

pSELECT-puro-LacZ

A LacZ-expression plasmid selectable with Puromycin

Catalog code: psetp-lacz

<https://www.invivogen.com/pselect-puro>

For research use only

Version 19A21-MM

PRODUCT INFORMATION

Contents

- 20 µg of pSELECT-puro-LacZ plasmid provided as lyophilized DNA
- 1 ml of Puromycin at 10 mg/ml

Storage and stability

- Product is shipped at room temperature.
- Upon receipt, store lyophilized DNA at -20°C.
- Resuspended DNA should be stored at -20°C.
- Store Puromycin at 4°C or -20°C. The expiry date is specified on the product label.

Quality control

- Plasmid construct has been confirmed by restriction analysis and sequencing.
- Plasmid DNA was purified by ion exchange chromatography and lyophilized.

GENERAL PRODUCT USE

pSELECT plasmids are specifically designed for strong and constitutive expression of a gene of interest in a wide variety of cell lines. They allow the selection of stable transfectants and offer a variety of selectable markers. pSELECT plasmids contain two expression cassettes: the first drives the expression of the gene of interest and the second drives the expression of a large choice of dominant selectable markers for both *E. coli* and mammalian cells. They are both terminating with a strong polyadenylation signal (polyA) that separates the two expression cassettes thus preventing any transcription interference. The late SV40 polyA terminates the transcription of the gene of interest while the human β-globin polyA terminates the transcription of the selectable marker.

pSELECT-LacZ plasmids can be used as control vectors or for cloning of an open reading frame, as the LacZ gene is flanked by two unique restriction sites: Nco I at the 5' end that encompasses the Start codon, and Nhe I at the 3' end.

METHODS

Plasmid resuspension:

Quickly spin the tube containing the lyophilized plasmid to pellet the DNA. To obtain a plasmid solution at 1 µg/µl, resuspend the DNA in 20 µl of sterile water. Store resuspended plasmid at -20°C.

Plasmid amplification and cloning:

Plasmid amplification and cloning can be performed in *E. coli* GT116 or other commonly used laboratory *E. coli* strains, such as DH5α.

Puromycin usage:

This antibiotic can be used for *E. coli* at 100-125 µg/ml in liquid or solid media and at 1-10 µg/ml to select Puromycin-resistant mammalian cells.

PLASMID FEATURES

First expression cassette

- **hEF1-HTLV prom** is a composite promoter comprising the Elongation Factor-1α (EF-1α) core promoter¹ and the R segment and part of the U5 sequence (R-U5') of the Human T-Cell Leukemia Virus (HTLV) Type 1 Long Terminal Repeat². The EF-1α promoter exhibits a strong activity and yields long lasting expression of a transgene *in vivo*. The R-U5' has been coupled to the EF-1α core promoter to enhance stability of RNA.
- **LacZ**: The *E. coli lacZ* gene codes for the enzyme β-galactosidase which catalyzes the hydrolysis of the substrate X-Gal to produce a blue color that is easily visualized under a microscope.
- **SV40 pAn**: the Simian Virus 40 late polyadenylation signal enables efficient cleavage and polyadenylation reactions resulting in high levels of steady-state mRNA³.
- **ori**: a minimal *E. coli* origin of replication to limit vector size, but with the same activity as the longer Ori.

Second expression cassette

- **CMV enh/prom**: The human cytomegalovirus immediate-early gene 1 promoter/enhancer was originally isolated from the Towne strain and was found to be stronger than any other viral promoters.
- **EM7** is a bacterial promoter that enables the constitutive expression of the antibiotic resistance gene in *E. coli*.
- **Puro**: Resistance to Puromycin is conferred by the *Pac* gene from *Streptomyces* which encodes a N-acetyl-transferase. The *Pac* gene is driven by the CMV enhancer/promoter in tandem with the bacterial EM7 promoter allowing selection in both mammalian cells and *E. coli*.
- **βGlo pAn**: The human beta-globin 3'UTR and polyadenylation sequence allows efficient arrest of the transgene transcription⁴.

