPheLeuSerGlnMetTrpI leGlyAspLysLysGlnLeuLeuThrProLeuArgAspGlnPheThr  
2901 CGTGACCCGCTGGATAACGACATTGGCGTAAGTGAAGCGACCCGATTGACCCTAACGCCTGGTTCGACCGTGAAGGCGGGCCATTACCAGGCCG  
819▶ ArgAlaProLeuAspAsnAspI leGlyValSerGluAlaThrArgI leAspProAsnAlaTrpValGluArgTrpLysAlaAlaGlyHisTyrGlnAlaG  
3001 AAGCAGCGTTGTTGAGTGCACGGCAGATACACTTGTGTATGCGGTGCTGATTACGACCGCTCACGCGTGGCAGCATCAGGGGAAAACCTTATTTATCAG  
852▶ luAlaAlaLeuLeuGlnCysThrAlaAspThrLeuAlaAspAlaValLeuI leThrThrAlaHisAlaTrpGlnHisGlnGlyLysThrLeuPheI leSe  
3101 CCGGAAAACCTACCGATTGATGGTAGTGGTCAAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGATACCCGCATCCGGCGGGATTGGCCTGAAC  
885▶ rArgLysThrTyrArgI leAspGlySerGlyGlnMetAlaI leThrValAspValGluValAlaSerAspThrProHisProAlaArgI leGlyLeuAsn  
3201 TGCCAGCTGGCGCAGGTAGCAGAGCGGTAACCTGGCTCGGATTAGGGCCGCAAGAAAACCTATCCCGACCGCTTACTGCCGCTGTTTTGACCGCTGGG  
919▶ CysGlnLeuAlaGlnValAlaGluArgValAsnTrpLeuGlyLeuGlyProGlnGluAsnTyrProAspArgLeuThrAlaAlaCysPheAspArgTrpA

**Bst1107I (3320)**

BspLU11I (3317) **BsiWI (3328)**

3301 ATCTGCCATTGTGAGACATGTATACCCGTAGCTCTCCCGAGCGAAAACGGTCTGCGCTGCGGGACGCGGAATTGAATTATGGCCACACCAGTGGCG  
952▶ spLeuProLeuSerAspMetTyrThrProTyrValPheProSerGluAsnGlyLeuArgCysGlyThrArgGluLeuAsnTyrGlyProHisGlnTrpAr  
3401 CGGCGACTTCCAGTTCAACATCAGCCGCTACAGTCAACAGCAACTGATGGAAACAGCCATCGCCATCTGCTGCACGCGGAAGAAGGCACATGGCTGAAT  
985▶ gGlyAspPheGlnPheAsnI leSerArgTyrSerGlnGlnGlnLeuMetGluThrSerHisArgHisLeuLeuHisAlaGluGluGlyThrTrpLeuAsn

**NdeI (3515)**

3501 ATCGACGGTTTCCATATGGGGATTGGTGGCGACGACTCCTGGAGCCCGTCAGTATCGCGGAATTACAGCTGAGCGCCGGTCTGCTACCATTACCAGTTGG  
1019▶ I leAspGlyPheHisMetGlyI leGlyGlyAspAspSerTrpSerProSerValSerAlaGluLeuGlnLeuSerAlaGlyArgTyrHisTyrGlnLeuV

NheI (3637)

**EcoRI (3631)**

3601 TCTGGTGTCAAAAATAATAATCTAGTCGAGAATTTCGCTAGCTCGACATGATAAGATACATTGATGAGTTTGGACAAAACCACAACCTAGAATGCAGTGAAAA  
1052▶ alTrpCysGlnLys•••

3701 AAATGCTTTATTTGTGAATTTGTGATGCTATTGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGT

**MfeI (3811)**

DraI (3860)

DraI (3899)

