Product Data Sheet

pWZLneo-PI3K p110α-CAAX Retroviral Vector

CATALOG NUMBER: RTV-124 **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 pWZL 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 neomycin-resistance gene for the growth of infected mammalian cells to select stable cell lines (Figure 1).

Phosphoinositide 3-kinase lipid products play a central role in the regulation of a number of cellular processes. The PtdIns 3-P is a key lipid regulator of vesicle trafficking in all eukaryotic organisms, including yeast. The PtdIns(3,4)P_2 and PtdIns(3,4,5)P_3 are transiently produced in multi-cellular organisms in response to receptor activation by extracellular stimuli and, by acting as second messengers, orchestrate a large array of mitogenic, metabolic, and anti-apoptotic responses. Production of 3-phosphorylated phosphoinositides is dependent on the activity of phosphoinositide 3-kinases (PI3Ks). Heterodimeric PI3Ks, to which the prototypic PI3Kα (p85α/p110α) belongs, are composed of an adaptor subunit of 50-85 kDa containing two SH2 domains and a tightly bound 110-kDa catalytic subunit of either the p110α, p110ß, or p110δ Type. Upon receptor tyrosine kinase activation, the SH2 domains of the adaptor bring the heterodimer to the cell surface, thereby allowing the p110 catalytic subunit to phosphorylate its lipid substrate(s). A constitutively active form of the catalytic domain of human PI3K (p110α-CAAX) is cloned into the retroviral vector pWZLneo at the *Sna* BI site. The p110α-CAAX mutant has a Prenyl group binding site (CAAX box) for membrane association.

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. New Wymann, M. P. and Pirola, L. (1998) *Biochim. Biophys. Acta* 1436, 127-150.

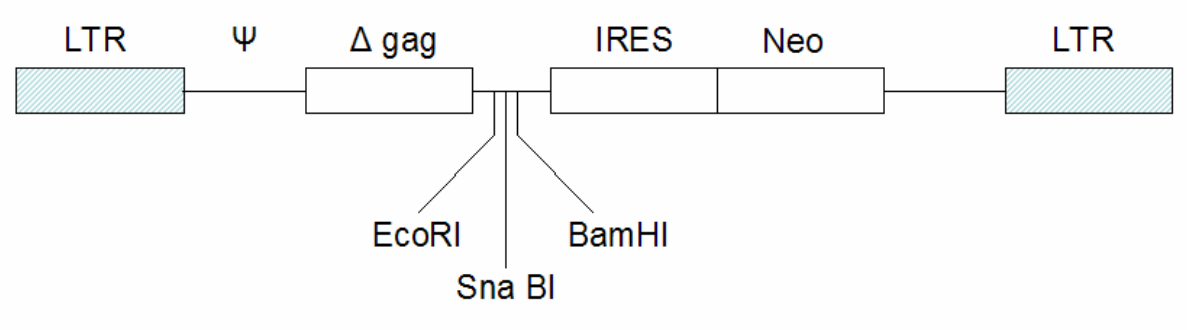

Figure 1. Schematic representation of pWZLneo retroviral vector

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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