PRODUCT INFORMATION

ALK2 Extracellular Domain (human, recombinant)

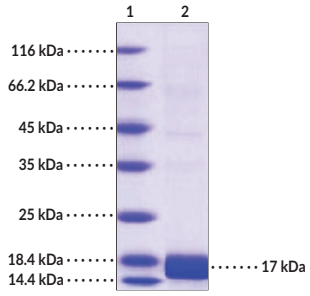
Item No. 44183

Overview and Properties

Synonyms:	Activin Receptor-like Kinase 2, Activin Receptor Type I, ACTR-I, ACVR1, Serine/threonine-protein Kinase Receptor R1, TGF-β Superfamily Receptor Type I, TSR-I
Source:	Recombinant human C-terminal His-tagged ALK2 extracellular domain expressed in insect cells
Amino Acids:	21-124
Uniprot No.:	Q04771
Molecular Weight:	12.8 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥93% estimated by SDS-PAGE
Supplied in:	Sterile 20 mM Tris, pH 7.4, with 500 mM sodium chloride and 10% glycerol
Endotoxin Testing:	<1.0 EU/µg, determined by the LAL endotoxin assay
Bioactivity:	See figures for details

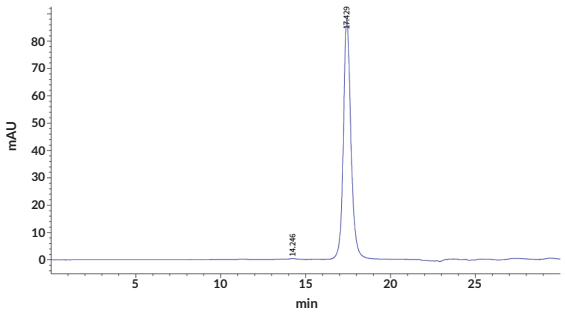
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: ALK2 Extracellular Domain

SDS-PAGE Analysis of ALK2 Extracellular Domain. This protein has a calculated molecular weight of 12.8 kDa. It has an apparent molecular weight of approximately 17 kDa by SDS-PAGE under reducing conditions due to glycosylation.



Size Exclusion Chromatography of purified ALK2 Extracellular Domain.

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Description

Activin receptor-like kinase 2 (ALK2) is a type I receptor kinase and member of the bone morphogenetic protein (BMP) receptor family.[1,2] It is composed of a ligand-binding extracellular domain, a transmembrane domain, a membrane-associated glycine/serine-rich (GS) domain, and an intracellular kinase domain. ALK2 is expressed primarily in the heart, liver, intestine, and kidneys but is found at low levels in the brain and lung.[3] Upon ligand binding, ALK2 is activated by type II BMP receptors via phosphorylation of the GS domain, which then activates SMAD or MAPK signaling.[1,2] SNPs in *ACVR1*, the gene encoding ALK2, are associated with fibrodysplasia ossificans progressiva (FOP), congenital heart defects, and diffuse intrinsic pontine glioma.[4-6] Cayman's ALK2 Extracellular Domain (human, recombinant) protein consists of 114 amino acids, has a calculated molecular weight of 12.8 kDa, and a predicted N-terminus of Met21 after signal peptide cleavage. By SDS-PAGE, under reducing conditions, the apparent molecular mass of the protein is 17 kDa due to glycosylation.

References

1. Shi, F., Gao, J., Zou, J., *et al.* Targeting heterotopic ossification by inhibiting activin receptor-like kinase 2 function (Review). *Mol. Med. Rep.* **20(4)**, 2979-2989 (2019).
2. Katagiri, T., Tsukamoto, S., and Kuratani, M. Accumulated knowledge of activin receptor-like kinase 2 (ALK2)/activin A receptor, type 1 (ACVR1) as a target for human disorders. *Biomedicines* **9(7)**, 736 (2021).
3. Matsuzaki, K., Xu, J., Wang, F., *et al.* A widely expressed transmembrane serine/threonine kinase that does not bind activin, inhibin, transforming growth factor β, or bone morphogenic factor. *J. Biol. Chem.* **268(17)**, 12719-12723 (1993).
4. Shore, E.M., Xu, M., Feldman, G.J., *et al.* A recurrent mutation in the BMP type I receptor ACVR1 causes inherited and sporadic fibrodysplasia ossificans progressiva. *Nat. Genet.* **38(5)**, 525-527 (2006).
5. Smith, K.A., Joziasse, I.C., Chocron, S., *et al.* Dominant-negative *ALK2* allele associates with congenital heart defects. *Circulation* **119(24)**, 3062-3069 (2009).
6. Ensan, D., Smil, D., Zepeda-Velázquez, C.A., *et al.* Targeting ALK2: An open science approach to developing therapeutics for the treatment of diffuse intrinsic pontine glioma. *J. Med. Chem.* **63(9)**, 4978-4996 (2020).

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