# pCMV-Gag-Pol Vector

**CATALOG NUMBER:** RV-111 **STORAGE:** -20ºC

**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).

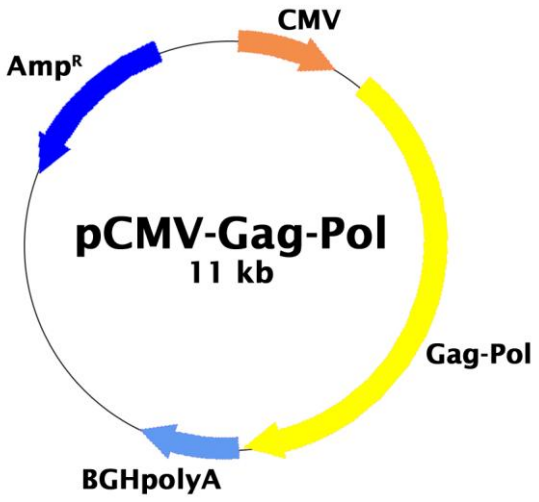


**Figure 1.** Schematic representation of pCMV-Gag-Pol vector.

## Plasmid Digestion

Single digestion: XbaI or SacII

Double digestion: NotI and XbaI yield 7.2 kb and 3.2 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. Mackay, L. K. et al. (2016). Hobit and Blimp1 instruct a universal transcriptional program of tissue residency in lymphocytes. *Science.* **352**:459-463.
2. 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.


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