pBABEpuro-myr-Rac1 Retroviral Vector

CATALOG NUMBER: RTV-201
STORAGE: -80°C

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).

Three members of the Rho family of small GTPases, Rho, Rac, and Cdc42, have been shown to play a crucial role in regulating the organization of the actin cytoskeleton in response to extracellular stimuli. Activation of Rho, Rac, and Cdc42 in quiescent Swiss 3T3 fibroblasts induces the assembly of filamentous actin into stress fibers, lamellipodia, and filopodia, respectively. In addition to these effects on the actin cytoskeleton, it has been shown that Rac and Cdc42 (and in some cells Rho) can activate JNK and p38 which leads to transcriptional activation. In fibroblast cells, Rho, Rac, and Cdc42 have each been implicated in cell cycle control. A membrane targeting form of Rac1, N-terminally myristoylation signal-attached Rac1 (myr-Rac1), is cloned into the retroviral vector pBABEpuro at the SnaB 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
Figure 1. Retroviral Vector Map

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Contact Information
Cell Biolabs, Inc.
7758 Arjons Drive
San Diego, CA 92126
Worldwide: +1 858-271-6500
USA Toll-Free: 1-888-CBL-0505
E-mail: tech@cellbiolabs.com
www.cellbiolabs.com

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