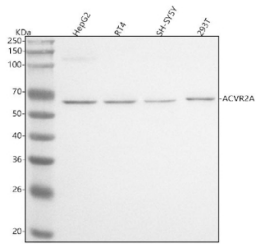
ACVR2A Antibody / Activin receptor type-2A (FY13357)

Catalog No.	Formulation	Size
FY13357	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

Availability	1-2 days
Species Reactivity	Human
Format	Lyophilized
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	P27037
Applications	Western Blot : 0.25-0.5ug/ml ELISA : 0.1-0.5ug/ml
Limitations	This ACVR2A antibody is available for research use only.



Western blot analysis of ACVR2A using anti-ACVR2A antibody. Lane 1: human HepG2 whole cell lysates, Lane 2: human RT4 whole cell lysates, Lane 3: human SH-SY5Y whole cell lysates, Lane 4: human 293T whole cell lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-ACVR2A antibody at 0.5 ug/ml overnight at 4oC, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody at a dilution of 1:5000 for 1.5 hour at RT. The signal was developed using enhanced chemiluminescent. The expected molecular weight of ACVR2A is ~58 kDa.

Description

ACVR2A antibody detects Activin receptor type-2A, a transmembrane serine/threonine kinase receptor encoded by the ACVR2A gene on chromosome 2q22.2. ACVR2A is a member of the transforming growth factor beta receptor family and functions as a type II receptor for activins, inhibins, and related growth factors. It is broadly expressed in reproductive organs, liver, skeletal muscle, and nervous tissue, mediating diverse biological processes including cell growth,

differentiation, and embryonic patterning. ACVR2A serves as a central component in activin-mediated signaling that controls reproduction, metabolism, and tissue repair.

ACVR2A binds activin A, activin B, and growth differentiation factors such as GDF8 (myostatin) and GDF11, initiating phosphorylation of type I receptor partners (ALK4/ALK7). This triggers SMAD2 and SMAD3 activation and downstream transcriptional responses that regulate gene expression in target tissues. Co-localization studies show ACVR2A clustering with ALK4 at the plasma membrane and endosomal compartments, where ligand-induced receptor internalization fine-tunes signaling output.

Structurally, ACVR2A features an extracellular ligand-binding domain, a single transmembrane region, and an intracellular kinase domain responsible for catalytic activity. It belongs to the transforming growth factor beta receptor family of serine/threonine kinases, sharing sequence homology with ACVR2B. The receptor interacts with ligands and type I receptors to form heterotetrameric complexes required for signal propagation. Known ligands include activins, inhibins, GDF8, and GDF11, which influence muscle growth, reproductive physiology, and developmental patterning.

Functionally, ACVR2A mediates activin signaling involved in follicle-stimulating hormone regulation, gonadal development, and muscle differentiation. It also participates in metabolic control, modulating insulin sensitivity and energy expenditure. During embryogenesis, ACVR2A expression is essential for mesoderm formation, neural tube development, and left-right axis determination. In adult tissues, ACVR2A supports tissue regeneration and wound repair by activating SMAD-dependent transcriptional networks.

Dysregulation of ACVR2A signaling contributes to reproductive disorders, cancer, and muscle-wasting diseases. Loss-of-function mutations can impair fertility, while overactivation has been linked to tumor progression through transforming growth factor beta pathway cross-talk. In hepatocellular carcinoma, reduced ACVR2A expression correlates with increased proliferation and metastasis. Pathway associations include transforming growth factor beta, SMAD, and MAPK signaling networks, which coordinate growth and differentiation across cell types. Isoform-specific studies reveal that ACVR2A and its paralog ACVR2B exhibit distinct ligand affinities and tissue distributions, allowing fine-tuned activin signaling.

Immunohistochemical staining using ACVR2A antibody shows membrane and cytoplasmic localization in reproductive, hepatic, and neural tissues. The ACVR2A antibody from NSJ Bioreagents is an excellent reagent for exploring transforming growth factor beta and activin receptor signaling, development, and disease pathogenesis.

Application Notes

Optimal dilution of the ACVR2A antibody should be determined by the researcher.

Immunogen

E.coli-derived human ACVR2A recombinant protein (Position: A20-N138) was used as the immunogen for the ACVR2A antibody.

Storage

After reconstitution, the ACVR2A antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.