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Phospho-SMAD2(T220) Antibody

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP3675a

Product Information

Application	IF, DB, WB, E
Primary Accession	Q15796
Other Accession	O70436, Q62432, Q9I9P9, Q1W668
Reactivity	Human, Rat, Mouse
Predicted	Mouse, Rat, Zebrafish, Bovine, Canine, Rabbit, Chicken
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Calculated MW	52306

Additional Information

Gene ID	4087
Other Names	Mothers against decapentaplegic homolog 2, MAD homolog 2, Mothers against DPP homolog 2, JV18-1, Mad-related protein 2, hMAD-2, SMAD family member 2, SMAD 2, Smad2, hSMAD2, SMAD2, MADH2, MADR2
Target/Specificity	This SMAD2 Antibody is generated from rabbits immunized with a KLH conjugated synthetic phosphopeptide corresponding to amino acid residues surrounding T220 of human SMAD2.
Dilution	IF~~1:10~50 DB~~1:500 WB~~1:500 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein A column, followed by peptide affinity purification.
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	Phospho-SMAD2(T220) Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	SMAD2 (HGNC:6768)
Synonyms	MADH2, MADR2

Function	Receptor-regulated SMAD (R-SMAD) that is an intracellular signal transducer and transcriptional modulator activated by TGF-beta (transforming growth factor) and activin type 1 receptor kinases. Binds the TRE element in the promoter region of many genes that are regulated by TGF-beta and, on formation of the SMAD2/SMAD4 complex, activates transcription. Promotes TGFB1-mediated transcription of odontoblastic differentiation genes in dental papilla cells (By similarity). Positively regulates PDPK1 kinase activity by stimulating its dissociation from the 14-3-3 protein YWHAQ which acts as a negative regulator. May act as a tumor suppressor in colorectal carcinoma (PubMed:8752209).
Cellular Location	Cytoplasm. Nucleus Note=Cytoplasmic and nuclear in the absence of TGF-beta. On TGF-beta stimulation, migrates to the nucleus when complexed with SMAD4 or with IPO7 (PubMed:21145499, PubMed:9865696). On dephosphorylation by phosphatase PPM1A, released from the SMAD2/SMAD4 complex, and exported out of the nucleus by interaction with RANBP1 (PubMed:16751101, PubMed:19289081). Localized mainly to the nucleus in the early stages of embryo development with expression becoming evident in the cytoplasm at the blastocyst and epiblast stages (By similarity) {ECO:0000250|UniProtKB:Q62432, ECO:0000269|PubMed:16751101, ECO:0000269|PubMed:19289081, ECO:0000269|PubMed:21145499, ECO:0000269|PubMed:9865696}
Tissue Location	Expressed at high levels in skeletal muscle, endothelial cells, heart and placenta.

Background

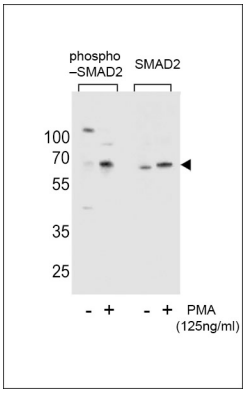
SMAD2 is a 58 kDa member of a family of proteins involved in cell proliferation, differentiation and development. The Smad family is divided into three subclasses: receptor-regulated Smad's, activin/TGF?receptor-regulated (Smad2 and 3) or BMP receptor regulated (Smad1, 5, and 8); the common partner, (Smad4) that functions via its interaction to the various Smad's; and the inhibitory Smad's, (Smad6 and Smad7). Smad2 consists of two highly conserved domains, the N terminal Mad homology (MH1) and the C-terminal Mad homology 2 (MH2) domains. The MH1 domain binds DNA and regulates nuclear import and transcription while the MH2 domain conserved among all the Smad's regulates Smad2 oligomerization and binding to cytoplasmic adaptors and transcription factors. Activated Smad2 associates with Smad4 and translocates as a complex into the nucleus, allowing its binding to DNA and transcription factors. This translocation of Smad2 (as well as Smad3) into the nucleus is a central event in TGF beta signaling. Phosphorylation of threonine 8 in the calmodulin binding region of the MH1 domain by extracellular signal regulated kinase 1(ERK 1) enhances Smad2 transcriptional activity, which is negatively regulated by calmodulin. The regulation of Smad2 phosphorylation on threonine 8 by ERK 1 and calmodulin is critical for Smad2 mediated signaling.

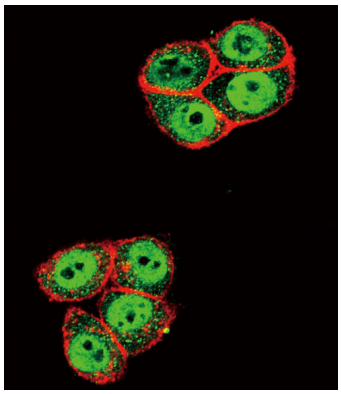
References

Papageorgis,P., et.al., Cancer Res. 70 (3), 968-978 (2010)
Funaba,M., et.al., J. Biol. Chem. 277 (44), 41361-41368 (2002)

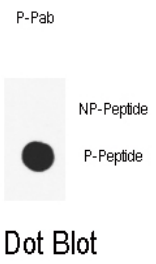
Images

Western blot analysis of extracts from Hela cell,untreated or treated with PMA,using phospho-SMAD2-T220(left) or SMAD2 antibody(right).





Confocal immunofluorescent analysis of Phospho-SMAD2-T220 Antibody(Cat#AP3675a) with Hela cell followed by Alexa Fluor 488-conjugated goat anti-rabbit lgG (green).Actin filaments have been labeled with Alexa Fluor 555 phalloidin (red).



Dot blot analysis of anti-Phospho-SMAD2-T220 Phospho-specific Pab (Cat. #AP3675a閱?) on nitrocellulose membrane. 50ng of Phospho-peptide or Non Phospho-peptide per dot were adsorbed. Antibody working concentrations are 0.5ug per ml.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.