

CSK Recombinant Adenovirus (Dominant Negative)

CATALOG NUMBER: ADV-406

STORAGE: -80°C

QUANTITY AND CONCENTRATION: 50 µl, 1×10^{11} VP/mL in TBS containing 10% Glycerol

Background

Recombinant adenoviruses have tremendous potential in both research and therapeutic applications. There are numerous advantages in using an adenovirus to introduce genetic material into host cells. The permissive host cell range is very wide. The virus has been used to infect many mammalian cell types (both replicative and non-replicative) for high expression of the recombinant protein. Recombinant adenoviruses are especially useful for gene transfer and protein expression in cell lines that have low transfection efficiency with liposome. After entering cells, the virus remains epichromosomal (i.e. does not integrate into the host chromosome so does not activate or inactivate host genes). Recently, recombinant adenoviruses have been used to deliver RNAi into cells.

The Src family of protein tyrosine kinases (Src, Fyn, Lyn, Yes, Lck, Hck, etc) are key regulatory molecules in a variety of intracellular pathways. Src is regulated by tyrosine phosphorylation at two sites with opposite effects. Phosphorylation of Tyr 416 in the activation loop of the kinase domain upregulates the enzyme; Phosphorylation of Tyr 527 in the C-terminal by CSK (C-terminal Src Kinase) inhibits the enzyme activity. The activity of CSK is essential to maintain Src inactive. The provided recombinant adenovirus contains dominant negative form of human CSK sequence. In the CSK (KM) mutant, a critical Lys residue (K222) in the ATP-binding domain has been changed to Met.

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.

Methods

The appropriate amount of viruses used for infecting cells is critical for the outcome of your experiments. If not enough virus is used, it will not give 100% of infection. If too much virus is used, it will cause cytotoxicity or other undesired effects. The amount of adenovirus cell surface receptors vary greatly among different cell types therefore the optimal concentration differs dramatically between cell types. A range of 10-200 MOI (multiplicity of infection) is used for most cell lines, but up to 1000 MOI may be used for lymphoid cell lines.

Traditionally, Infectivity particles are measured in culture by a plaque-forming unit assay (PFU) that scores the number of viral plaques as a function of dilution. In contrast to the 10-day infection of a classical plaque assay, Cell Biolabs' QuickTiter™ Adenovirus Titer Immunoassay Kit (Cat. #VPK-109) only requires 2-day infection, and there is no agar overlay step. The kit antibody against hexon protein recognizes all serotypes of adenovirus by immunocytochemistry (see Flow Chart).

Seed 293 cells in 24 or 12-well plate for 1 hr



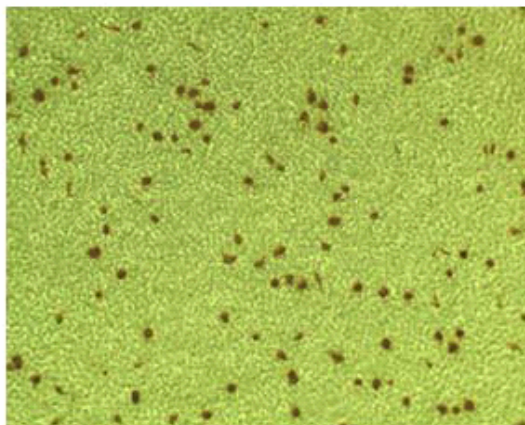
Prepare Adenovirus Serial Dilutions
and Infect 293 cells for 48 hrs



Anti-Hexon Immunocytochemistry Staining



Count Positive Cells and Calculate Viral Titer



References

1. Bett AJ, Haddara W, Prevec L and Graham FL. (1994) *Proc Natl Acad Sci U S A*. 91:8802-6.
2. Robbins, P. D., Tahara, H., and Ghivizzani, S. C. (1998) *Trends Biotechnol.* 16, 35-40.
3. Huang, S., Stupack, D., Mathias, P., Wang, Y., and Nemerow, G. (1997) *Proc. Natl. Acad. Sci. U S A*. 94, 8156-8161.
4. Bergelson, J. M., J. A. Cunningham, G. Droguett, E. A. Kurt-Jones, A. Krithivas, J. S. Hong, M. S. Horwitz, R. L. Crowell, and R. W. Finberg. (1997) *Science* 275:1320-1323.
5. Hunter T. (1987) *Cell* 50:823-9.

Recent Product Citations

1. Koh, W. et al. (2009). Formation of endothelial lumens requires a PKC-, Src-, Pak-, and Raf-kinase dependent signaling cascade downstream of Cdc42 activation. *J. Cell Sci.* **122**:1812-1822.

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