PRODUCT INFORMATION

ACTRIIB Extracellular Domain (human, recombinant)

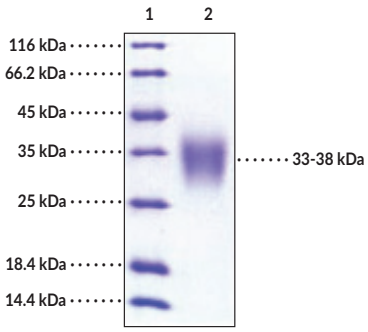
Item No. ***44184***

Overview and Properties

Synonyms:	Activin RIIB, Activin Receptor Type IIB, Activin Receptor Type-2B, ACTR-IIB, ACVR2B, AVR2B
Source:	Active recombinant human C-terminal His-tagged ACTRIIB extracellular domain expressed in HEK293 cells
Amino Acids:	19-134
Uniprot No.:	Q13705
Molecular Weight:	15 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥97% 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

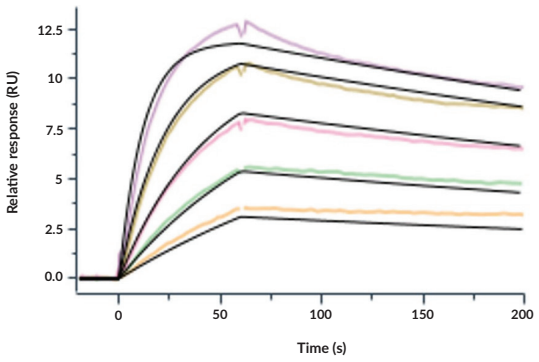
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images

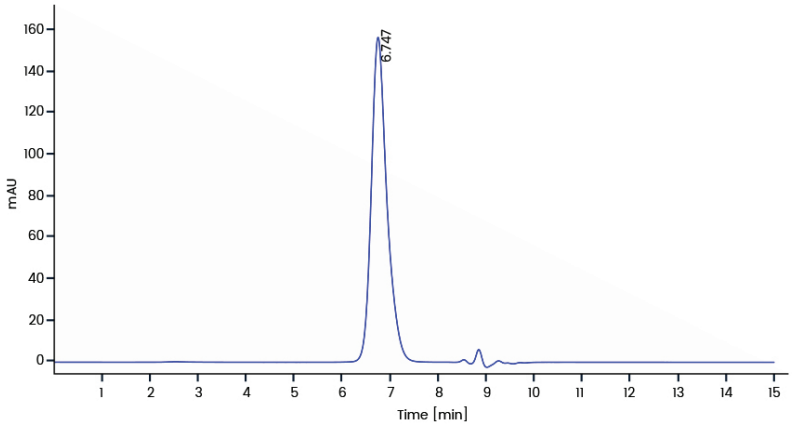


Lane 1: MW Markers
Lane 2: ACTRIIB Extracellular Domain

SDS-PAGE Analysis of ACTRIIB Extracellular Domain. This protein has a calculated molecular weight of 15 kDa. It has an apparent molecular weight of approximately 33-38 kDa by SDS-PAGE under reducing conditions due to glycosylation.



ACTRIIB Extracellular Domain (human, recombinant) (Item No. 44184) immobilized on CM5 chip can bind Recombinant Mouse Activin A Protein, His Tag with an affinity constant of 2.42 nM as determined in an SPR assay (Biacore 8K) (routinely tested).