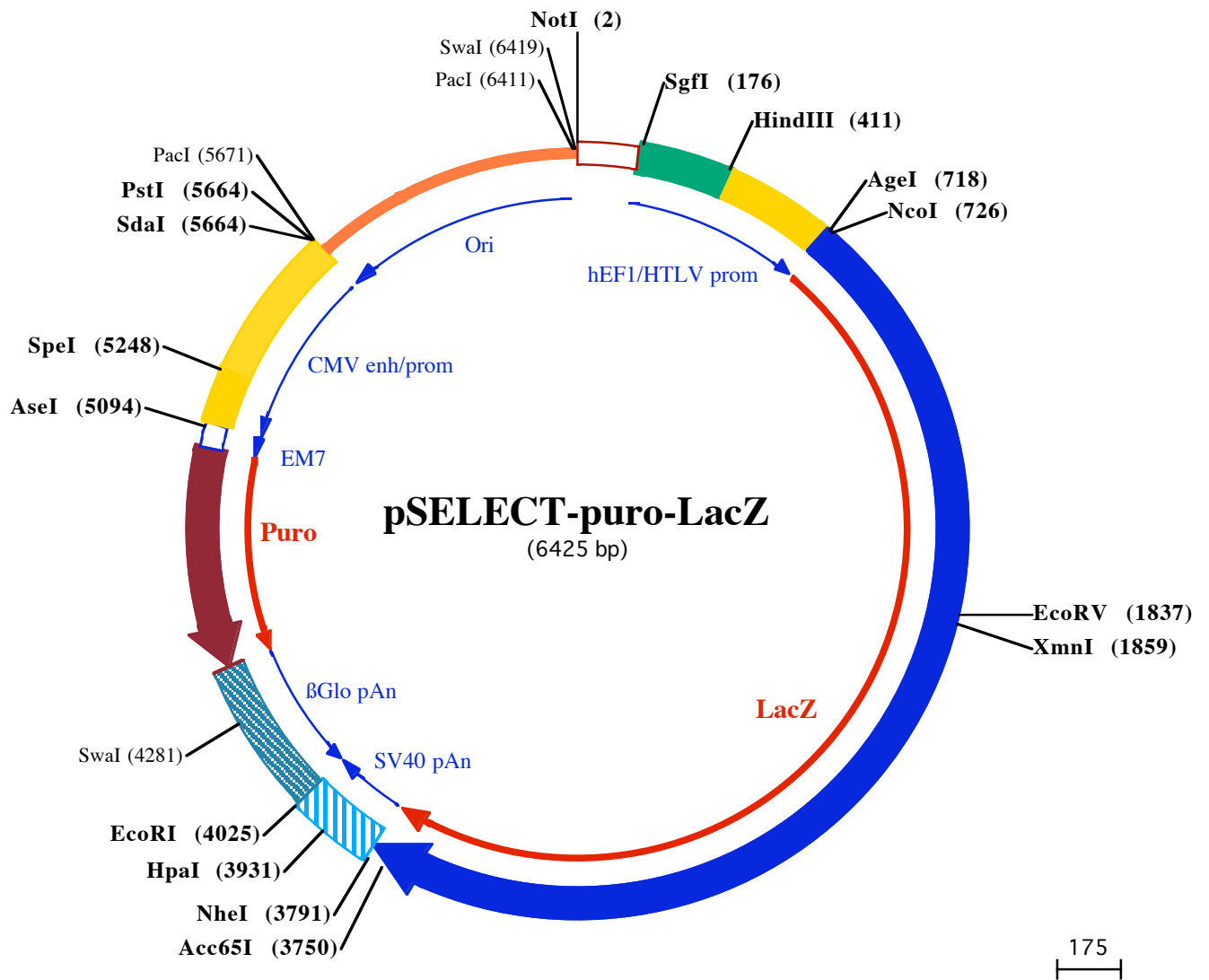
References

1. Kim D.W. *et al.*, 1990. Use of the human elongation factor 1 alpha promoter as a versatile and efficient expression system. *Gene* 2: 217-223. 2. Takebe Y. *et al.*, 1988. SR alpha promoter: an efficient and versatile mammalian cDNA expression system composed of the simian virus 40 early promoter and the R-U5 segment of human T-cell leukemia virus type 1 long terminal repeat. *Mol. Cell Biol.* 1: 466-472. 3. Carswell S. & Alwine J.C., 1989. Efficiency of utilization of the simian virus 40 late polyadenylation site: effects of upstream sequences. *Mol. Cell Biol.* 10: 4248-4258. 4. Yu J. & Russell J.E., 2001. Structural and functional analysis of an mRNP complex that mediates the high stability of human beta-globin mRNA. *Mol Cell Biol.* 21(17):5879-88.

TECHNICAL SUPPORT

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HpaI (3931)

3901 TGTAACCATTATAAGCTGCAATAAACAGTTAAACAACAACATTGCATTCTATTTATGTTTCAGGTTCCAGGGGAGGTGTGGGAGGTTTTTAAAGCAAG

EcoRI (4025)

4001 TAAAACTCTACAAATGTGGTATGGAATTCTAAAATACAGCATAGCAAACTTTAACTCCAATCAAGCCTCTACTTGAATCCTTTCTGAGGGATGAA

4101 TAAGGCATAGGCATCAGGGGCTGTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTTCTTTCATGGAGTTAAGATATAGTGATTTTCCCAAGGTTT

Swal (4281)

4201 GAAGTAGCTCTTCATTTCTTTATGTTTTAAATGCACTGACCTCCCACTTCCCTTTTAGTAAAATATTAGAAAATATTTAAATACATCATTGCAATGA

4301 AAATAAATGTTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAGGAACCTTTAATA

4401 GAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTCAGGTTTAAAGCTCCAGGCTTCTTGTGCATGCACCAAGTTCTTGGCCCTTGGAACTCAACATCAG