**SwaI (3902)**

3801 TAACAACAACAATTGCATTCAATTTATGTTTCAGGTTACAGGGGAGGTGGGAGGTTTTTAAAGCAAGTAAAACCTCTACAAATGTGGTAGATCCATT

3901 TAAATGTTAATTAAGTACGATGACCAAAATCCCTTAACGTGAGTTTTCTGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGA

4001 TCCTTTTTTCTGCGCGTAATCTGCTGCTTGCAAAACAAAAAACCCGCTACCAGCGGTGTTTTGTTTGCCGGATCAAGAGCTACCAACTCTTTTTCCG

4101 AAGGTAAGTGGCTTACGAGAGCGCAGATACCAATACTGTTCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAAGCTGTAGCACCCTACAT

4201 ACCTCGCTCTGTAATCCTGTTACCAGTGGCTGCTGCCAGTGGCGATAAGTCGTGTCTTACCGGTTGGACTCAAGACGATAGTTACCGGATAAGGGCGCA

4301 GCGGTGGGCTGAACGGGGGTTCTGTGCACACAGCCAGCTTGGAGCGAACGACCTACCCGAAGTGGAGATACCTACAGCGTGAGCTATGAGAAAGCGCC

4401 ACGCTTCCCGAAGGGAGAAAGGCGGACAGGTATCCGGTAAGCGCGAGGTGCGAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGAAACGCTGTTATC

4501 TTTATAGTCTGTGCGGTTTTGCCACCTCTGACTTGAGCGTCGATTTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGGAAAAACGCCAGCAACGCGGC

BspLU11I (4640)

**AseI (4678)**

4601 CTTTTACGGTCTCGCCCTTTGCTGGCCTTTTGCTCAATGTTCTTAATTAATTTTTCAAAGTAGTTGACAATTAATCATCGGCATAGTATATCGG

SfiI (4729) **MseI (4740)**

4701 CATAGTATAATACGACTCACTATAGGAGGGCCATCATGGCCAAGTTGACCAGTGTGCCAGTGTCCAGTGTCCACAGCCAGGGATGTGGCTGGAGCTGTTGAGT

4800 TCTGGACTGACAGGTTGGGTTCTCCAGAGATTTTGGGAGGATGACTTTGCAGGTGTGGTCAGAGATGATGTCACCCTGTTTCATCTCAGCAGTCCAGGA  
22▶ heTrpThrAspArgLeuGlyPheSerArgAspPheValGluAspAspPheAlaGlyValValArgAspAspValThrLeuPheI leSerAlaValGlnAs

4900 CCAGGTGGTGCCTGACAACACCTGGCTTGGTGTGGTGTGAGGACTGGATGAGCTGTATGCTGAGTGGAGTGGAGTGGTCTCCACCAACTCAGGGAT  
55▶ pGlnValValProAspAsnThrLeuAlaTrpValTrpValArgGlyLeuAspGluLeuTyrAlaGluTrpSerGluValValSerThrAsnPheArgAsp

