

pMXs-Puro Retroviral Vector

CATALOG NUMBER: RTV-012

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-Puro 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).

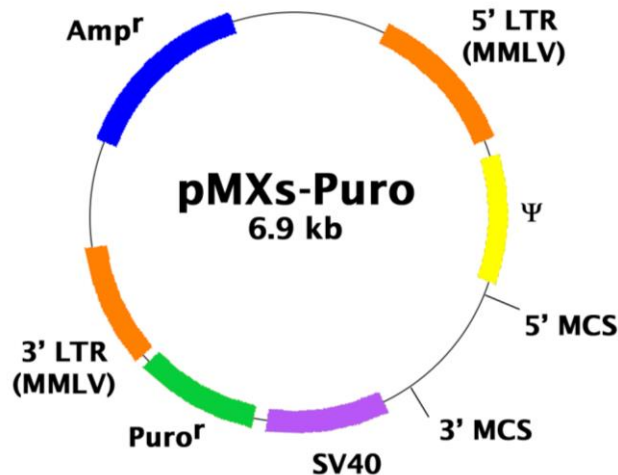


Figure 1. Schematic representation of pMXs-Puro retroviral vector.

5'-MCS:

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

3'-MCS:

- Enzyme Sites: 5'-EcoRI, XhoI, NotI-3'
- MCS Sequence:
GGCGGAATTCAGCTGAGCGCCGGTTCGCTACCATTACCAGTTGGTCTGGTGTCAAAA
ATAATAATAACCGGGCAGGCCATGTCTGCCCGTATTCGCGTAAGGAAATCCATTATG
TACTATTTAAACTCGAGCGGCCCGCCAGCACAGTGGTCGAC---SV40---puro-GTCGAC---

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. Berková, L. et al. (2023). Terminal differentiation of villus tip enterocytes is governed by distinct Tgfb β superfamily members. *EMBO Rep.* **24**(9):e56454. doi: 10.15252/embr.202256454.
2. Hahn, A.M. et al. (2023). A monoclonal Trd chain supports the development of the complete set of functional $\gamma\delta$ T cell lineages. *Cell Rep.* **42**(3):112253. doi: 10.1016/j.celrep.2023.112253.
3. Yoshioka, S. et al. (2022). Identification and Characterization of a Novel Dual Inhibitor of Indoleamine 2,3-dioxygenase 1 and Tryptophan 2,3-dioxygenase. *Int J Tryptophan Res.* doi: 10.1177/11786469221138456.
4. Caravia, X.M. et al. (2022). Loss of function of the nuclear envelope protein LEMD2 causes DNA damage-dependent cardiomyopathy. *J Clin Invest.* **132**(22):e158897. doi: 10.1172/JCI158897.
5. Savill, K.M.Z. et al. (2022). Distinct resistance mechanisms arise to allosteric vs. ATP-competitive AKT inhibitors. *Nat Commun.* **13**(1):2057. doi: 10.1038/s41467-022-29655-0.
6. Hirobe, S. et al. (2022). The Effects of Chimeric Antigen Receptor (CAR) Hinge Domain Post-Translational Modifications on CAR-T Cell Activity. *Int J Mol Sci.* **23**(7):4056. doi: 10.3390/ijms23074056.
7. Saito, T. et al. (2022). Molecular Mechanisms Underlying the Cellular Entry and Host Range Restriction of Lujo Virus. *mBio.* **13**(1):e0306021. doi: 10.1128/mbio.03060-21.
8. Zhang, H. et al. (2021). Feedback regulation of Notch signaling and myogenesis connected by MyoD-Dll1 axis. *PLoS Genet.* **17**(8):e1009729. doi: 10.1371/journal.pgen.1009729.
9. Maeda, R. et al. (2021). RNA decay in processing bodies is indispensable for adipogenesis. *Cell Death Dis.* **12**(4):285. doi: 10.1038/s41419-021-03537-7.
10. Ramirez-Martinez, A. et al. (2021). The nuclear envelope protein Net39 is essential for muscle nuclear integrity and chromatin organization. *Nat Commun.* **12**(1):690. doi: 10.1038/s41467-021-20987-x.
11. Zhang, H. et al. (2020). Human myotube formation is determined by MyoD–Myomixer/Myomaker axis. *Sci. Adv.* **6**(51):eabc4062. doi: 10.1126/sciadv.abc4062.
12. Jongsma, M.L.M. et al. (2020). The SPPL3-Defined Glycosphingolipid Repertoire Orchestrates HLA Class I-Mediated Immune Responses. *Immunity.* doi: 10.1016/j.immuni.2020.11.003.
13. Komorizono, R. et al. (2020). Evolutionary Selection of the Nuclear Localization Signal in the Viral Nucleoprotein Leads to Host Adaptation of the Genus Orthobornavirus. *Viruses.* **12**(11):E1291. doi: 10.3390/v12111291.
14. Wang, L. et al. (2020). Down-regulation of Beclin1 promotes direct cardiac reprogramming. *Sci Transl Med.* **12**(566):eaay7856. doi: 10.1126/scitranslmed.aay7856.
15. Takadate, Y. et al. (2020). Receptor-Mediated Host Cell Preference of a Bat-Derived Filovirus, Lloviu Virus. *Microorganisms.* **8**(10):E1530. doi: 10.3390/microorganisms8101530.

