

ALK-4/ACVR1B Protein, Rat, Recombinant (hFc)

General Information

Synonyms:	activin A receptor, type 1B
Protein Construction:	A DNA sequence encoding the rat ACVR1B (NP_954700.1)(Met1-Glu126) was expressed with the Fc region of human IgG1 at the C-terminus. Predicted N terminal: Ser 24
Species:	Rat
Expression Host:	HEK293 Cells
Accession:	P80202
Molecular Weight:	38.4 kDa (predicted); 42 and 34 kDa (reducing conditions)

QC Testing

Biological Activity:	Measured by its ability to bind with rat TDGF1-His in a functional ELISA.
Purity:	> 95 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/μg of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 μm filter, containing PBS, pH 7.4. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

Preparation and Storage

Reconstitution:
A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

ALK-4 (Activin Receptor-Like Kinase 4) or ACVR1B (Activin A Receptor, type 1B), belongs to the protein kinase superfamily, TKL Ser/Thr protein kinase family, and TGFβ receptor subfamily. ALK-4/ACVR1B acts as a transducer of activin or activin like ligands signals. Activin binds to either ACVR2A or ACVR2B and then forms a complex with ACVR1B. The known type II activin receptors include ActRII and ActRIIB, while the main type I activin receptor in mammalian cells is ALK-4 (ActRIB). In the presence of activin, type II and type I receptors form complexes whereby

the type II receptors activate ALK-4 through phosphorylation. The activated ALK-4, in turn, transduces signals downstream by phosphorylation of its effectors, such as Smads, to regulate gene expression and affect cellular phenotype. ALK-4/ACVR1B is an important regulator of vertebrate development, with roles in mesoderm induction, primitive streak formation, gastrulation, dorsoanterior patterning, and left-right axis determination.

Reference

Chen Y, et al. (2005) Developmental analysis of activin-like kinase receptor-4 (ALK4) expression in *Xenopus laevis*. 232(2): 393-8.J.

Massagu. (1998) TGF- SIGNAL TRANSDUCTION. Annual Review of Biochemistry. 67: 753-91.

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