Biotinylated Recombinant Human TGF-β RI/ALK-5 Fc Chimera Avi-tag

Catalog Number: AVI3025

DESCRIPTION

Source

Human embryonic kidney cell, HEK293-derived human TGF-beta RI/ALK-5 protein

Human TGF-beta R1/ALK-5 (Ala25 or Leu34-Glu125) Accession # P36897.1	IEGRMD	Human IgG_1 (Pro100-Lys330)	Avi-tag

N-terminus C-terminus

N-terminal Sequence Analysis	Ala25, Leu34
Structure / Form	Disulfide-linked homodimer
Predicted Molecular Mass	39 kDa

SPECIFICATIONS

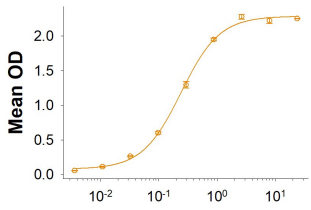
SDS-PAGE	43-60 kDa, under reducing conditions
Activity	The biotin to protein ratio is greater than 0.7 as determined by the HABA assay. Measured by its binding ability in a functional ELISA. When Recombinant Human (rh) TGF-β RII Fc Chimera (Catalog # 341-BR) is immobilized at 1 µg/mL (100 µL/well), in the presence of rhTGF-β1 (Catalog # 240-B), Biotinylated Recombinant Human TGF-β RI/ALK-5 Fc Chimera Avi-tag protein binds with an ED_{50} of 0.15-0.75 µg/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 500 µg/mL in PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 12 months from date of receipt, -20 to -70 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 3 months, -20 to -70 °C under sterile conditions after reconstitution.

DATA

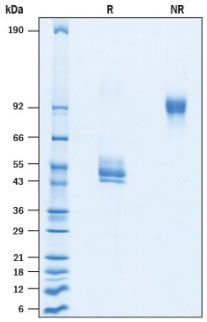
SDS-PAGE



Biotinylated Recombinant Human TGF-β RI/ALK-5 Fc Chimera Avi-tag (µg/mL)

Biotinylated Recombinant Human TGF-beta RI/ALK-5 Fc Chimera Avi-tag Binding Activity. When Recombinant Human TGF-β RII Fc Chimera (Catalog # 341-BR) is immobilized at 1 µg/mL (100 µL/well), in the presence of Recombinant Human TGF-β1 (Catalog # 240-B), it binds Recombinant Human TGF-β RI/ALK-5 Fc Chimera Avi-tag (Catalog # AVI3025) with an ED_{50} of 0.15-0.75 µg/mL.

SDS-PAGE



Biotinylated Recombinant Human TGF-beta RI/ALK-5 Fc Chimera Avi-tag Protein SDS-PAGE. 2 µg/lane of Biotinylated Recombinant Human TGF-beta RI/ALK-5 Fc Chimera Avi-tag (Catalog # AVI3025) was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by Coomassie® Blue staining, showing bands at 43-60 kDa and 86-120 kDa, respectively

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BACKGROUND

TGF-β RI, also called ALK-5, is an approximately 55 kDa type I transmembrane serine/threonine receptor kinase (1, 2). It contains a cysteine-rich extracellular domain (ECD), a transmembrane helix, and a C-terminal cytoplasmic kinase domain (3). Within the cytoplasmic domain there is also a short, conserved regulatory sequence known as the GS region that is N-terminal to the kinase domain (1). Within the ECD, human TGF-β RI shares 90% and 88% aa sequence identity with mouse and rat TGF-β RI, respectively. In the presence of TGF-β, TGF-β RI forms a complex with, and is phosphorylated by, TGF-β RII (1). Phosphorylated TGF-beta RI can then transiently bind and phosphorylate Smad2 and Smad3 (2, 4-6). These phosphorylated Smads form heteromeric complexes with Smad4, translocate to the nucleus, and regulate target gene transcription (2, 4-6). TGF-β RI is likely important during development, since mice deficient for TGF-β RI die at midgestation with severe defects in vascular development of the yolk sac and placenta, and an absence of circulating red blood cells (7). Furthermore, TGF-β RI appears to be involved in proper lymphatic network development (8). Mutations in TGF-beta RI have been identified in pancreatic, colorectal, ovarian, and head and neck cancers (9). Our Avi-tg Biotinylated human TGF-β RI features biotinylation at a single site contained within the Avi-tag, a unique 15 amino acid peptide. Protein orientation will be uniform when bound to streptavidin-coated surface due to the precise control of biotinylation and the rest of the protein is unchanged so there is no interference in the protein's bioactivity.

References:

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8. James, J.M. *et al.* (2013) Development **140**:3903.
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