



**PvuI (7)**  
**SgfI (6)**
**MfeI (82)**

1 GGATCTGCATCGCTCCGGTGCCCGTCAGTGGGAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA  
 101 GAGAAGGTGGCGGGGTAACGGAAAGTGTGTCTGTACTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

---

**HindIII (245)**
**Psp1406I (203)**
**PvuII (239)**
**Bsu36I (291)**

201 GTGAACGTTCTTTTTCGCAACGGGTTTCCGCCAGAACACAGCTGAAGCTTCAGAGGGCTCGCATCTCTCTTACAGCGCCCGCCGCCCTACCTGAGGCC  
 301 GCCATCCACGCCGGTTGAGTGCCTTCTGCCGCTCCCGCTGTGGTGCCTCCTGAAGTGCCTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC  
 401 GGGCCTTTGTCCGGCGCTCCCTTGGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTCTCAACTCTACGCTTTTGTTCGTTT

---

**Ppu10I (562)**
**KasI (535)**
**AgeI (552)**
**SphI (560)**
**NsiI (562)**

501 TCTGTTCTGCGCGTTACAGATCCAAGCTGTGACCGCGCCTACCTGAGATCACCGGTGAGTGCATCTCTTGGATTCTGTTTTGTCTCTCTGGTC  
 1▶MeThi sLeuLeuAl a l eLeuPheCysAl aLeuTrpSe

---

**BsiBI (625)**
**DraIII (693)**
**EcoO109I (686)**

601 TGCAGTGTGGCCGAGAAGCTCGGATGATTATGATCTCATGTATGTGAATTTGGACAACGAAATAGACAATGGACTCCATCCCCTGAGGACCCACGCCG  
 13▶rAl aVal LeuAl aGl uAsnSerAspAspTyrAspLeuMe tTyrVal AsnLeuAspAsnGl u l eAspAsnGl yLeuHi sP roThr Gl uAspP roThr P ro

**PshAI (703)**
**SphI (773)**
**Tth111I (793)**

701 TGCAGTGCAGGACTCGGAATGGACAAGCTCTTCATCATGCTGGAGAAGCTGCAGATGAGAGAGCGCATGCTGCTGCAAGCCACGGACGACG  
 47▶CysAspCysGl yGl nGl uHi sSer Gl uTrpAspLysLeuPhe l l eMe tLeuGl uAsnSer Gl nMe tArgGl uArgMe tLeuLeuGl nAl aThrAspAspV

**BssHII (869)**

801 TCCTGCGGGCGAGCTGCAGAGGCTGCGGGAGGAGCTGGGCCGCTCGCGAAAGCCTGGCGAGGCCGTGCGCGCCGGGGCTCCCGCAGAGGCCAGGCT  
 80▶al LeuArgGl yGl uLeuGl nArgLeuArgGl uGl uLeuGl yA rgLeuAl aGl uSer LeuAl aArgP roCysAl aP roGl yAl aP roAl aGl uAl aArgLe

**BssHII (999)**  
**AscI (998)**

901 GACCAGTGTCTGACGAGCTGCTGCAGGCGACCCGCGACGCGGGCCGAGGCTGGCGGTATGGAGGCGCGGAGGCGCAGCGCCAGAGGAGGCGGGG  
 113▶uThr SerAl aLeuAspGl uLeuLeuGl nAl aThr ArgAspAl aGl yA rgArgLeuAl aArgMe tGl uGl yAl aGl uAl aGl nArgP roGl uGl uAl aGl y

**SacII (1010)**
**DraIII (1051)**

1001 CGCGCCCTGGCCCGGCTAGAGGAGCTGCGGAGACGCGAGCCGACCTGCACGCGGTGCAGGGCTGGGCTGCCCGAGCTGGCTGCCGGCAGGTTGTG  
 147▶ArgAl aLeuAl aAl aVal LeuGl uGl uLeuArgGl nThr ArgAl aAspLeuHi sAl aVal Gl nGl yTrpAl aAl aArgSer TrpLeuP roAl aGl yCysG

1101 AAAGACTGCTGTGTGGTGGTGGCTTTGATGAAACATTAGCCTTCTGGGAGACTCACAGGCTTCAATCTGGGATAGTGTTCCTTAGCAATGAA  
 180▶ l uThr Al a l eLeuPheP roMe tArgSer LysLys l l ePheGl ySer Val l Hi sP roVal aArgP roMe tArgLeuGl uSer PheSer Al aCys l l eTrpVa

