

# pUC19

GenBank Accession #: L09137

Feature	Coordinates	Source
<i>lacZα</i>	469-146	—
origin	1455-867	pMB1 (mutant)
<i>bla</i> (Ap <sup>R</sup> )	2486-1626	<i>Tn3</i>

ori = origin of replication  
Ap = ampicillin

There are no restriction sites for the following enzymes: AarI(x), AfeI, AfIII, AgeI, AleI, ApaI, AscI, AsiSI, AvrII, BaeI, BbsI, BbvCI, BclI, BglIII, BlnI, BmgBI, BmiI, Bpu10I, BsaAI, BsaBI, BseRI, BsgI, BsiWI, BsmFI, BsmI, BspDI, BspEI, BsrGI, BssHII, BstBI, BstEII, BstXI, BstZ17I, Bsu36I, BtgI, BtgZI, ClaI, CspCI, DralI, EagI, EcoNI, EcoRV, FseI, FspAI(x), HpaI, I-CeuI, I-SceI, MfeI, MluI, MscI, NaeI, NcoI, NgoMIV, NheI, NotI, NruI, NsiI, P1-PspI, P1-SceI, PacI, PaeR7I, PfiFI, PflMI, PmeI, PmlI, PpuMI, PshAI, PsiI, PspOMI, PspXI, RsrII, SacII, SanDI(x), SexAI, SfiI, SgrAI, SnaBI, SpeI, SrfI(x), StuI, StyI, Swal, TliI, Tth111I, XcmI, XhoI

(x) = enzyme not available from NEB

pUC19 is a small, high-copy number *E. coli* plasmid cloning vector containing portions of pBR322 and M13mp19 (1). It contains the pMB1 origin of replication from pBR322, but it lacks the *rop* gene and carries a point mutation in the RNAII transcript (G 2975 in pBR322 to A 1308 in pUC19; 2). These changes together result in a temperature-dependent copy number of about 75 per cell at 37°C and >200 per cell at 42°C (2, 3). The multiple cloning site (MCS) is in frame with the *lacZα* gene, allowing screening for insertions using α-complementation.

pUC18 is identical to pUC19 except that the MCS region (nt 397-454) is inverted.

pNEB193 is also identical to pUC19 except for the addition of several restriction endonuclease sites to the MCS. Its total length is 2713 bp.

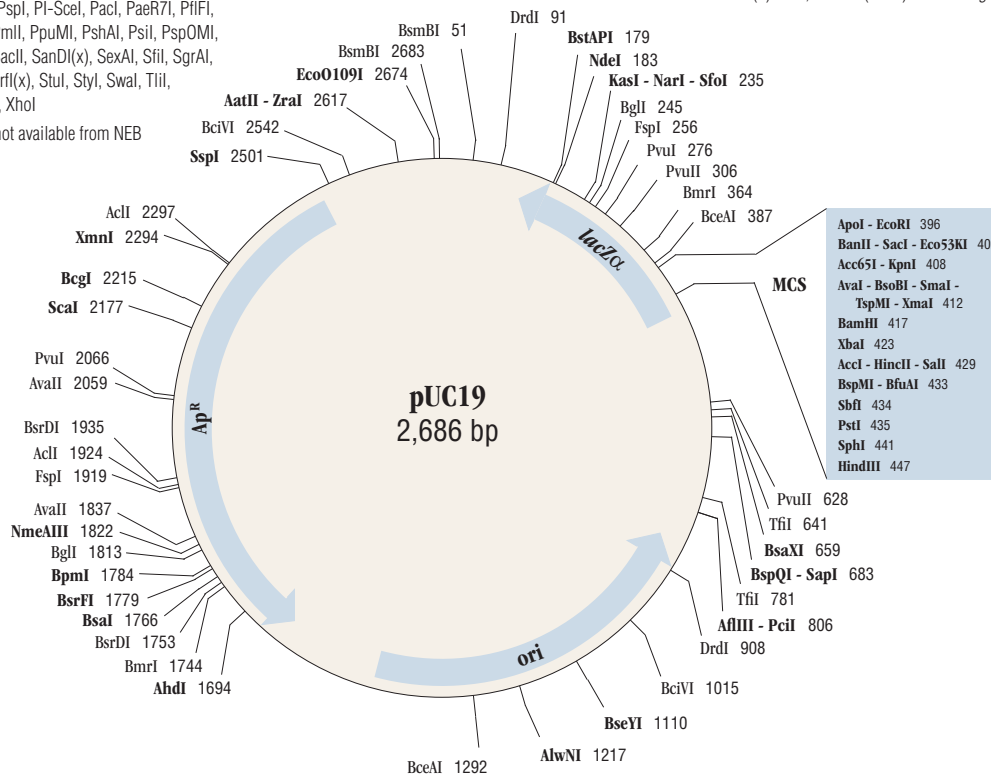
Enzymes with unique restriction sites are shown in **bold** type, and enzymes with two restriction sites are shown in regular type. Location of sites of all NEB restriction enzymes can be found on the NEB web site (choose Technical Reference > DNA Sequences and Maps). Restriction site coordinates refer to the position of the 5'-most base on the top strand in each recognition sequence.

Open reading frame (ORF) coordinates are in the form "translational start – translational stop"; numbers refer to positions on the top (clockwise) strand, regardless of the direction of transcription and include the start and stop codons.

Origin of replication coordinates include the region from the -35 promoter sequence of the RNAII transcript to the RNA/DNA switch point. *bla* (Ap<sup>R</sup>) gene coordinates include the signal sequence.

## References

- (1) Yanisch-Perron, C., Vieira, J. and Messing, J. (1985) *Gene*, 33, 103–119.
- (2) Lin-Chao, S., Chen, W.-T. and Wong, T.-T. (1992) *Mol. Microbiol.*, 6, 3385–3393
- (3) Miki, T. et al. (1987) *Protein Eng.*, 1, 327–332.



## pUC19 MCS

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EcoRI   SacI   SmaI   XbaI   SbfI
EcoRI   KpnI   BamHI   SalI   PstI   SphI   HindIII
agtgAATTCGAGCTCGGTACCCGGGGATCCTCTAGAGTCGACCTGCAGGCATGCAAGCTTGGcgtaatcatggtcat
      400     410     420     430     440     450     460
...S N S S P V R P D E L T S R C A H L S P T I M T M
          ← lacZα translational start
    
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## pNEB193 MCS

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SacI   SmaI   BssHII   PacI   SbfI
EcoRI   KpnI   AscI   BamHI   XbaI   SalI   PmeI   PstI   SphI   HindIII
agtgAATTCGAGCTCGGTACCCGGGGCGCGCCGGATCCTTAATTAAGTCTAGAGTCGACTGTTTAAACCTGCAGGCATGCAAGCTTGGcgtaatcatggtcat
      400     410     420     430     440     450     460     470     480     490
...S N S S P V R P R A P D K I L D L T S Q K F R C A H L S P T I M T M
          ← lacZα translational start
    
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