

pCMV-Gag-Pol Vector

CATALOG NUMBER: RV-111

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. Moloney Murine Leukemia Virus (MMLV)-based retroviral vector system is the most commonly used gene transfer vehicle. pCMV-Gag-Pol expresses the retroviral structure proteins under the control of the CMV immediate-early promoter. The gag region encodes genes which comprise the capsid proteins; the pol region encodes the reverse transcriptase and integrase proteins.

Retrovirus can be produced using one of the following methods:

- 1) Transfection of a retrovirus packaging cell line with a retrovirus expression vector. Packaging cell lines usually stably express gag, pol and env genes. For example, transfection of Plat-E packaging cell line (Cat. # RV-101) with a pMXs vector would produce an ecotropic retrovirus.
- 2) Cotransfection of a host cell with plasmids containing LTRs, Gag, Pol, Env. For example, cotransfection of 293RTV (Cat.# RV-100) with pMXs, pCMV-Gag-Pol (Cat. # RV-111) and pCMV-VSV-G (Cat. # RV-110) would produce VSVG-pseudotyped retrovirus.

Note: We recommend cotransfection of expression vector:gag-pol vector:envelope vector at the following plasmid ratios:

- (a) For ecotropic or amphotropic retrovirus, 3:1:1
- (b) For VSVG-pseudotyped retrovirus, 3:1:0.5

The pCMV-Gag-Pol vector contains the ampicillin-resistance gene for propagation and antibiotic selection in bacteria (Figure 1).

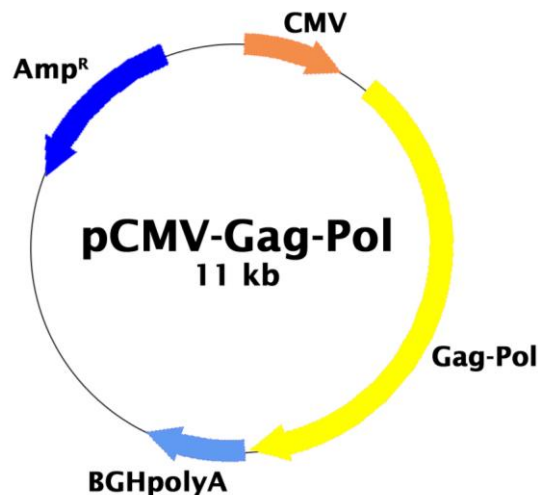


Figure 1. Schematic representation of pCMV-Gag-Pol vector.

Plasmid Digestion

Single digestion: XbaI or SacII

Double digestion: NotI and XbaI yield 7.2 kb and 3.5 kb

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. Miller, A. D. & Baltimore, C. (1986) *Mol. Cell. Biol.* **6**:2895–2902.
2. Mann, R., Mulligan, R. C. and Baltimore, D. (1983) *Cell* **33**:153–159.
3. Morita, S., Kojim, T., and Kitamura, T. (2000) *Gene Therapy* **7**: 1063-1066.

Recent Product Citations

1. Ebner, J. et al. (2023). ABCC1 and glutathione metabolism limit the efficacy of BCL-2 inhibitors in acute myeloid leukemia. *Nat Commun.* **14**(1):5709. doi: 10.1038/s41467-023-41229-2.
2. Simpson, L.M. et al. (2023). An affinity-directed phosphatase, AdPhosphatase, system for targeted protein dephosphorylation. *Cell Chem Biol.* **30**(2):188-202.e6. doi: 10.1016/j.chembiol.2023.01.003.
3. Simpson, J. et al. (2022). Cross-species transmission of an ancient endogenous retrovirus and convergent co-option of its envelope gene in two mammalian orders. *PLoS Genet.* **18**(10):e1010458. doi: 10.1371/journal.pgen.1010458.
4. Crowe, M.S. et al. (2021). RAF-mutant melanomas differentially depend on ERK2 over ERK1 to support aberrant MAPK pathway activation and cell proliferation. *Mol Cancer Res.* doi: 10.1158/1541-7786.MCR-20-1022.
5. Jia, R. et al. (2021). The ubiquitin isopeptidase USP10 deubiquitinates LC3B to increase LC3B levels and autophagic activity. *J Biol Chem.* doi: 10.1016/j.jbc.2021.100405.
6. Simpson, L.M. et al. (2020). Inducible Degradation of Target Proteins through a Tractable Affinity-Directed Protein Missile System. *Cell Chem Biol.* S2451-9456(20)30236-1. doi: 10.1016/j.chembiol.2020.06.013.
7. Tachie-Menson, T. et al. (2020). Characterisation of the biochemical and cellular roles of native and pathogenic amelogenesis imperfecta mutants of FAM83H. *Cell Signal.* doi: 10.1016/j.cellsig.2020.109632.
8. Wu, K.Z.L. et al. (2019). Pathogenic FAM83G palmoplantar keratoderma mutations inhibit the PAWS1:CK1 α association and attenuate Wnt signalling. *Wellcome Open Res.* **4**:133. doi: 10.12688/wellcomeopenres.15403.1.
9. Hennessy, E.J. et al. (2019). The long noncoding RNA CHROME regulates cholesterol homeostasis in primates. *Nature Metabolism.* **1**:98–110. doi: 10.1038/s42255-018-0004-9.
10. Rajavelu, A. et al. (2018). Chromatin-dependent allosteric regulation of DNMT3A activity by MeCP2. *Nucleic Acids Res.* **46**(17):9044-9056. doi: 10.1093/nar/gky715.
11. Marazioti, A. et al. (2018). Myeloid-derived interleukin-1 β drives oncogenic KRAS-NF- κ B addiction in malignant pleural effusion. *Nat Commun.* **9**(1):672. doi: 10.1038/s41467-018-03051-z.

12. Macartney, T. J. et al. (2017). An Affinity-directed Protein Missile (AdPROM) System for Targeted Destruction of Endogenous Proteins. *Bio-protocol*. **7**(22): e2614. doi: 10.21769/BioProtoc.2614.
13. Giannou AD, et al. (2017). NRAS destines tumor cells to the lungs. *EMBO Mol Med*. pii: e201606978. doi: 10.15252/emmm.201606978.
14. Mackay, L. K. et al. (2016). Hobit and Blimp1 instruct a universal transcriptional program of tissue residency in lymphocytes. *Science*. **352**:459-463.
15. Okamoto, K. et al. (2012). Dengue virus strain DEN2 16681 utilizes a specific glycochain of syndecan-2 proteoglycan as a receptor. *J.Gen. Virol*. **93**:761-770.

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
www.cellbiolabs.com

©2009-2024: Cell Biolabs, Inc. - All rights reserved. No part of these works may be reproduced in any form without permissions in writing.