

## pRetro-p53 (Human) shRNA Retroviral Vector

CATALOG NUMBER: RTV-410

STORAGE: -80°C

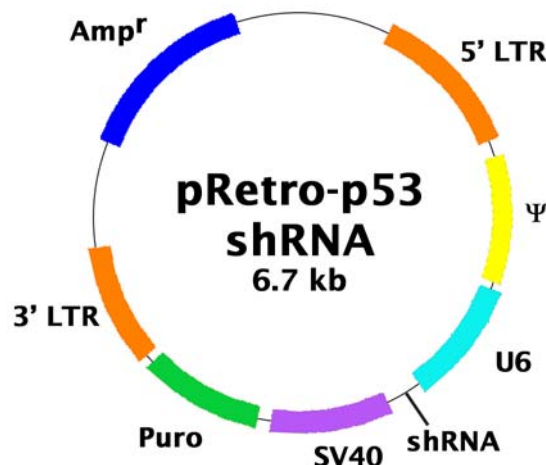
QUANTITY AND CONCENTRATION: 100 µL of bacterial glycerol stock

### 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 p53 is a tumor suppressor; mutations in p53 are found in most tumor types. p53 tumor suppressor is normally found at low levels, but when DNA damage is sensed, p53 levels rise and initiate protective measures. p53 binds to many regulatory sites in the genome and begins production of proteins that halt cell division until the damage is repaired. If the damage is too severe, p53 initiates the process of programmed cell death, or apoptosis, which directs the cell to commit suicide, permanently removing the damage. Besides tumor suppressor, p53 forms a barrier to the generation of induced pluripotent stem cells (iPS), and knockdown of p53 by siRNA can significantly improve the reprogramming efficiency during iPS generation.

The vector contains an shRNA to human p53 and puromycin resistant gene (Figure 1).



**Figure 1.** Schematic representation of pRetro-p53 shRNA (Human) retroviral vector.

## **Human p53 shRNA Hairpin Structure:**

GACTCCAGTGGTAATCTACTTCAAGAGAGTAGATTACACTGGAGTCTTTTT  
(Human p53 sense)                      (Hairpin)                      (Human p53 antisense)

## **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. Zhang W., Guo X. Y., Hu G. Y., Liu W. B., Shay J. W. and Deisseroth A. B. (1994) *EMBO J.* **13**, 2535-44.
5. Hong, H. et al. (2009) *Nature* **460**, 1132-1135.

## **Warranty**

These products are warranted to perform as described in their labeling and in Cell Biolabs literature when used in accordance with their instructions. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THIS EXPRESSED WARRANTY AND CELL BIOLABS DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR PARTICULAR PURPOSE. CELL BIOLABS's sole obligation and purchaser's exclusive remedy for breach of this warranty shall be, at the option of CELL BIOLABS, to repair or replace the products. In no event shall CELL BIOLABS be liable for any proximate, incidental or consequential damages in connection with the products.

***This product is for RESEARCH USE ONLY; not for use in diagnostic procedures.***

## **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](mailto:tech@cellbiolabs.com)  
[www.cellbiolabs.com](http://www.cellbiolabs.com)

©2009: Cell Biolabs, Inc. - All rights reserved. No part of these works may be reproduced in any form without permissions in writing.