pBABEpuro-c-Abl-TM Retroviral Vector

CATALOG NUMBER: RTV-403 **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).

The Src family of non-receptor protein tyrosine kinases (Src, Fyn, Lyn, Yes, Lck, Hck, c-Abl, etc) are key regulatory molecules in a variety of intracellular pathways. The c-Abl tyrosine kinase is ubiquitously expressed in mammalian cells and participates in growth factor and integrin signaling, cell cycle regulation, neurogenesis, responses to DNA damage and oxidative stress, and apoptosis. In proliferating cells, c-Abl is found in the cytoplasm and the nucleus. The nuclear c-Abl tyrosine kinase is cell cycle-regulated. Although in its N-terminal, like Src, c-Abl contains an SH3 and an SH2 Src homology domain, as well as a linker that connects the SH2 domain to the catalytic domain; immediately C-terminal to the catalytic domain of c-Abl is an extended region not present in the Src family members. This C-terminal region consists of a proline-rich sequence that binds several adapter proteins followed by a DNA binding domain and a region that interacts with both G-actin and F-actin. Recently, it was shown that c-Abl is cleaved by caspase substrate during apoptosis at three major sites: D565, D444, and D958. A D565A, D644A and D958A mutant of human c-Abl type 1 sequence is cloned into the retroviral vector pBABEpuro at the *Bam*H 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

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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. Van Etten, R. A. (1999) *Trends Cell Biol.* **9**, 179-186

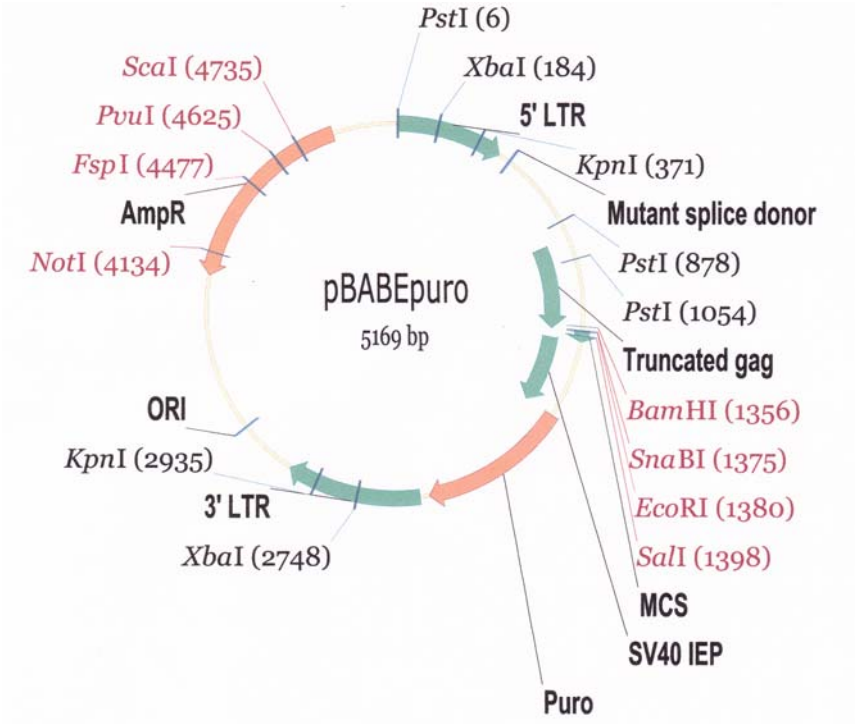

Figure 1. Retroviral Vector Map

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