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Product datasheet

Recombinant Human Smad3 protein ab151882

1 References 1 Image

Description

Product name	Recombinant Human Smad3 protein
Purity	> 80 % Densitometry.
Expression system	Escherichia coli
Accession	P84022
Protein length	Full length protein
Animal free	No
Nature	Recombinant
Species	Human
Sequence	MSSILPFTPPIVKRLLGWKKGEQNGQEEKWCEKAVKSLV KKLKKTGQLDE LEKAITTQNV NTKCITIPRSLDGRLQVSHRKGLPHVIYCRLWRWPDLH SHHELRAMELCEFAFNMKKDEV CVNPYHYQRVETPVLPPVLVPRHTEI PAEFPPLDDYSHSIPENTNFPAGIEPQSNIPETP PPGYLSEDGETSDH QMNHSMDAGSPNLSPNPMSPAHNNLDLQPVTYCEPAFW CSISYYELNQRV GETFHASQPSMTVDGFTDPSNSERFCLGLLSNVNRNAAV ELTRRHIGRGV RLYYIGGEVFAECLSDSAIFVQSPNCNQRYGWHPATVCKI PPGCNLKIFN NQEFAALLAQSVNQGFEAVYQLTRMCTIRMSFVKGWGAE YRRQTVTSTPC WIELHLNGPLQWLDKVLTQMGSPSIRCSSVS
Predicted molecular weight	77 kDa including tags
Amino acids	1 to 425
Tags	GST tag N-Terminus

Specifications

Our **Abpromise guarantee** covers the use of **ab151882** in the following tested applications.

The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

Applications	Western blot
Form	Liquid
Additional notes	**ab64311** (Myelin Basic Protein protein) can be utilized as a substrate for assessing kinase activity

Preparation and Storage

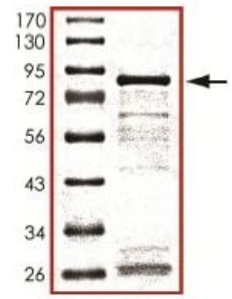
Stability and Storage	Shipped on dry ice. Upon delivery aliquot and store at -80ºC. Avoid freeze / thaw cycles. pH: 7.50 Constituents: 0.002% PMSF, 0.004% DTT, 0.79% Tris HCl, 25% Glycerol (glycerin, glycerine), 0.88% Sodium chloride

General Info

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 SMAD3/SMAD4 complex, activates transcription. Also can form a SMAD3/SMAD4/JUN/FOS complex at the AP-1/SMAD site to regulate TGF-beta-mediated transcription. Has an inhibitory effect on wound healing probably by modulating both growth and migration of primary keratinocytes and by altering the TGF-mediated chemotaxis of monocytes. This effect on wound healing appears to be hormone-sensitive. Regulator of chondrogenesis and osteogenesis and inhibits early healing of bone fractures. Positively regulates PDPK1 kinase activity by stimulating its dissociation from the 14-3-3 protein YWHAQ which acts as a negative regulator.
Involvement in disease	Colorectal cancer Loeys-Dietz syndrome 3
Sequence similarities	Belongs to the dwarfin/SMAD family. Contains 1 MH1 (MAD homology 1) domain. Contains 1 MH2 (MAD homology 2) domain.
Domain	The MH1 domain is required for DNA binding. Also binds zinc ions which are necessary for the DNA binding. The MH2 domain is required for both homomeric and heteromeric interactions and for transcriptional regulation. Sufficient for nuclear import. The linker region is required for the TGFbeta-mediated transcriptional activity and acts synergistically with the MH2 domain.
Post-translational modifications	Phosphorylated on serine and threonine residues. Enhanced phosphorylation in the linker region on Thr-179, Ser-204 and Ser-208 on EGF and TGF-beta treatment. Ser-208 is the main site of MAPK-mediated phosphorylation. CDK-mediated phosphorylation occurs in a cell-cycle dependent manner and inhibits both the transcriptional activity and antiproliferative functions of SMAD3. This phosphorylation is inhibited by flavopiridol. Maximum phosphorylation at the G(1)/S junction. Also phosphorylated on serine residues in the C-terminal SXS motif by TGFBR1 and ACVR1. TGFBR1-mediated phosphorylation at these C-terminal sites is required for interaction with SMAD4, nuclear location and transactivational activity, and appears to be a prerequisite for the TGF-beta mediated phosphorylation in the linker region. Dephosphorylated in the C-terminal SXS motif by PPM1A. This dephosphorylation disrupts the interaction with SMAD4, promotes nuclear export and terminates TGF-beta-mediated signaling. Phosphorylation at Ser-418 by

	CSNK1G2/CK1 promotes ligand-dependent ubiquitination and subsequent proteasome degradation, thus inhibiting SMAD3-mediated TGF-beta responses. Phosphorylated by PDPK1. Acetylation in the nucleus by EP300 in the MH2 domain regulates positively its transcriptional activity and is enhanced by TGF-beta. Ubiquitinated. Monoubiquitinated, leading to prevent DNA-binding. Deubiquitination by USP15 alleviates inhibition and promotes activation of TGF-beta target genes. Poly-ADP-ribosylated by PARP1 and PARP2. ADP-ribosylation negatively regulates SMAD3 transcriptional responses during the course of TGF-beta signaling.
Cellular localization	Cytoplasm. Nucleus. Cytoplasmic and nuclear in the absence of TGF-beta. On TGF-beta stimulation, migrates to the nucleus when complexed with SMAD4 (PubMed:15799969). Through the action of the phosphatase PPM1A, released from the SMAD2/SMAD4 complex, and exported out of the nucleus by interaction with RANBP1 (PubMed:16751101, PubMed:19289081). Co-localizes with LEMD3 at the nucleus inner membrane (PubMed:15601644). MAPK-mediated phosphorylation appears to have no effect on nuclear import (PubMed:19218245). PDPK1 prevents its nuclear translocation in response to TGF-beta (PubMed:17327236).

Images



SDS-PAGE - Recombinant Human Smad3 protein (ab151882)

SDS-PAGE analysis of ab151882 which was determined to be >80% pure by densitometry.

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