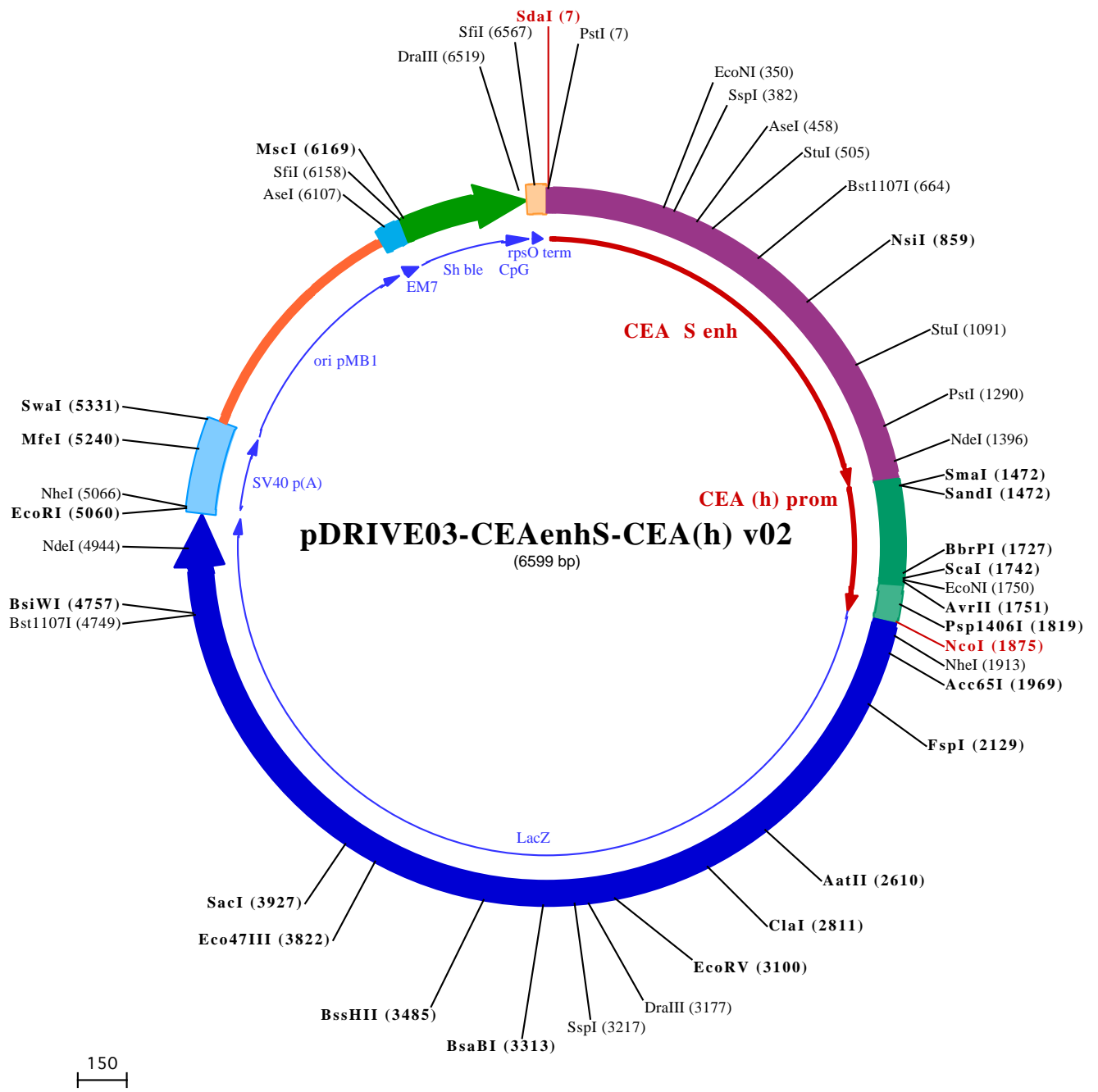
DraIII (5090)

5000 GCCAGTGGCCCTGCCATGACAGAGATTGGAGAGCAGCCCTGGGGAGAGAGTTTGCCTGAGAGACCCAGCAGGCAACTGTGTGCACCTTTGTGGCAGAGG  
89▶ AlaSerGlyProAlaMetThrGluI leGlyGluGlnProTrpGlyArgGluPheAlaLeuArgAspProAlaGlyAsnCysValHisPheValAlaGluG

SfiI (5138)

