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TGF Beta Receptor I Antibody (Center)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP7822c

Product Information

Application	WB, IHC-P, E
Primary Accession	P36897
Other Accession	P80204, Q5CD18, Q64729, O46680
Reactivity	Human, Rat, Mouse
Predicted	Rat, Pig, Bovine, Canine, Rabbit, Chicken
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Calculated MW	55960
Antigen Region	134-163

Additional Information

Gene ID	7046
Other Names	TGF-beta receptor type-1, TGFR-1, Activin A receptor type II-like protein kinase of 53kD, Activin receptor-like kinase 5, ALK-5, ALK5, Serine/threonine-protein kinase receptor R4, SKR4, TGF-beta type I receptor, Transforming growth factor-beta receptor type I, TGF-beta receptor type I, TbetaR-I, TGFBR1, ALK5, SKR4
Target/Specificity	This TGF Beta Receptor I antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 134-163 amino acids from the Central region of human TGF Beta Receptor I.
Dilution	WB~~1:1000 IHC-P~~1:100~500 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is prepared by Saturated Ammonium Sulfate (SAS) precipitation followed by dialysis against PBS.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	TGF Beta Receptor I Antibody (Center) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	TGFBR1

Synonyms	ALK5, SKR4
Function	Transmembrane serine/threonine kinase forming with the TGF- beta type II serine/threonine kinase receptor, TGFBR2, the non- promiscuous receptor for the TGF-beta cytokines TGFB1, TGFB2 and TGFB3. Transduces the TGFB1, TGFB2 and TGFB3 signal from the cell surface to the cytoplasm and is thus regulating a plethora of physiological and pathological processes including cell cycle arrest in epithelial and hematopoietic cells, control of mesenchymal cell proliferation and differentiation, wound healing, extracellular matrix production, immunosuppression and carcinogenesis (PubMed:33914044). The formation of the receptor complex composed of 2 TGFBR1 and 2 TGFBR2 molecules symmetrically bound to the cytokine dimer results in the phosphorylation and the activation of TGFBR1 by the constitutively active TGFBR2. Activated TGFBR1 phosphorylates SMAD2 which dissociates from the receptor and interacts with SMAD4. The SMAD2-SMAD4 complex is subsequently translocated to the nucleus where it modulates the transcription of the TGF-beta-regulated genes. This constitutes the canonical SMAD-dependent TGF-beta signaling cascade. Also involved in non-canonical, SMAD-independent TGF-beta signaling pathways. For instance, TGFBR1 induces TRAF6 autoubiquitination which in turn results in MAP3K7 ubiquitination and activation to trigger apoptosis. Also regulates epithelial to mesenchymal transition through a SMAD- independent signaling pathway through PARD6A phosphorylation and activation.
Cellular Location	Cell membrane; Single-pass type I membrane protein. Cell junction, tight junction. Cell surface. Membrane raft
Tissue Location	Found in all tissues examined, most abundant in placenta and least abundant in brain and heart. Expressed in a variety of cancer cell lines (PubMed:25893292).

Background

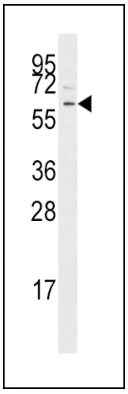
The protein encoded by this gene forms a heteromeric complex with type II TGF-beta receptors when bound to TGF-beta, transducing the TGF-beta signal from the cell surface to the cytoplasm. The encoded protein is a serine/threonine protein kinase. Mutations in this gene have been associated with Loeys-Dietz aortic aneurysm syndrome (LDAS).

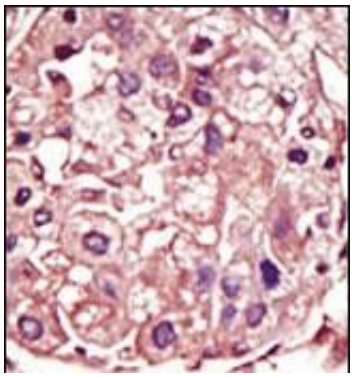
References

Itoh, S., et al., J. Biol. Chem. 278(6):3751-3761 (2003). Valcourt, U., et al., J. Biol. Chem. 277(37):33545-33558 (2002). Bourguignon, L.Y., et al., J. Biol. Chem. 277(42):39703-39712 (2002). Jude, E.B., et al., Diabet. Med. 19(6):440-447 (2002). Nagel, D., et al., Biochem. Biophys. Res. Commun. 290(5):1558-1563 (2002).

Images

Western blot analysis of anti-TGFBR1 Pab (Cat. #AP7822c) in Jurkat cell line lysates (35ug/lane). TGFBR1 (arrow) was detected using the purified Pab.





Formalin-fixed and paraffin-embedded human cancer tissue reacted with the primary antibody, which was peroxidase-conjugated to the secondary antibody, followed by AEC staining. This data demonstrates the use of this antibody for immunohistochemistry; clinical relevance has not been evaluated. BC = breast carcinoma; HC = hepatocarcinoma.

Citations

- ALK5 and Smad4 are involved in TGF-beta1-induced pulmonary endothelial permeability.
- Neonatal exposure to agonists and antagonists of sex steroid receptors induces changes in the expression of oocyte-derived growth factors and their receptors in ovarian follicles in gilts.
- Increased TGF- 1-mediated suppression of growth and motility in castrate-resistant prostate cancer cells is consistent with Smad2/3 signaling.
- CD36 is involved in high glucose-induced epithelial to mesenchymal transition in renal tubular epithelial cells.
- miR-140-5p regulates adipocyte differentiation by targeting transforming growth factor-β signaling.
- Effects of secreted frizzled-related protein 1 on proliferation, migration, invasion, and apoptosis of colorectal cancer cells.
- miR-22 regulates C2C12 myoblast proliferation and differentiation by targeting TGFBR1.
- Effect of astragalus injection on renal tubular epithelial transdifferentiation in type 2 diabetic mice.
- Enhanced Expression of ARK5 in Hepatic Stellate Cell and Hepatocyte Synergistically Promote Liver Fibrosis

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