

# Human ALK-2 / ACVR1 Protein (His & Fc Tag)



Sino Biological  
Biological Solution Specialist

Catalog Number: 10227-H03H

## General Information

### Gene Name Synonym:

ACTRI; ACVR1A; ACVRLK2; ALK2; FOP; SKR1; TSRI

### Protein Construction:

A DNA sequence encoding the extracellular domain (Met 1-Val 124) of human ALK2 (NP\_001104537.1) precursor was fused with the C-terminal polyhistidine-tagged Fc region of human IgG1 at the C-terminus.

**Source:** Human

**Expression Host:** HEK293 Cells

## QC Testing

**Purity:** > 95 % as determined by SDS-PAGE

### Bio Activity:

**Measure by its ability to bind with human BMP2 in a functional ELISA.**

### Endotoxin:

< 1.0 EU per µg of the protein as determined by the LAL method

### Stability:

Samples are stable for up to twelve months from date of receipt at -70 °C

**Predicted N terminal:** Met 21

### Molecular Mass:

The recombinant human ALK2/Fc is a disulfide-linked homodimeric Protein after removal of the signal peptide. Each monomer consists of 352 amino acids and predicts a molecular mass of 39.6 kDa. As a result of glycosylation, the rh ALK2/Fc monomer migrates as approximately 40-45 kDa band in SDS-PAGE under reducing conditions.

### Formulation:

Lyophilized from sterile PBS, pH 7.4

Normally 5 % - 8 % trehalose, mannitol and 0.01% Tween80 are added as protectants before lyophilization. Specific concentrations are included in the hardcopy of COA. Please contact us for any concerns or special requirements.

## Usage Guide

### Storage:

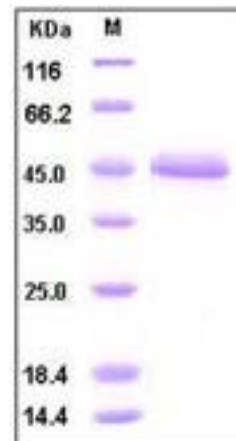
Store it under sterile conditions at -20°C to -80°C upon receiving. Recommend to aliquot the protein into smaller quantities for optimal storage.

**Avoid repeated freeze-thaw cycles.**

### Reconstitution:

Detailed reconstitution instructions are sent along with the products.

## SDS-PAGE:



## Protein Description

ALK-2, also termed as ACVR1, was initially identified as an activin type I receptor because of its ability to bind activin in concert with ActRII or ActRIIB. ALK-2 is also identified as a BMP type I receptor. It has been demonstrated that ALK-2 forms complex with either the BMP-2/7-bound BMPRII or ACVR2A /ACVR2B. ALK-1 and ALK-2 presenting in the yeast *Saccharomyces cerevisiae* are two haspin homologues. Both ALK-1 and ALK-2 exhibit a weak auto-kinase activity in vitro, and are phosphoproteins in vivo. ALK-1 and ALK-2 levels peak in mitosis and late-S/G2. Control of protein stability plays a major role in ALK-2 regulation. The half-life of ALK-2 is particularly short in G1. Overexpression of ALK-2, but not of ALK-1, causes a mitotic arrest, which is correlated to the kinase activity of the protein. This suggests a role for ALK-2 in the control of mitosis. Endoglin is phosphorylated on cytosolic domain threonine residues by the TGF-beta type I receptors ALK-2 and ALK-5 in prostate cancer cells. Endoglin did not inhibit cell migration in the presence of constitutively active ALK-2. Defects in ALK-2 are a cause of fibrodysplasia ossificans progressiva (FOP).

## References

- Armes NA, *et al.* (1997) The ALK-2 and ALK-4 activin receptors transduce distinct mesoderm-inducing signals during early *Xenopus* development but do not co-operate to establish thresholds. *Development* 124(19): 3797-804.
- Armes NA, *et al.* (1999) A short loop on the ALK-2 and ALK-4 activin receptors regulates signaling specificity but cannot account for all their effects on early *Xenopus* development. *J Biol Chem.* 274(12):7929-35.
- Kawai S, *et al.* (2000) Mouse smad8 phosphorylation downstream of BMP receptors ALK-2, ALK-3, and ALK-6 induces its association with Smad4 and transcriptional activity. *Biochem Biophys Res Commun.* 271(3):682-7.

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