

## pMXs Retroviral Vector

**CATALOG NUMBER:** RTV-010

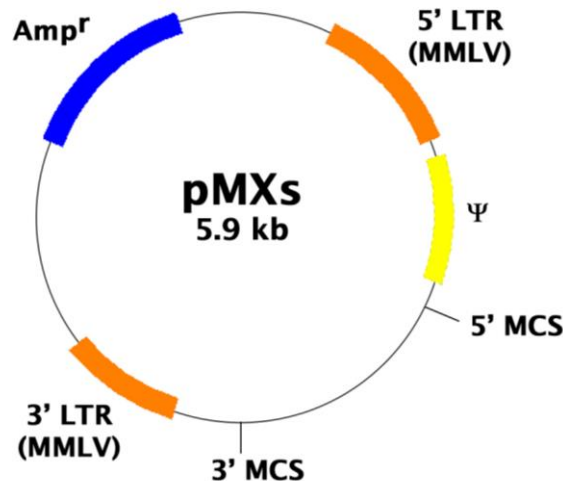
**STORAGE:** -20°C

**QUANTITY AND CONCENTRATION:** 10 µg at 0.25 µg/µL in TE

### Background

Retroviruses are efficient tools for delivering heritable genes into the genome of dividing cells. Cell Biolabs' pMXs retroviral vector is based on Moloney murine leukemia virus (MMLV). The vector provides the viral package signal, transcription and processing elements, and MCS for cloning of a target gene. The viral *env* gene, produced by the package cell line, encodes the envelope 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 ampicillin-resistance gene, MMLV LTRs, package signal and MCS for cloning of your gene of interest (Figure 1).



**Figure 1.** Schematic representation of pMXs retroviral vector.

5'-MCS:

- Enzyme Sites: 5'-PacI, BamHI, EcoRI, HindIII-3'
- MCS Sequence: TTAATTAAGGATCCCAGTGTGGTGGTACGGGAATTCAAGCTTGATC

3'-MCS:

- Enzyme Sites: 5'-EcoRI, XhoI, NotI, SalI-3'
- MCS Sequence: GGCGGAATTCCAGCTGAGCGCCGGTCGCTACCATTACCAGTTGGTCTGGTGTCAAAA

ATAATAATAACCGGGCAGGCCATGTCTGCCCCGTAATTCGCGTAAGGAAATCCATTATG  
TACTATTTAAACTCGAGCGGCCCGCCAGCACAGTGGTCGACGATAA

*Note: For optimal expression, both 5' MCS and 3' MCS should be used to clone gene of interest and replace the stuffer sequence (partial LacZ) between them.*

