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ACVR1 Antibody

Catalog # ASC10761

Product Information

Application	WB, E
Primary Accession	Q04771
Other Accession	NP_001096, 4501895
Reactivity	Human, Mouse
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	57153
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	ACVR1 antibody can be used for detection of ACVR1 by Western blot at 1 g/mL.

Additional Information

Gene ID	90
Other Names	Activin receptor type-1, 2.7.11.30, Activin receptor type I, ACTR-I, Activin receptor-like kinase 2, ALK-2, Serine/threonine-protein kinase receptor R1, SKR1, TGF-B superfamily receptor type I, TSR-I, ACVR1, ACVRLK2
Target/Specificity	ACVR1; At least four isoforms of ACVR1 are known to exist. This antibody is predicted to have no cross-reactivity to ACVR1B or ACVR1C.
Reconstitution & Storage	ACVR1 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.
Precautions	ACVR1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	ACVR1
Synonyms	ACVRLK2
Function	Bone morphogenetic protein (BMP) type I receptor that is involved in a wide variety of biological processes, including bone, heart, cartilage, nervous, and reproductive system development and regulation (PubMed:20628059, PubMed:22977237). As a type I receptor, forms heterotetrameric receptor complexes with the type II receptors AMHR2, ACVR2A or ACVR2B (PubMed:17911401). Upon binding of ligands such as BMP7 or GDF2/BMP9 to

	the heteromeric complexes, type II receptors transphosphorylate ACVR1 intracellular domain (PubMed:25354296). In turn, ACVR1 kinase domain is activated and subsequently phosphorylates SMAD1/5/8 proteins that transduce the signal (PubMed:9748228). In addition to its role in mediating BMP pathway-specific signaling, suppresses TGFbeta/activin pathway signaling by interfering with the binding of activin to its type II receptor (PubMed:17911401). Besides canonical SMAD signaling, can activate non-canonical pathways such as p38 mitogen-activated protein kinases/MAPKs (By similarity). May promote the expression of HAMP, potentially via its interaction with BMP6 (By similarity).
Cellular Location	Membrane; Single-pass type I membrane protein.
Tissue Location	Expressed in normal parenchymal cells, endothelial cells, fibroblasts and tumor-derived epithelial cells

Background

ACVR1 Antibody: Activins are dimeric growth and differentiation factors which belong to the transforming growth factor-beta (TGF-beta) superfamily of structurally related signaling proteins. Activins signal through a heteromeric complex of receptor serine kinases which include at least two type I and two type II receptors. Unlike ACVR1B and ACVR1C, ACVR1, also known as activin receptor-like kinase 2 (ALK2), can not transduce activin-mediated signaling, but will transduce BMP and Mullerian inhibiting substance (MIS) group signaling. It is thought that ACVR1 also inhibits activin signaling by blocking the binding of activin to its type II receptor. Recent studies indicate that genetic variation in ACVR1 is associated with polycystic ovary syndrome, suggesting that ACVR1 signaling contributes to disturbed folliculogenesis in these patients.

References

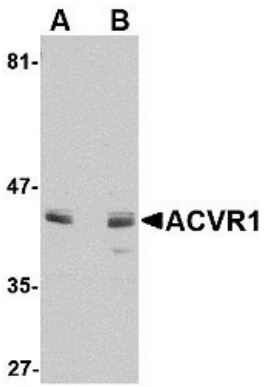
Tsuchida K, Sawchenko PN, Nishikawa S, et al. Molecular cloning of a novel type I receptor serine/threonine kinase for the TGF beta superfamily from rat brain. Mol. Cell. Neurosci.1996; 76:467-78.

ten Dijke P, Yamashita H, Sampath TK, et al. Identification of type I receptors for osteogenic protein-1 and bone morphogenetic protein-4. J. Biol. Chem.1994; 269:16985-8.

Clarke TR, Hoshiya Y, Yi SE, et al. Mullerian inhibiting substance signaling uses a BMP-like pathway mediated by ALK2 and induces Smad6 expression. Mol. Endocrinol.2001; 15:946-59.

Renlund N, O'Neill FH, Zhang L, et al. Activin receptor-like kinase-2 inhibits activin signaling by blocking the binding of activin to its type II receptor. J. Endocrinol.2007; 195:95-103.

Images



Western blot analysis of ACVR1 in A549 cell lysate with ACVR1 antibody at 1 µg/mL in (A) the absence and (B) the presence of blocking peptide.