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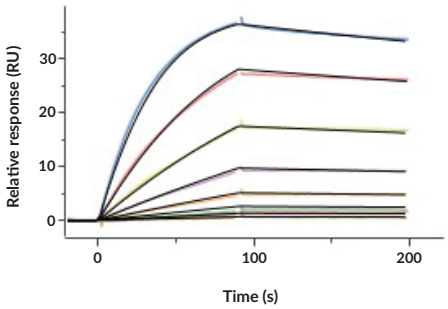
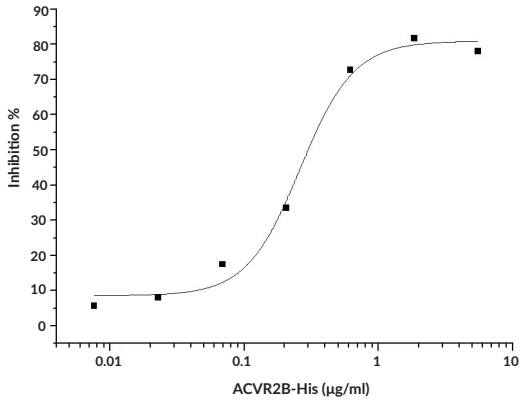
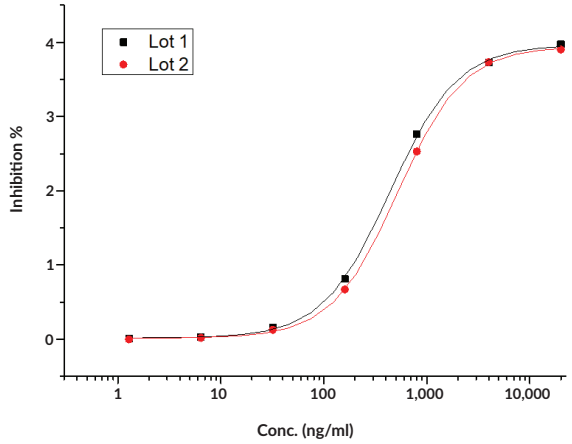
Images



ACTRIIB Extracellular Domain (human, recombinant) (Item No. 44184) immobilized on CM5 chip, can bind Recombinant Human/Mouse/Rat/Cynomolgus/Rhesus Activin A/INHBA Protein with an affinity constant of 0.239 nM as determined in an SPR assay (Biacore 8K) (QC tested).



Measured by its ability to neutralize Activin-mediated inhibition on MPC11 cell proliferation. The ED_{50} for this effect is typically 0.3-2 µg/ml in the presence of 10 ng/ml recombinant Activin A (routinely tested).



Lot-to-lot consistency

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Description

Activin receptor type IIB (ACTRIIB) is a type II activin receptor and member of the TGF-β receptor superfamily.[1,2] It is composed of an extracellular ligand-binding domain, a transmembrane domain, an intracellular kinase domain, and a C-terminal tail.[2] ACTRIIB is ubiquitously expressed in fetal development with the highest expression in the brain and spinal cord and is enriched in adult skeletal muscle.[3,4] ACTRIIB has several ligands, including activins, growth differentiation factor 8 (GDF8), also known as myostatin, and bone morphogenetic proteins (BMPs).[2] Upon ligand binding, ACTRIIB forms a complex with type I activin receptors, which results in their activation and signaling *via* the SMAD pathway. ACTRIIB is involved in hematopoiesis, myogenesis, and bone formation and resorption.[5] Mutations in the gene encoding ACTRIIB, *ACVR2B*, are associated with left-right axis malformations.[6] Formulations containing a fusion protein of the ACTRIIB ligand-binding domain with the Fc of an immunoglobulin have been used as erythroid maturation agents in the treatment of anemia in patients with β-thalassemia or myelodysplastic syndrome (MDS). Cayman's ACTRIIB Extracellular Domain (human, recombinant) protein can be used for binding assay and cell-based assay applications. This protein consists of 127 amino acids, has a calculated molecular weight of 15 kDa, and a predicted N-terminus of Ser19 after signal peptide cleavage. By SDS-PAGE, under reducing conditions, the apparent molecular mass of the protein is 33-38 kDa due to glycosylation.

References

1. Attisano, L., Wrana, J.L., Montalvo, E., *et al.* Activation of signalling by the activin receptor complex. *Mol. Cell. Biol.* **16(3)**, 1066-1073 (1996).
2. Leung, P.C.K. and Peng, C. Activin Receptor Signaling. *Encyclopedia of Hormones* 17-23 (2003).
3. Hildén, K., Tuuri, T., Erämaa, M., *et al.* Expression of type II activin receptor genes during differentiation of human K562 cells and cDNA cloning of the human type IIB activin receptor. *Blood* **83(8)**, 2163-2170 (1994).
4. Han, H.Q., Zhou, X., Mitch, W.E., *et al.* Myostatin/activin pathway antagonism: molecular basis and therapeutic potential. *Int. J. Biochem. Cell Biol.* **45(10)**, 2333-2347 (2013).
5. Lodberg, A. Principles of the activin receptor signaling pathway and its inhibition. *Cytokine Growth Factor Rev.* **60**, 1-17 (2021).
6. Kosaki, R., Gebbia, M., Kosaki, K., *et al.* Left-right axis malformations associated with mutations in ACVR2B, the gene for human activin receptor type IIB. *Am. J. Med. Genet.* **82(1)**, 70-76 (1999).

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