5100 AGCAGGACTGAGGATAAGAATTGAGTTTCAGAAAAGGGGCGCTGAGTGGCCCTTTTTTCAACTTAATTAA

122▶ luGlnAsp•••



PstI (7)  
**SdaI (7)**  
 1 CCTGCAGGGCCCACTAGAGCCACAGCCTAAGGCAGTGGACAGTCCACTTTGAGGCTCTACCATCTAGGAGACATCTCAGCCATGAACATAGCCACATC  
 101 TGTCATTAGAAAACATGTTTTATTAAGAGGAAAAATCTAGGCTAGAAGTGCCTTATGCTCTTTTTCTTTTATGTTCAAATTCATATACTTTTAGATCA  
 201 TTCCTTAAAGAAGAATCTATCCCCTAAGTAAATGTTATCACTGACTGGATAGTGTGGTGTCTCACTCCCAACCCCTGTGTGGTGACAGTGCCTGCTT  
 301 CCCAGCCCTGGGCCCTCTCTGATTCTGAGAGCTTTGGGTGCTCCTTCATTAGGAGGAAGAGAGGAAGGGTGTTTTAAATATTCTCACCATTACCCAT  
 401 CCACCTCTAGACACTGGGAAGAATCAGTTGCCCACTCTGGATTTGATCCTCGAATTAATGACCTCTATTTCTGTCCTTGTCCATTTCAACAATGTGA  
 501 CAGGCCTAAGAGGTGCCTTCTCCATGTGATTTTTGAGGAGAAGGTTCTCAAGATAAGTTTTCTCACACCTCTTTGAATTACCTCCACCTGTGCCCCATC  
 601 ACCATTACCAGCAGCATTGGACCCTTTTTCTGTTAGTCAGATGCTTCCACCTCTTGAGGGTGATACTGTATGCTCTTACACAGGAATATGCAGAGG  
 701 AAATAGAAAAGGAAATCGCATTACTATTAGAGAGAAGAAGACCTTTATGTGAATGAATGAGAGTCTAAAATCTAAGAGAGCCCATATAAAATTATT  
 801 ACCAGTGTAAAACACTACAAAAGTTACACTAACAGTAACTAGAATAATAAAACATGCATCACAGTTGCTGGTAAAGCTAAATCAGATATTTTTTTCTTAG  
 901 AAAAAGCATTCCATGTGTGTTGCAGTGATGACAGGAGTGCCTTCAGTCAATATGCTGCCTGAATTTTTGTTCCCTGGCAGAAATGATTGCTTTTTCTC  
 1001 CCTTTAAATCTTAAATGCAAAACTAAAGGCAGCTCCTGGGCCCTCCCAAAGTCAGCTGCCTGCAACCAGCCCCAAGAGCAGAGGCCCTGAGCTTC  
 1101 CCTGGTCAAAATAGGGGCTAGGGAGCTTAACCTcGCTCGATAAAGCTGTGTTCCAGAATGTCGCTCCTGTTCCAGGGGACCAGCTGGAGGGTGGT  
 1201 GAGCCTCACTGGTGGCCTGATGCTTACCTTGTCCTCACACCAGTGGTCACTGGAACCTTGAACACTTGGCTGTCGCCCGGATCTGCAGATGTCAAGAA  
 1301 CTTCTGGAAGTCAAATTACTGCCCAcTTCTCCAGGGCAGATACCTGTGAACATCCAAAACCATGCCACAGAACCTGCCTGGGGTCTACAACACATATGG  
 1401 ACTGTGAGCACCAGTCCAGCCCTGAATCTGTGACCACCTGcTAGT**SmaI (1472)**  
 1501 GGAAAATAATCCCCTGGTGTGACAGACCCAAGGACAGAACACAGCAGAGGTGAGCAGTGGGAAAGCAGGTTGTCTCCAGGGGATGGGGTCCATCC  
 1601 ACCTTGCCGAAAAGATTTGCTGAGGAACTGAAAATAGAAGGGAAAAAGAGGAGGGACAAAAGAGGCAGAAATGAGAGGGGAGGGGACAGAGGACACCT  
 1701 GAATAAAGACCACCCATGACCCACGTGATGCTGAGAAGTACTCCTGCCCTAGGAAGAGACTCAGGGCAGAGGGAGGAAGGACAGCAGACCAGACAGTC  
 1801 ACAGCAGCCTTGACAAAACGTTCTGGAACTCAAGCTCTTCTCCACAGAGGAGGACAGAGCAGAGACCATGGGGGGTTCTCATCATCATC  
 1901 ATCATGGTATGGCTAGCATGACTGGTGACAGCAAATGGGTCGGATCTGTACGACGATGACGATAAGGTACCTAAGGATCAGCTTGAGATTGATCCCGT  
 2001 CGTTTTACAACGTCGTGACTGGGAAAACCTGGCGTTACCCAACTTAATCGCCTTGACGACATCCCCCTTCGCCAGCTGGCGTAATAGCGAAGAGGCC  
 2101 CGCACCGATCGCCCTTCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGCTTTCCTGGTTCCGGCACCAGAAGCGGTGCCGAAAAGCTGGCTGGAGT  
 2201 GCGATCTTCTGAGGCCGATACTGTCGTCCCTCAAACCTGGCAGATGCACGGTTACGATGCGCCATCTACACCAACGTAACCTATCCATTACGGT  
 2301 CAATCCGCCGTTTGTCCACGGAGAATCCGACGGGTTGTTACTCGCTCACATTTAATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACGCGAATTATT  
 2401 TTTGATGGCGTTAACTCGCGTTTCATCTGTGGTGCAACGGGCGCTGGGTCGGTTACGGCCAGGACAGTCTGTTGCCGTCTGAATTTGACCTGAGCGCAT  
 2501 PheAspGlyValAsnSerAlaPheHisLeuTrpCysAsnGlyArgTrpValGlyTyrGlyGlnAspSerArgLeuProSerGluPheAspLeuSerAlaP

