TGFBR1/ALK-5 Protein, Human (HEK293, mFc-Avi)

Cat. No.:	HY-P78525
Synonyms:	AAT5; ACVRLK4; ALK-5; LDS1A; LDS2A; SKR4; tbetaR-I; TGFB1R1; TGF-beta RI; TGFbetaRI; TGFBR1; TGF-bRI; TGFR-1; tβR-I; TGF-β RI; TGFβRI
Species:	Human
Source:	HEK293
Accession:	P36897-1 (L34-E125)
Gene ID:	7046
Molecular Weight:	50-60 kDa

PROPERTIES

AA Sequence	L Q C F C H L C T K D N F T C V T D G L C F V S V T E T T D K V I H N S M C I A E I D L I P R D R P F V C A P S S K T G S V T T T Y C C N Q D H C N K I E L P T T V K S S P G L G P V E
Biological Activity	1.Human TGFBR1, mFc Tag captured on CM5 Chip via Protein A can bind Human Mature TGF beta 1, No Tag with an affinity constant of 0.12 μM as determined in SPR assay (Biacore T200). 2.Measured by its binding ability in a functional ELISA. When Recombinant Human TGF-beta RII is immobilized at 1 μg/mL (100 μL/well), it binds Recombinant Human TGF-beta RI in the presence of TGF-beta 1. The concentration of rhTGF-beta RI that produces 50% of the optimal binding response is approximately 1.639 μg/mL.
Appearance	Lyophilized powder.
Formulation	Lyophilized from a 0.22 μm filtered solution of PBS, pH 7.4. Normally 8% trehalose is added as protectant before lyophilization.
Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconsititution	It is not recommended to reconstitute to a concentration less than 100 μg/mL in ddH_2O.
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

DESCRIPTION

Background	The transmembrane serine/threonine kinase, TGFBR1 (ALK-5), collaborates with the TGF-beta type II serine/threonine kinase receptor, TGFBR2, to form the dedicated receptor for TGF-beta cytokines, including TGFB1, TGFB2, and TGFB3. Serving as a signal transducer, TGFBR1 mediates the transmission of TGFB1, TGFB2, and TGFB3 signals from the cell surface

to the cytoplasm, thereby orchestrating a diverse array of physiological and pathological processes. These include cell cycle arrest in epithelial and hematopoietic cells, control of mesenchymal cell proliferation and differentiation, wound healing, extracellular matrix production, immunosuppression, and carcinogenesis. The receptor complex, composed of 2 TGFBR1 and 2 TGFBR2 molecules symmetrically bound to the cytokine dimer, leads to the phosphorylation and activation of TGFBR1 by the constitutively active TGFBR2. Activated TGFBR1 phosphorylates SMAD2, causing its dissociation from the receptor and interaction with SMAD4. The resulting SMAD2-SMAD4 complex translocates to the nucleus, where it modulates the transcription of TGF-beta-regulated genes, constituting the canonical SMAD-dependent TGF-beta signaling cascade. Additionally, TGFBR1 is involved in non-canonical, SMAD-independent TGF-beta signaling pathways. For instance, it induces TRAF6 autoubiquitination, leading to MAP3K7 ubiquitination and activation, triggering apoptosis. TGFBR1 also regulates epithelial to mesenchymal transition through a SMAD-independent signaling pathway involving PARD6A phosphorylation and activation.

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