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PRODUCT INFORMATION

ALK5 Extracellular Domain (human, recombinant)

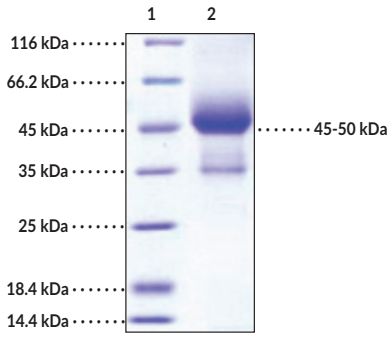
Item No. 31847

Overview and Properties

Synonyms:	Activin Receptor-like Kinase 5, Serine/threonine Protein Kinase Receptor 4, SKR4, TGF-βRI, Transforming Growth Factor β Receptor Type I
Source:	Active recombinant C-terminal human IgG1 Fc-His-tagged ALK5 expressed in HEK293 cells
Amino Acids:	34-125
Uniprot No.:	P36897
Molecular Weight:	38.1 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥85% estimated by SDS-PAGE
Supplied in:	Lyophilized from sterile PBS, pH 7.4
Endotoxin Testing:	<1.0 EU/µg, determined by the LAL endotoxin assay
Bioactivity:	See figures for details

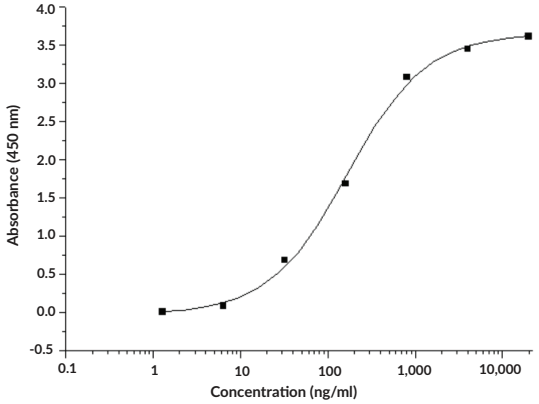
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: ALK5 Extracellular Domain

SDS-PAGE Analysis of ALK5 Extracellular Domain. This protein has a calculated molecular weight of 38.1 kDa. It has an apparent molecular weight of approximately 45-50 kDa by SDS-PAGE under reducing conditions due to glycosylation.



ALK5 Extracellular Domain binding in a binding assay. Immobilized mouse CD105 at 10 µg/ml (100 µl/well) can bind human ALK5 Extracellular Domain with a linear range of 6.4-800 ng/ml.

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PRODUCT INFORMATION

Description

Activin receptor-like kinase 5 (ALK5), also known as TGF-β receptor type 1 (TGF-βRI), is a type I transmembrane glycoprotein, serine/threonine kinase, and member of the TGF-β superfamily that is ubiquitously expressed.[1,2] It is composed of an extracellular ligand-binding domain, a single transmembrane domain, an intracellular serine/threonine kinase domain, and a cytoplasmic serine/threonine-rich region.[1] The ALK5 ligand TGF-β mediates the formation of a complex that includes ALK5 and the type II transmembrane glycoprotein TGF-βRII, which phosphorylates ALK5 to induce intracellular signaling and phosphorylation of SMAD2 and SMAD3 to regulate gene expression.[1,3] The ligands myostatin and growth differentiation factor 11 (GDF-11) induce formation of a complex between ALK5, TGF-βRI, activin receptor type 2A (ACTRIIA), and ACTRIIB to activate SMAD signaling in a similar manner. ALK5 signaling has roles in endothelial cell proliferation and migration, as well as angiogenesis.[2,4] Mutations in *TGFBR1* are associated with Loeys-Dietz syndrome, which is a connective tissue disorder characterized by a variety of mild-to-severe vascular defects, including aortic aneurysm.[5] Cayman's ALK5 Extracellular Domain (human, recombinant) protein can be used for binding assays. This protein is a disulfide-linked homodimer. The reduced monomer, composed of ALK5 (amino acids 34-125) fused to His-tagged human IgG1 Fc at its C-terminus, consists of 340 amino acids, has a calculated molecular weight of 38.1 kDa, and a predicted N-terminus of Leu34 after signal peptide cleavage. As a result of glycosylation, the monomer migrates at approximately 45-50 kDa by SDS-PAGE under reducing conditions.

References

1. Tsuchida, K., Nakatani, M., Uezumi, A., *et al*. Signal transduction pathway through activin receptors as a therapeutic target of musculoskeletal diseases and cancer. *Endocr. J.* **55(1)**, 11-21 (2008).
2. van Meeteren, L.A., and ten Dijke, P. Regulation of endothelial cell plasticity by TGF-β. *Cell Tissue Res.* **347(1)**, 177-186 (2012).
3. Nickel, J., ten Dijke, P., and Mueller, T.D. TGF-β family co-receptor function and signaling. *Acta Biochim. Biophys. Sin. (Shanghai)* **50(1)**, 12-36 (2018).
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5. Gallo, E.M., Loch, D.C., Habashi, J.P., *et al*. Angiotensin II-dependent TGF-β signaling contributes to Loeys-Dietz syndrome vascular pathogenesis. *J. Clin. Invest.* **124(1)**, 448-460 (2014).

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