# pLacZ-Control Vector Information

PT2112-5 Cat. No. 631709

GenBank Accession No. U13186



Restriction Map and Multiple Cloning Site (MCS) of pLacZ-Control. Unique restriction sites are in bold.

#### Description

pLacZ-Control is a reporter vector which will express  $\beta$ -galactosidase in mammalian cells. Therefore, this vector can serve as a positive control in experiments that use lacZ as the primary reporter and can also be used to normalize transfection efficiencies in experiments using other reporter molecules. pLacZ-Control contains the SV40 early promoter and enhancer sequences inserted upstream and downstream, respectively, of the *lacZ* gene. The promoter fragment contains an SV40 origin of replication which is active in cells expressing the SV40 T-antigen. A pUC origin of replication and ampicillin resistance gene allow propagation and selection in *E. coli*. An f1 origin allows for single-stranded DNA production.

Clontech offers the Beta-Galactosidase Staining Kit (Cat. No. 631780) to determine the efficiency of β-galactosidase transfection and the Luminescent Beta-Galactosidase Reporter System 3 (Cat. No. 631713) to quantify  $\beta$ -galactosidase expression.

### Location of features

- Multiple cloning site (MCS): 1-42
- SV40 early promoter
- Promoter insert: 38-239 21-bp repeats: 69-89, 90-110 & 112-132 Early promoter element: 145–151; major transcription start points: 141, 179, 185 & 190 • SV40 origin of replication: 89-224
- β-galactosidase fusion protein Start codon (ATG): 286–288; stop codon: 3427–3429 Amino acids from D. melanogaster alcohol dehydrogenase: 286-378 Amino acids from *E. coli*  $\beta$ -galactosidase (1): 382–3426
- SV40 small t antigen intron: 4045-4110
  - SV40 early mRNA polyadenylation signals: 4716-4721 & 4745-4750 mRNA 3' ends: 4754 & 4766
- SV40 enhancer:
  - Enhancer insert: 4816–5072 72-bp tandem repeats: 4844-4915 & 4916-4987 21-bp repeats: 4991-5011, 5012-5032 & 5034-5054

Vector Information



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## List of features (*continued*)

- pUC plasmid origin of replication: 5357–6000
- Ampicillin resistance (β-lactamase) gene
  - Promoter: –35 region: 7078–7073; –10 region: 7055–7050 Transcription start point: 7043 Ribosome binding site: 7020–7016 β-lactamase coding sequences: start codon (ATG): 7008–7006; stop codon: 6150–6148
  - β-lactamase signal peptide: 7008–6940; β-lactamase mature protein: 6939–6151
- f1 single-strand DNA origin (packages the coding strand of the *lacZ* gene): 7140–7595
- SV40 early mRNA polyadenylation signals: 7816-7821 & 7845-7850

### Propagation in *E. coli*

- Suitable host strains: DH5 $\alpha$  and other general purpose strains. Single-stranded DNA production requires a host containing an F' episome such as JM109.
- Selectable marker: plasmid confers resistance to ampicillin (100 µg/ml) to *E. coli* hosts.
- E. coli replication origin: pUC
- Copy number: ~500
- Plasmid incompatibility group: pMB1/Col E1

#### Reference

1. MacGregor, G. R., et al. (1987) Somat. Cell Mol. Genet. 13: 253–265.

**Note**: The attached sequence file has been compiled from information in the sequence databases, published literature, and other sources, together with partial sequences obtained by Clontech. This vector has not been completely sequenced.

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