**NdeI (1259)**
**PvuII (1270)**

1201 CAAAGCCACAGATGTATTAACAAAACCATCCTGTTTTCTATGGCACAAAGAGGAATCCATATGAAATCCAGCTGTATCTCAGCTACCAATCCATAGTG  
 213▶ l LysAl aThrAspVal LeuAsnLysThr l l eLeuPheSer TyrGl yThr LysArgAsnP roTyrGl u l eGl nLeuTyrLeuSer TyrGl nSer l l eVal

**NcoI (1340)**
**EcoRI (1383)**

1301 TTTGTGGTGGTGGAGAGGAGAACAACACTGGTTGCTGAAGCCATGGTTTCCCTGGGAAGTGGACCCACCTGTGCGGCACCTGGAATTCAGAGGAAGGGC  
 247▶PheVal Val Gl yGl yGl uGl uAsnLysLeuVal Al aGl uAl aMe tVal Ser LeuGl yA rgTrpThr Hi sLeuCysGl yThr TrpAsnSer Gl uGl uGl yL

**Bsu36I (1468)**

1401 TCACATCCTGTGGGTAATGGTGAAGTGGCGCTACCACTGTTGAGATGGCCACAGGTCACATTGTTCTGAGGGAGGAATCCTGCAGATTGGCCAAGA  
 280▶euThr SerLeuTrpVal AsnGl yGl uLeuAl aAl aThr Thr Val Gl uMe tAl aThr Gl yHi s l l eVal l P roGl uGl yGl y l l eLeuGl n l l eGl yGl nGl

1501 AAAGAATGGCTGTGTGGTGGTGGCTTTGATGAAACATTAGCCTTCTGGGAGACTCACAGGCTTCAATCTGGGATAGTGTTCCTTAGCAATGAA  
 313▶uLysAsnGl yCysCysVal Gl yGl yGl yPheAspGl uThr LeuAl aPheSer Gl yA rgLeuThr Gl yPheAsn l l eTrpAspSer Val LeuSerAsnGl u

**SspI (1645)**

1601 GAGATAAGAGAGACCGGAGGAGCAGAGTCTTGTACATCCGGGGGAATATTGTTGGTGGGAGTGCAGAGATCCAGCCACATGGAGGAGCTCAGTATG  
 347▶Gl u l l eArgGl uThr Gl yGl yAl aGl uSer CysHi s l l eArgGl yAsn l l eVal Gl yTrpGl yVal Thr Gl u l l eGl nP roHi sGl yGl yAl aGl nTyrV

**NheI (1771)**

1701 TTTATAAATGTTGTGAACTCCACTTGAAGCCAAAGAAAGAACTCACACTTAAACACATGCCAGTGGGCTAGCTGGCCAGACATGATAAGATACAT  
 380▶al Ser ●●●

1801 TGATGAGTTTGGACAAACCAACTAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGC

---

**HpaI (1909)**
**MfeI (1920)**

1901 AATAACAAGTTAAACAACAATTGCATTCTTTATGTTTCAGGTTAGGGGAGGTGGGAGGTTTTTAAAGCAAGTAAACCTCTACAATGTG

---

**EcoRI (2005)**

2001 GTATGGAATCTAAATACAGCATGCAAACTTTAACCTCCAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGG  
 2101 GCTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTCTTTCATGGAGTTAAGATATAGTGTATTTTCCAAGGTTTGAAGTACTCTTCAATTCT

---

**SspI (2244)**
**SwaI (2258)**

2201 TTATGTTTTAAATGCACTGACCTCCACATTCCCTTTTGTAGTAAATATTCAGAAATAATTTAAATACATCATTGCAATGAAAATAAATGTTTTTTATTA

---

**EcoO109I (2319)**

2301 GGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTGTGGACTTAGGGAACAAGGAACCTTAAATAGAAATGGACAGCAAGAAA

---

2401 GCGAGCTTCTAGCTTTAGTCTCTGGTACTTGGGGGATGAGTTTCTCAATGGTGGTTTTGACCAGCTTGCCATTCTCAATGAGCACAAAGCAGT  
 141▶●●●AsnArgThr TyrLysLeuProl l eLeuGl uGl u l l eThr Thr LysVal l LeuLysGl yAsnMe tGl u l l eLeuVal l PheCysAs

