pBABEpuro-uPA Retroviral Vector

CATALOG NUMBER: RTV-501 **STORAGE:** -80ºC

QUANTITY AND CONCENTRATION: 100 µL of bacterial glycerol stock

Background

Retroviruses are efficient tools for delivering heritable genes into the genome of dividing cells. Cell Biolabs' retrovirus vector is based on the pBABE vector system, which is derived from Moloney murine leukemia virus (MMLV). The vector provides the viral package signal, transcription and processing elements, and a target gene. The viral *env* gene, produced by the package cell line, encodes the envelop protein, which determines the viral infectivity range. Transfection into a package cell line produces high-titer, replication-incompetent viruses. In addition to transfer and expression of exogenous genes in mammalian cells, recently, retroviruses have been used to express silencing RNAs (siRNA) to decrease the expression of target genes both *in vitro* and *in vivo*.

The vector contains the bacterial origin of replication, ampicillin-resistance gene, and puromycin-resistance gene for the growth of infected mammalian cells to select stable cell lines (Figure 1).

Urokinase-type plasminogen activator (uPA) is a highly restricted serine protease that converts the zymogen plasminogen to the active plasmin. Plasmin, in turn, mediates pericellular proteolysis of extracellular matrix proteins in the path of cellular invasion. uPA has also been shown to be involved in cell adhesion, migration, and cell growth. uPA is composed of three independently folded domain structures: growth factor domain (GFD) (residue 1–43), kringle domain (residue 50–131), and serine protease domain (residue 159–411). Enzymatic digestion of uPA by plasmin generates an N-terminal fragment (ATF) that consists of the GFD and kringle domains and the low molecular weight fragment (LMW-uPA), possessing serine protease activity. uPAR is a glycosylphosphatidylinositol-anchored 35–55-kDa glycoprotein. It is generally accepted that uPA-mediated signaling requires prior binding to uPAR. However, the mechanism by which uPAR mediates signaling events is still to be fully elucidated. A human uPA sequence is cloned into the retroviral vector pBABEpuro at the *Sna*B I site.

Safety Consideration

Remember that you will be working with samples containing infectious virus. Follow the recommended NIH guidelines for all materials containing BSL-2 organisms. Always wear gloves, use filtered tips and work under a biosafety hood.

References

1. Morgenstern, J. P. and H Land. (1990) *Nuc. Acid Res.* 18, 3587-3596.
2. Coffin, J. M. and H. E. Varmus, *Retroviruses*, Cold Spring Harbor Press, NY.
3. Schuck S, Manninen A, Honsho M, Fullekrug J and Simons K. (2004) *Proc Natl Acad Sci U S A.* 101, 4912-4917.
4. Preissner, K. T., Kanse, S. M. and May, A. E. (2000) *Curr. Opin. Cell Biol.* 12, 621–628.

Recent Product Citations

1. Gutova, M. et al. (2008). Urokinase plasminogen activator and urokinase plasminogen activator receptor mediate human stem cell tropism to malignant solid tumors. *Stem Cells* **26**:1406-1413.

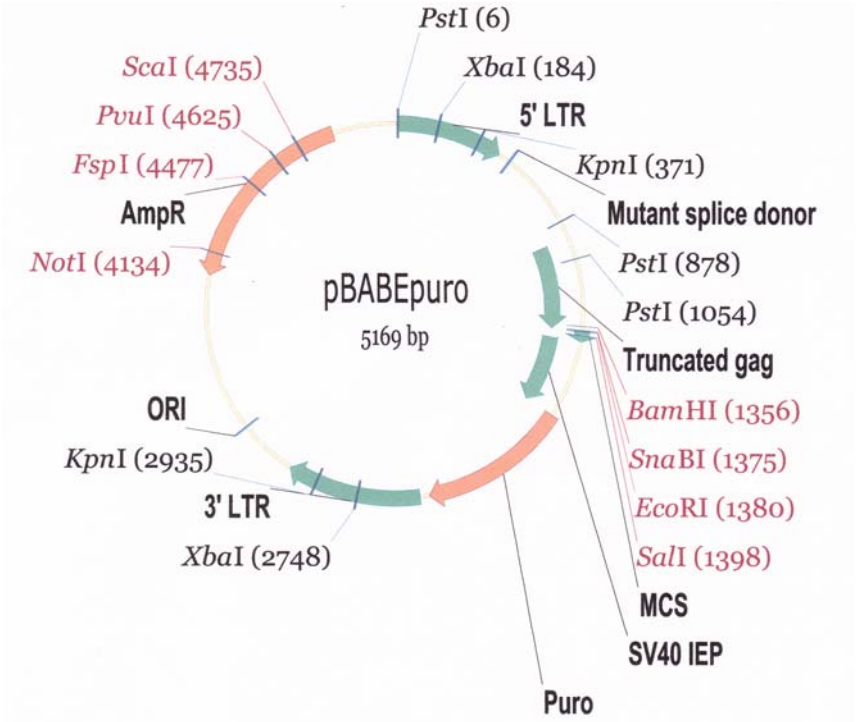

Figure 1. Retroviral Vector Map

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