### **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.

### **Reference**

1. Kitamura T., *et al.*, (2003) *Exp. Hematol.* **31**, 1007-1014.

### **Recent Product Citations**

1. Elmarsafawi, A.G. *et al.* (2023). Modulating the polyamine-hypusine axis controls generation of CD8+ tissue resident memory T cells. *JCI Insight*. doi: 10.1172/jci.insight.169308.
2. Kakihana, T. *et al.* (2021). The optineurin/TIA1 pathway inhibits aberrant stress granule formation and reduces ubiquitinated TDP-43. *iScience*. doi: 10.1016/j.isci.2021.102733.
3. Mihara, Y. *et al.* (2020). An integrated genomic approach identifies HOXC8 as an upstream regulator in ovarian endometrioma. *J Clin Endocrinol Metab*. doi: 10.1210/clinem/dgaa618.
4. Cangkruma, M. *et al.* (2020). A paracrine activin A-mDia2 axis promotes squamous carcinogenesis via fibroblast reprogramming. *EMBO Mol Med*. doi: 10.15252/emmm.201911466.
5. Xia, X. *et al.* (2020). Reprogrammed astrocytes display higher neurogenic competence, migration ability and cell death resistance than reprogrammed fibroblasts. *Transl Neurodegener.* **9**:6. doi: 10.1186/s40035-020-0184-6.
6. Torres-Mejía, E. *et al.* (2020). Sox2 controls Schwann cell self-organization through fibronectin fibrillogenesis. *Sci Rep.* **10**(1):1984. doi: 10.1038/s41598-019-56877-y.
7. Bui, P.L. *et al.* (2019). Template Activating Factor-I  $\alpha$  Regulates Retroviral Silencing during Reprogramming. *Cell Rep.* **29**(7):1909-1922.e5. doi: 10.1016/j.celrep.2019.10.010.
8. Inoue, Y. *et al.* (2019). Direct conversion of fibroblasts into urothelial cells that may be recruited to regenerating mucosa of injured urinary bladder. *Sci Rep.* **9**(1):13850. doi: 10.1038/s41598-019-50388-6.
9. Xu, J. *et al.* (2019). Generation of pig induced pluripotent stem cells using an extended pluripotent stem cell culture system. *Stem Cell Res Ther.* **10**(1):193. doi: 10.1186/s13287-019-1303-0.
10. Kang, P.J. *et al.* (2019). Glycine decarboxylase regulates the maintenance and induction of pluripotency via metabolic control. *Metab Eng.* **53**:35-47. doi: 10.1016/j.ymben.2019.02.003.
11. Ma, K. *et al.* (2018). Direct conversion of mouse astrocytes into neural progenitor cells and specific lineages of neurons. *Transl Neurodegener.* **7**:29. doi: 10.1186/s40035-018-0132-x.
12. Bose, R.J. *et al.* (2018). Bioengineered stem cell membrane functionalized nanocarriers for therapeutic targeting of severe hindlimb ischemia. *Biomaterials.* **185**:360-370. doi: 10.1016/j.biomaterials.2018.08.018.
13. Wang, L. *et al.* (2017). Enhanced human somatic cell reprogramming efficiency by fusion of the MYC transactivation domain and OCT4. *Stem Cell Res.* **25**:88-97. doi: 10.1016/j.scr.2017.10.014.
14. Mühlhäuse, W.W. *et al.* (2017). Light-Regulated Protein Kinases Based on the CRY2-CIB1 System. *Methods Mol Biol.* **1596**:257-270. doi: 10.1007/978-1-4939-6940-1\_16.

15. Stelzl, T. et al. (2017). Glycans in the intestinal peptide transporter PEPT1 contribute to function and protect from proteolysis. *Am J Physiol Gastrointest Liver Physiol*. ajpgi.00343.2016. doi: 10.1152/ajpgi.00343.2016.
16. Tada, H. et al (2017). Reprogrammed chondrocytes engineered to produce IL-12 provide novel ex vivo immune-gene therapy for cancer. *Immunotherapy*. **9**(3):239-248. doi: 10.2217/imt-2016-0004.
17. Fukumura, K. et al. (2016). Genomic characterization of primary central nervous system lymphoma. *Acta Neuropathol*. doi:10.1007/s00401-016-1536-2.
18. Kishida, T. et al. (2015). Reprogrammed functional brown adipocytes ameliorate insulin resistance and dyslipidemia in diet-induced obesity and type 2 diabetes. *Stem Cell Reports*. doi:10.1016/j.stemcr.2015.08.007.
19. Nakamura, H. et al. (2015). Genomic spectra of biliary tract cancer. *Nat Genet*. **47**:1003-10.
20. Yamamoto, K. et al. (2015). Direct conversion of human fibroblasts into functional osteoblasts by defined factors. *Proc Natl Acad Sci U S A*. doi:10.1073/pnas.1420713112.
21. Lee, H. K. et al. (2015). Nuclear factor IC regulates E-cadherin via control of KLF4 in breast cancer. *BMC Cancer*. **15**:113.
22. Rao, F. et al. (2015). Inositol pyrophosphates promote tumor growth and metastasis by antagonizing liver kinase B1. *Proc Natl Acad Sci U S A*. **112**:1773-1778.
23. Arai, Y. et al. (2014). Fibroblast growth factor receptor 2 tyrosine kinase fusions define a unique molecular subtype of cholangiocarcinoma. *Hepatology*, **59**: 1427–1434.
24. Tang, Y. et al. (2014). Differential effects of Akt isoforms on somatic cell reprogramming. *J Cell Sci*. **127**:3998-4008.
25. Miyoshi, N. et al. (2010). Defined factors induce reprogramming of gastrointestinal cancer cells. *PNAS* **107**:40-45.

### **License Information**

This product is licensed from the University of Tokyo.

### **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.  
5628 Copley Drive  
San Diego, CA 92111  
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)

©2008-2024: Cell Biolabs, Inc. - All rights reserved. No part of these works may be reproduced in any form without permissions in writing.