EcoNI (350) SspI (382)  
 AseI (458)  
 StuI (505)  
 BstI107I (664)  
 NsiI (859)  
 StuI (1091)  
 PstI (1290)  
 NdeI (1396)  
**SmaI (1472)**  
**SmaI (1472)**  
 EcoNI (1750)  
**BbrPI (1727) ScaI (1742) AvrII (1751)**  
**Psp1406I (1819) NcoI (1875)**  
 NheI (1913) **Acc65I (1969)**  
**FspI (2129)**  
 9▶ isHisGlyMetAlaSerMetThrGlyGlyGlnGlnMetGlyArgAspLeuTyrAspAspAspAspLysValProLysAspGlnLeuGlyValAspProVa  
 42▶ IValLeuGlnArgArgAspTrpGluAsnProGlyValThrGlnLeuAsnArgLeuAlaAlaHisProProPheAlaSerTrpArgAsnSerGluGluAla  
 76▶ ArgThrAspArgProSerGlnGlnLeuArgSerLeuAsnGlyGluTrpArgPheAlaTrpPheProAlaProGluAlaValProGluSerTrpLeuGluC  
 109▶ ysAspLeuProGluAlaAspThrValValValProSerAsnTrpGlnMetHisGlyTyrAspAlaProIeTyrThrAsnValThrTyrProIeThrVa  
 142▶ IAsnProProPheValProThrGluAsnProThrGlyCysTyrSerLeuThrPheAsnValAspGluSerTrpLeuGlnGluGlyGlnThrArgIleIle  
 176▶ PheAspGlyValAsnSerAlaPheHisLeuTrpCysAsnGlyArgTrpValGlyTyrGlyGlnAspSerArgLeuProSerGluPheAspLeuSerAlaP

