

## pBABpuro-MKK3 Retroviral Vector (Constitutively Active)

**CATALOG NUMBER:** RTV-114

**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).

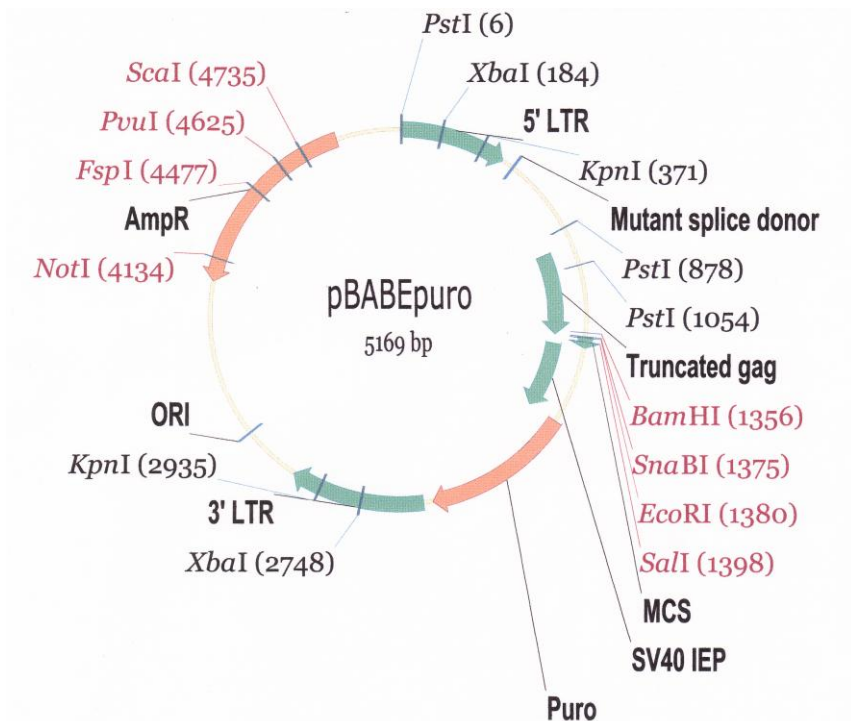
Mitogen-activated protein kinases (MAPK), including ERK1/2, p38, and JNK1/2, are important regulators of cell function. The ERK MAPKs are most frequently activated by mitogens, whereas the JNK and p38 MAPKs are strongly responsive to stress and inflammatory signals. The MAPKs are activated through multiple intracellular phosphorylation cascade events. The core unit includes MAPKKs and MAPKKs. MKK3 and MKK6 are two closely related dual-specificity protein kinases that activate p38. A constitutively active form of human MKK3 sequence is cloned into the retroviral vector pBABEpuro at the *Sna*B I site. The dual phosphorylation site S189/T193 in the MKK3 (E) mutant has been changed to E189/E193.

### **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. Derijard B., Raingeaud J., Barrett T., Wu I. H., Han J., Ulevitch R. J. and Davis R. J. (1995) *Science* 267:682-5.



**Figure 1.** Retroviral Vector Map

### **Recent Product Citation**

Huang, R. L. et al. (2014). Opposing TNF- $\alpha$ /IL-1 $\beta$ -and BMP-2-activated MAPK signaling pathways converge on Runx2 to regulate BMP-2-induced osteoblastic differentiation. *Cell Death Dis.* **5**:e1187.

### **Warranty**

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