4501 CTGTCACAGTGAATCCAGTCTTTCATAAAAAGGCAGGTTTCTGGGAGCAGAAGTTCCAGAAAGGCAGGAAGCTCCAGCCCTTTCAGCAGCTTCAACTCC

179 ↓ aThr Val Thr PheGlyLeuArgGluTyrPheProLeuAsnArgProAlaSer Thr GluLeuPheAlaProValGlyAlaArgGluAlaAlaGluValGly

4601 AGGCAGAACACAGCAGATCCAGACCCTTCCCTGGTGGTCAGGGCTCACTCCAACAGTTGCCAGAAACCAAGCTGGCTCTTTTGGCCTGTGTGGTGCC

146 ↓ ProLeuValValAlaSer GlyLeuGlyLysGlyGlnHisAspProSerValGlyValThrAlaLeuPheTrpAlaProGluLysProArgHisProAlaL

4701 AGCAGACTTCCATTTGTTGTTGTGCTGCCAGCCTGCTTCCAGAGAGCTCAGCCATTCTTGGTCCAATTCAGCAAAAACAGCACCAGCTTCAACAGACT

112 ↓ euLeuGlyGlyuMetGlnGlnAlaAlaLeuArgSerGlySerLeuGluAlaMetArgProGlyIleGluAlaPheValAlaGlyAlaGluValSerGly

4801 CAGGTGTGTCCAACTGCAACAGCAGCTCCATCATCTGCAACCCAACTTTTCCAATGTCCAGTCCCACTCTGGTGAGGAAGGTTCTTGCAGTCTGTG

79 ↓ uProThr Thr TrpValAlaValAlaAlaGlyAspAspAlaValTrpValLysGlyIleAspLeuGlyValArgThrLeuPheLeuGluGlnLeuGluThr

4901 CACCTCTCAATGTCCCTGTCAGGGTCACTGTGCTTGTGTCAGGTAGTCTGCAAAAGCAGCAGCCAGTGTCTCACAGCTTGTGAAACATCATCT

46 ↓ ValArgGluIleHisArgAspProAspValThrHisArgThrAlaProTrpAspAlaPheAlaAlaAlaLeuThrArgValAlaArgProValAspAspA

AseI (5094)

5001 CTGGTGGCAGCCTCACTGTGGGTTGTACTCAGTCATGGTGGCCCTCTATAGTGAGTCGTATTATACTATGCCGATATACTATGCCGATGATTAATTG

12 ↓ rGThrAlaLeuArgValThrProLysTyrGluThrMet

5101 TCAAACAGCGTGATGGCGTCTCCAGCTTATCTGACGGTCACTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCCTACCGCCATTGGCG

SpeI (5248)

5201 TCAATGGGGCGGAGTTGTTACGACATTTTGGAAAGTCCCGTTGATTTACTAGTCAAAACAACTCCCAATTGACGTCAATGGGGTGGAGACTTGGAAATCC

5301 CCGTGAGTCAAACCGCTATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGTACTGCCAAGTAGGA

5401 AAGTCCATAAGGTCATGTACTGGGCATAATGCCAGGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCGTACTTGGCATATGATACACTTGATGA

5501 CTGCCAAGTGGGCGTTTACCGTAAATACTCCACCATTGACGTCAATGGAAAGTCCCTATTGGCGTTACTATGGGAACATACGTCAATTATTGACGTCAA

PacI (5671)

PstI (5664)

SdaI (5664)

5601 TGGGCGGGGTCGTTGGGCGGTACAGCAGGCGGGCATTACCCTAAGTTATGTAACGCCTGCAGGTTAATTAAGAACATGTGAGCAAAGGCCAGCAAA

5701 AGGCCAGGAACCGTAAAAAGGCCGCTTGTGGCGTTTTTCCATAGGCTCCGCCCTTGCAGGATCACAAAAATCGACGCTCAAGTCAGAGGTGGCG

5801 AAACCCGACAGGACTATAAAGATACAGGCGTTCCCTGGAAGCTCCCTCGTGGCTCTCTGTTCCGACCCTGCCGTTACCGGATACCTGTCCGCC

5901 TTTCTCCCTTCGGGAAGCGTGGCGTTTTCTCATAGCTCAGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCCGCTCAAGCTGGGCTGTGTGCAGAAC

6001 CCCCGTTTACGCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGTGTTCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAA

6101 CAGGATTAGCAGAGCGAGGTATGTAGCGGTGCTACAGAGTCTTGAAGTGGTGGCTAACTACGGCTACACTAGAAGAACAGTATTGGTATCTGCGCT

6201 CTGCTGAAGCCAGTTACCTTCGAAAAAGAGTTGGTAGCTCTTGTATCCGGCAAAACACCCTGGTAGCGGTGGTTTTTTTGTGCAAGCAGCAGA

6301 TTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGTCTGACGCTCAGTGAACGAAAACCTCACGTTAAGGGATTTTGGTCA

PacI (6411) Swal (6419)

6401 GGCTAGTTAATTAACATTTAAATCA