2501 TTTTACGCGCCGGAGAAAACCGCTCGCGGTGATGGTGTGCGTTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGATGAGCGGCATTTT  
209▶ heLeuArgAlaGlyGluAsnArgLeuAlaValMetValLeuArgTrpSerAspGlySerTyrLeuGluAspGlnAspMetTrpArgMetSerGlyI lePh  
AatII (2610)  
2601 CCGTGACGTCTCGTTGCTGCATAAACCGACTACAAAATCAGCGATTTCCATGTTGCCACTCGCTTTAATGATGATTCAGCCGCGCTGTACTGGAGGCT  
242▶ eArgAspValSerLeuLeuHisLysProThrThrGlnI leSerAspPheHisValAlaThrArgPheAsnAspAspPheSerArgAlaValLeuGluAla  
2701 GAAGTTCAGATGTGCGCGGAGTTGCGTGACTACCTACGGGTAACAGTTTCTTTATGGCAGGGTAAACGCAGGTCGCCAGCGGCACCGCCCTTTCCGGC  
276▶ GluValGlnMetCysGlyGluLeuArgAspTyrLeuArgValThrValSerLeuTrpGlnGlyGluThrGlnValAlaSerGlyThrAlaProPheGlyG  
ClaI (2811)  
2801 GTGAAATATCGATGAGCGTGGTGGTTATGCCGATCGGTCACACTACGCTCTGAACGTCGAAAACCCGAACTGTGGAGCGCCGAAATCCCGAATCTCTA  
309▶ lyGluI leI leAspGluArgGlyGlyTyrAlaAspArgValThrLeuArgLeuAsnValGluAsnProLysLeuTrpSerAlaGluI leProAsnLeuTy  
2901 TCGTGCGGTGGTTGAATGCACACCCGACGGCAGCGCTGATTGAAGCAGAAGCCTGCGATGTCGGTTTCCGCGAGGTGCGGATTGAAAATGGTCTGCTG  
342▶ rArgAlaValValGluLeuHisThrAlaAspGlyThrLeuI leGluAlaGluAlaCysAspValGlyPheArgGluValArgI leGluAsnGlyLeuLeu  
EcoRV (3100)  
3001 CTGCTGAACGGCAAGCCGTTGCTGATTCGAGGCGTTAACCGTCACGAGCATCATCTCTGCATGGTCAGGTCATGGATGAGCAGACGATGGTGCAGGATA  
376▶ LeuLeuAsnGlyLysProLeuLeuI leArgGlyValAsnArgHisGluHisHisProLeuHisGlyGlnValMetAspGluGlnThrMetValGlnAspI  
DraIII (3177)  
3101 TCCTGCTGATGAAGCAGAACAACTTTAACCGCGTGGCTGTTTCGATTATCCGAACCATCCGCTGTGGTACACGCTGTGCGACCGCTACGGCCTGTATGT  
409▶ leLeuLeuMetLysGlnAsnAsnPheAsnAlaValArgCysSerHisTyrProAsnHisProLeuTrpTyrThrLeuCysAspArgTyrGlyLeuTyrVa  
SspI (3217)  
3201 GGTGGATGAAGCCAATATTGAAACCCACGGCATGGTGCCAATGAATCGTCTGACCGATGATCCGCGTGGCTACCGCGATGAGCGAACCGTAACCGCA  
442▶ lValAspGluAlaAsnI leGluThrHisGlyMetValProMetAsnArgLeuThrAspAspProArgTrpLeuProAlaMetSerGluArgValThrArg  
BsaBI (3313)  
3301 ATGGTGCAGCGCATCGTAATCACCCGAGTGTATCATCTGGTCTGGGGAATGAATCAGGCCACGGCGCTAATCACGACGCGCTGTATCGCTGGATCA  
476▶ MetValGlnArgAspArgAsnHisProSerValI leI leTrpSerLeuGlyAsnGluSerGlyHisGlyAlaAsnHisAspAlaLeuTyrArgTrpI leL  
BssHII (3485)  
3401 AATCTGTCGATCTTCCCGCCCGTGCAGTATGAAGCGCGGAGCCGACACACGGCCACCGATATTATTTGCCGATGTACGCGCGTGGATGAAGA  
509▶ ysSerValAspProSerArgProValGlnTyrGluGlyGlyGlyAlaAspThrThrAlaThrAspI leI leCysProMetTyrAlaArgValAspGluAs  
3501 CCAGCCCTTCCCGGCTGTGCCAAATGGTCCATCAAAAAATGGCTTTCGCTACCTGGAGAGACGCGCCCGCTGATCCTTTGCGAATACGCCACCGGATG  
542▶ pGlnProPheProAlaValProLysTrpSerI leLysLysTrpLeuSerLeuProGlyGluThrArgProLeuI leLeuCysGluTyrAlaHisAlaMet  
3601 GGTAACAGTCTTGGCGGTTTCGCTAAATACTGCAGCGGTTTCGTCAGTATCCCGTTACAGGGCGGCTTCTGCTGGGACTGGGTGGATCAGTCGCTGA  
576▶ GlyAsnSerLeuGlyGlyPheAlaLysTyrTrpGlnAlaPheArgGlnTyrProArgLeuGlnGlyGlyPheValTrpAspTrpValAspGlnSerLeuI  
3701 TTAAATATGATGAAAACGGCAACCCGTTGTCGCTTACGGCGGTGATTTTGGCGATACGCCAACGATCGCCAGTTCTGTATGAACGGTCTGGTCTTTGC  
609▶ leLysTyrAspGluAsnGlyAsnProTrpSerAlaTyrGlyGlyAspPheGlyAspThrProAsnAspArgGlnPheCysMetAsnGlyLeuValPheAl  
Eco47III (3822)  
3801 CGACCGCAGCCGCATCCAGCGCTGACGGAAGCAAAACACCAGCAGAGTTTTTCCAGTTCCGTTTATCCGGCAAACCATCGAAGTGACCAGCGAATAC  
642▶ aAspArgThrProHisProAlaLeuThrGluAlaLysHisGlnGlnGlnPhePheGlnPheArgLeuSerGlyGlnThrI leGluValThrSerGluTyr  
SacI (3927)  
3901 CTGTTCCGTCATAGCGATAACGAGCTCTGCACTGGATGGTGGCGCTGGATGGTAAGCCGCTGGCAAGCGGTGAAGTGCTCTGGATGTCGCTCCACAAG  
676▶ LeuPheArgHisSerAspAsnGluLeuLeuHisTrpMetValAlaLeuAspGlyLysProLeuAlaSerGlyGluValProLeuAspValAlaProGlnG  
4001 GTAAACAGTTGATTGAACTGCCTGAATACCCGAGCCGAGAGCGCCGGCAACTCTGGCTCACAGTACGCGTAGTGAACCGAACCGGACCGCATGGTC  
709▶ lyLysGlnLeuI leGluLeuProGluLeuProGlnProGluSerAlaGlyGlnLeuTrpLeuThrValArgValValGlnProAsnAlaThrAlaTrpSe  
4101 AGAAGCCGGGCACATCAGCGCTGGCAGCAGTGGCGTCTGGCGAAAACCTCAGTGTGACGCTCCCCGCCGCTCCACGCCATCCCGCATCTGACCACC  
742▶ rGluAlaGlyHisI leSerAlaTrpGlnGlnTrpArgLeuAlaGluAsnLeuSerValThrLeuProAlaAlaSerHisAlaI leProHisLeuThrThr  
4201 AGCGAAATGGATTTTTGCATCGAGCTGGTAATAAGCGTTGGCAATTAACCGCCAGTACGGCTTTCTTTACAGATGTGGATTGGCGATAAAAAACAC  
776▶ SerGluMetAspPheCysI leGluLeuGlyAsnLysArgTrpGlnPheAsnArgGlnSerGlyPheLeuSerGlnMetTrpI leGlyAspLysLysGlnL  
4301 TGCTGACCGCTGCGGATCAGTTACCCGTCACCGCTGGATAACGACATTGGCGTAAGTGAAGCGACCCGATTGACCTAACGCTGGGTGCAACG  
809▶ euLeuThrProLeuArgAspGlnPheThrArgAlaProLeuAspAsnAspI leGlyValSerGluAlaThrArgI leAspProAsnAlaTrpValGluAr  
4401 CTGGAAGCGCGCGGCCATTACCAGGCCGAAGCAGCGTTGTTGAGTGCACGGCAGATACACTTGTGATGCGGTGCTGATTACGACCGCTCACGCGTGG  
842▶ gTrpLysAlaAlaGlyHisTyrGlnAlaGluAlaAlaLeuLeuGlnCysThrAlaAspThrLeuAlaAspAlaValLeuI leThrThrAlaHisAlaTrp  
4501 CAGCATCAGGGGAAAACCTTATTTATCAGCCGAAAACCTACCGGATTGATGGTAGTGGTCAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGATA  
876▶ GlnHisGlnGlyLysThrLeuPheI leSerArgLysThrTyrArgI leAspGlySerGlyGlnMetAlaI leThrValAspValGluValAlaSerAspT  
4601 CACCGCATCCGGCAGGATTGGCTGAACTGCCAGCTGGCGCAGGTAGCAGAGCGGGTAAACTGGCTCGGATTAGGGCCGCAAGAAAACCTATCCCGACCG  
909▶ hrProHisProAlaArgI leGlyLeuAsnCysGlnLeuAlaGlnValAlaGluArgValAsnTrpLeuGlyLeuGlyProGlnGluAsnTyrProAspAr

