



# ACTR-IC (V-18): sc-54159

## BACKGROUND

ACTR-IC (Activin receptor type 1C), also referred to as Activin receptor-like kinase 7 (ALK-7), is a type I serine/threonine kinase receptor. ACTA-IC contains an extracellular binding domain, an intracellular serine/threonine kinase domain preceded by a GS box and a transmembrane domain. It is expressed throughout the digestive and central nervous system and localizes to the cell surface. Four ACTR-IC transcripts are generated by alternative splicing. Transcript 1 is the functional full length receptor, transcript 2 lacks a complete receptor binding domain and transcripts 3 and 4 are soluble proteins that lack a transmembrane domain. ACTR-IC is a receptor for Activin AB, Activin B and Nodal. In pancreatic cells, ACTR-IC forms a complex with Activin receptor type IIB (ACTR-IIB). The kinase domain of ACTR-IC can induce Smad2 and Smad3 signalling pathways. In some cell lines, ACTR-IC overexpression induces apoptosis and inhibits proliferation.

## REFERENCES

- Rydén, M., Imamura, T., Jörnvall, H., Belluardo, N., Neveu, I., Trupp, M., Okadome, T., ten Dijke, P. and Ibáñez, C.F. 1997. A novel type I receptor serine-threonine kinase predominantly expressed in the adult central nervous system. *J. Biol. Chem.* 271: 30603-30609.
- Kim, B.C., van Gelder, H., Kim, T.A., Lee, H.J., Baik, K.G., Chun, H.H., Lee, D.A., Choi, K.S. and Kim, S.J. 2004. Activin receptor-like kinase-7 induces apoptosis through activation of MAPKs in a Smad3-dependent mechanism in hepatoma cells. *J. Biol. Chem.* 279: 28458-28465.
- DaCosta Byfield, S., Major, C., Laping, N.J. and Roberts, A.B. 2004. SB-505124 is a selective inhibitor of transforming growth factor  $\beta$  type I receptors ALK4, ALK5, and ALK7. *Mol. Pharmacol.* 65: 744-752.
- Xu, G., Zhong, Y., Munir, S., Yang, B.B., Tsang, B.K. and Peng, C. 2004. Nodal induces apoptosis and inhibits proliferation in human epithelial ovarian cancer cells via Activin receptor-like kinase 7. *J. Clin. Endocrinol. Metab.* 89: 5523-5534.
- Munir, S., Xu, G., Wu, Y., Yang, B., Lala, P.K. and Peng, C. 2004. Nodal and ALK7 inhibit proliferation and induce apoptosis in human trophoblast cells. *J. Biol. Chem.* 279: 31277-31286.
- Tojo, M., Hamashima, Y., Hanyu, A., Kajimoto, T., Saitoh, M., Miyazono, K., Node, M. and Imamura, T. 2005. The ALK-5 inhibitor A-83-01 inhibits Smad signaling and epithelial-to-mesenchymal transition by transforming growth factor  $\beta$ . *Cancer Sci.* 96: 791-800.
- Yeh, L.C., Tsai, A.D. and Lee, J.C. 2005. Cartilage-derived morphogenetic proteins induce osteogenic gene expression in the C2C12 mesenchymal cell line. *J. Cell. Biochem.* 95: 173-188.
- Zhang, N., Kumar, M., Xu, G., Ju, W., Yoon, T., Xu, E., Huang, X., Gaisano, H., Peng, C. and Wang, Q. 2006. Activin receptor-like kinase 7 induces apoptosis of pancreatic  $\beta$  cells and  $\beta$  cell lines. *Diabetologia* 49: 506-518.
- Xu, G., Zhou, H., Wang, Q., Auersperg, N. and Peng, C. 2006. Activin receptor-like kinase 7 induces apoptosis through upregulation of Bax and downregulation of Xiap in normal and malignant ovarian epithelial cell lines. *Mol. Cancer Res.* 4: 235-246.

## CHROMOSOMAL LOCATION

Genetic locus: Acvr1c (mouse) mapping to 2 C1.1.

## SOURCE

ACTR-IC (V-18) is an affinity purified goat polyclonal antibody raised against a peptide mapping within a cytoplasmic domain of ACTR-IC of mouse origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-54159 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

ACTR-IC (V-18) is recommended for detection of ACTR-IC of mouse and rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for ACTR-IC siRNA (m): sc-155862, ACTR-IC shRNA Plasmid (m): sc-155862-SH and ACTR-IC shRNA (m) Lentiviral Particles: sc-155862-V.

Molecular Weight of ACTR-IC: 55 kDa.

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

## STORAGE

Store at 4° C, **\*\*DO NOT FREEZE\*\***. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) or our catalog for detailed protocols and support products.