16. Yamano, K. et al. (2020). Critical role of mitochondrial ubiquitination and the OPTN-ATG9A axis in mitophagy. *J Cell Biol.* **219**(9):e201912144. doi: 10.1083/jcb.201912144.
17. Zheng, J. et al. (2020). Long-term expansion of directly reprogrammed keratinocyte-like cells and in vitro reconstitution of human skin. *J Biomed Sci.* **27**(1):56. doi: 10.1186/s12929-020-00642-1.
18. Tanaka, Y. et al. (2020). LPIAT1/MBOAT7 depletion increases triglyceride synthesis fueled by high phosphatidylinositol turnover. *Gut.* pii: gutjnl-2020-320646. doi: 10.1136/gutjnl-2020-320646.
19. Yasuda, S. et al. (2020). Stress- and ubiquitylation-dependent phase separation of the proteasome. *Nature.* doi: 10.1038/s41586-020-1982-9.
20. Takadate, Y. et al. (2020). Niemann-Pick C1 Heterogeneity of Bat Cells Controls Filovirus Tropism. *Cell Rep.* **30**(2):308-319.e5. doi: 10.1016/j.celrep.2019.12.042.
21. Tanaka, M. et al. (2020). Generation of Rat Monoclonal Antibodies Specific for Human Stromal Cell-Derived Factor-2. *Monoclon Antib Immunodiagn Immunother.* doi: 10.1089/mab.2019.0043.
22. Kanemaru, K. et al. (2019). Clec10a regulates mite-induced dermatitis. *Sci Immunol.* **4**(42). pii: eaax6908. doi: 10.1126/sciimmunol.aax6908.
23. Koyano, F. et al. (2019). Parkin-mediated ubiquitylation redistributes MITOL/March5 from mitochondria to peroxisomes. *EMBO Rep.* doi: 10.15252/embr.201947728.
24. Anisimov, S. et al. (2019). G3BP1 inhibits ubiquitinated protein aggregations induced by p62 and USP10. *Sci Rep.* **9**(1):12896. doi: 10.1038/s41598-019-46237-1.
25. Hirose, Y. et al. (2019). Whole-Genome Analysis of Human Papillomavirus Type 16 Prevalent in Japanese Women with or without Cervical Lesions. *Viruses.* **11**(4). pii: E350. doi: 10.3390/v11040350.
26. Jastrzebski, S. et al. (2019). Protease-Activated Receptor 1 Deletion Causes Enhanced Osteoclastogenesis in Response to Inflammatory Signals through a Notch2-Dependent Mechanism. *J Immunol.* pii: ji1801032. doi: 10.4049/jimmunol.1801032.
27. Hashimoto, H. et al. (2019). Cardiac Reprogramming Factors Synergistically Activate Genome-wide Cardiogenic Stage-Specific Enhancers. *Cell Stem Cell.* pii: S1934-5909(19)30121-3. doi: 10.1016/j.stem.2019.03.022.
28. Princely Abudu, Y. et al. (2019). NIPSNAP1 and NIPSNAP2 Act as "Eat Me" Signals for Mitophagy. *Dev Cell.* pii: S1534-5807(19)30224-2. doi: 10.1016/j.devcel.2019.03.013.
29. Hafner-Bratkovič, I. et al. (2018). NLRP3 lacking the leucine-rich repeat domain can be fully activated via the canonical inflammasome pathway. *Nat Commun.* **9**(1):5182. doi: 10.1038/s41467-018-07573-4.
30. Morel, A. et al. (2018). Methods to Investigate the Role of Rho GTPases in Osteoclast Function. *Methods Mol Biol.* **1821**:219-233. doi: 10.1007/978-1-4939-8612-5_15.

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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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