**BsiWI (4757)**

Bst1107I (4749)

4701 CCTTACTGCCGCTGTTTTGACCGCTGGGATCTGCCATTGTCTCAGACATGTATACCCCGTACGCTTCCCGAGCGAAAACGGTCTGCGCTGCGGGACGCGC

942▶ gLeuThrAlaAlaCysPheAspArgTrpAspLeuProLeuSerAspMetTyrThrProTyrValPheProSerGluAsnGlyLeuArgCysGlyThrArg  
4801 GAATTGAATTATGCCCCACACAGTGGCGCGCGACTTCCAGTTCAACATCAGCCGCTACAGTCAACAGCAACTGATGGAAACCAGCCATCGCCATCTGC

976▶ GluLeuAsnTyrGlyProHisGlnTrpArgGlyAspPheGlnPheAsnI leSerArgTyrSerGlnGlnGlnLeuMetGluThrSerHisArgHisLeuL

NdeI (4944)

4901 TGCACGCGGAAGAAGGCACATGGCTGAATATCGACGGTTTCCATATGGGATTGGTGGCGACGACTCTGGAGCCCGTCAGTATCGCGGAATTACAGCT

1009▶ euHisAlaGluGluGlyThrTrpLeuAsnI leAspGlyPheHisMetGlyI leGlyGlyAspAspSerTrpSerProSerValSerAlaGluLeuGlnLe

NheI (5066)