2501 CAGGAGCATAGTCAGAGATGAGCTCTGCACATGCCACAGGGGCTGACCACCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCTGACAGCCAC  
 112▶pP roAl aTyrAspSer l l eLeuGl uArgCysMe tGl yCysP roSer Val Val aRgl l eSer ArgAspVal l Gl uAspSer TyrP roHi sArgVal Al aVal

StuI (2683)  
Eco147I (2683)

2601 AATGGTGTCAAAGTCTTCTGCCGTTGCTCACAGCAGACCCAATGGCAATGGCTTCAGCACAGACAGTGACCCTGCCAATGTAGGCCTCAATGTGGACA  
79 I l e Thr Asp Phe Asp Lys Gl n Gl y Asn Ser Val Al a Ser Gl yl l e Al al l e Al a Gl u Al a Cys Val Thr Val Arg Gl yl l e Tyr Al a Gl u l l e Hi s Val A  
2701 GCAGAGATGATCTCCCAGTCTTGGTCTGATGGCCGCCCGACATGGTGCTTGTGCTCATAGAGCATGGTGATCTTCTCAGTGGCGACCTCCACCA  
45 I a Ser l l e l l e Gl u Gl y Thr Lys Thr Arg l l e Al a Al a Gl y Val Hi s Hi s Lys Asn Asp Gl u Tyr Leu Met Thr l l e Lys Gl u Thr Al a Val Gl u Val Le

BspHI (2833) VspI (2891)  
XmnI (2825) AseI (2891)

2801 GCTCCAGATCCTGCTGAGAGATGTTGAAGGTCTTCATGATGGCCCTCTATAGTGAGTCGTATTATACTATGCCGATATACTATGCCGATGATTAATTGT  
12 u Gl u Leu Asp Gl n Gl n Ser l l e Asn Phe Thr Lys Met  
2901 CAAACAGCGTGGATGGCGTCTCCAGC T TATCTGACGGTTCCTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCCTACCGCCCATTTGCGT

SpeI (3046)

3001 CAATGGGGCGGAGTTGTTACGACATTTTGAAAGTCCCCTTGATTACTAGTCAAAACAAACTCCCATTGACGTCAATGGGGTGGAGACTTGAAATCC

SnaBI (3174)  
Eco105I (3174)

3100 CCGTGAGTCAAACCGCTATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGTACTGCCAAGTAGGA

NdeI (3279)

3200 AAGTCCATAAGGTCATGTACTGGGCATAATGCCAGGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCGTACTTGGCATATGATACACTTGATGTA  
3300 CTGCCAAGTGGGCAGTTTACCGTAAATACTCCACCATTGACGTCAATGGAAAGTCCCTATTGGCGTTACTATGGGAACATACGTCAATTATTGACGTCAA

SdaI (3457) PacI (3465) BspLU11I (3475)

3400 TGGGCGGGGTCGTTGGGCGGTCAGCCAGGCGGGCCATTTACCGTAAGTTATGTAACGCCCTG C A G G T T A A T T A A G A A C A T G T G A G C A A A A G G C C A G C A  
3498 AAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGG  
3598 CGAAACCCGACAGGACTATAAAGATACCAGCGCTTTCCCTGGAAAGCTCCCTCGTGCGCTCTCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCG

ApaLI (3789)

3698 CCTTCTCCCTTCGGAAGCGTGGCGCTTCTCATAGCTCAGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTGCTCCAAGCTGGGCTGTGTGCACGA  
3798 ACCCCCGTTCAGCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGT  
3898 AACAGATTAGCAGAGCGAGGTATGTAGCGGTGTACAGAGTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCG  
3998 CTCTGCTGAAGCCAGTTACCTTCGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTGTTGCAAGCAGCA  
4098 GATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGTCTGACGCTCAGTGAACGAAAACCTCACGTTAAGGGATTTTGGTC

EagI (4225)

PacI (4205) SmaI (4214) NotI (4224)

4198 ATGGCTAGTTAATTAACATTTAAATC AGCGGCCGCAATAAAATATCTTTATTTTATTACATCTGTGTGTTGGTTTTTTGTGTAATCGTAACATA  
4298 CGCTCTCCATCAAACAAACGAAACAAACAAACTAGCAAAATAGGCTGTCCCGTCAAGTGCAGGTGCCAGAACATTTCTCTATCGAA