**EcoRI (5060)**

5001 GAGCGCCGGTGCCTACCATTACCAGTTGGTCTGGTGTCAAAAATAATAATCTAGTCGAGAATTCGCTAGCTCGACATGATAAGATACATTGATGAGTTTG

1042▶ uSerAlaGlyArgTyrHisTyrGlnLeuValTrpCysGlnLys•••

5101 GACAAACCACAACCTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTT

**MfeI (5240)**

5201 GTAACCATTATAAGCTGCAATAAACAAGTTAACAACAACAATTGCATTCATTTTATGTTTCAGGTTCCAGGGGAGGTGTGGGAGTTTTTTAAAGCAAGT

**SwaI (5331)**

5301 AAAACCTCTACAATGTGGTAGATCCATTTAAATGTTAATTAAGTCCATGACCAAAATCCCTTAACGTGAGTTTTCTGTTCCACTGAGCGTCAGACCCC

5401 GTAGAAAAGATCAAAGGATCTTCTTGAGATCCTTTTTTCTGCGCGTAATCTGCTGCTTGCACAAAAAACCACCGCTACCAGCGGTGGTTTGTGTTGC

5501 CGGATCAAGAGCTACCAACTCTTTTTCCGAAGGTAAGTGGCTTCAGCAGAGCGCAGATACCAATACTGTTCTTCTAGTGTAGCCGTAGTTAGGCCACCA

5601 CTTCAAGAACTCTGTAGCACCGCTACATACCTCGCTCTGCTAATCTGTTACCAGTGGCTGCTGCCAGTGGCGATAAGTCTGTCTTACCGGGTTGGAC

5701 TCAAGACGATAGTTACCGGATAAGGCGCAGCGGTGGGCTGAACGGGGGTTCTGTCACACAGCCAGCTTGAGCGAACGACCTACACCGAACTGAGAT

5801 ACCTACAGCGTGAGCTATGAGAAAAGCGCCACGCTTCCCGAAGGGAGAAAAGCGGACAGGTATCCGGTAAGCGGCAGGGTTCGGAACAGGAGAGCGCACGAG

5901 GGAGCTTCCAGGGGAAACGCCTGGTATCTTTATAGTCTGTGCGGTTTCGCCACCTGACTTGAGCGTCGATTTTTGTGATGCTGTCAGGGGGCGG

6001 AGCCTATGGAAAACGCCAGCAACCGGCCTTTTTACGGTTCCTGGCCTTTTGTGCGCCTTTGCTCACATGTTCTTAAATTAATTTTCAAAGTAGTT

AseI (6107)

SfiI (6158) **MseI (6169)**

6101 GACAATTAATCATCGGCATAGTATATCGGCATAGTATAATACGACTCACTATAGGAGGGCCATCATGGCCAAGTTGACCAGTGCTGTCCCAGTGCTCAC

AGCCAGGGATGTGGCTGGAGCTGTTGAGTTCTGGACTGACAGGTTGGGTTCTCCAGAGATTTGTGGAGGATGACTTGCAGGTGTGGTCAGAGATGAT

12▶ rAlaArgAspValAlaGlyAlaValGluPheTrpThrAspArgLeuGlyPheSerArgAspPheValGluAspAspPheAlaGlyValValArgAspAsp

6300 GTCACCCTGTTTCATCTCAGCAGTCCAGGACCAGTGGTGCCTGACAACCCCTGGCTTGGGTGGGTGAGAGGACTGGATGAGCTGTATGCTGAGTGGG

46▶ ValThrLeuPheI leSerAlaValGlnAspGlnValValProAspAsnThrLeuAlaTrpValTrpValArgGlyLeuAspGluLeuTyrAlaGluTrpS

6400 GTGAGGTGGTCTCCACCAACTTCAGGGATGCCAGTGGCCCTGCCATGACAGAGATTGGAGAGCAGCCTGGGGGAGAGAGTTTGCCTGAGAGACCCAGC

79▶ erGluValValSerThrAsnPheArgAspAlaSerGlyProAlaMetThrGluI leGlyGluGlnProTrpGlyArgGluPheAlaLeuArgAspProAl

DraIII (6519)

SfiI (6567)

6500 AGGCAACTGTGTGCACTTTGTGGCAGAGGAGCAGGACTGAGGATAAGAATTGAGTTTCAGAAAAGGGGCGCTGAGTGGCCCTTTTTCAACTTAATTAA

112▶ aGlyAsnCysValHisPheValAlaGluGluGlnAsp•••