

## Product datasheet

# Anti-Smad3 (phospho S423 + S425) antibody ab118825

1 Image

### Overview

<b>Product name</b>	Anti-Smad3 (phospho S423 + S425) antibody
<b>Description</b>	Rabbit polyclonal to Smad3 (phospho S423 + S425)
<b>Host species</b>	Rabbit
<b>Specificity</b>	ab118825 detects Smad3 phosphorylated on Serine 423 and Serine 425. This Smad3 antibody may also detect Smad1, Smad2 and Smad5 phosphorylated at the equivalent sites.
<b>Tested applications</b>	<b>Suitable for:</b> ELISA, WB, IHC-P, ICC/IF
<b>Species reactivity</b>	<b>Reacts with:</b> Human <b>Predicted to work with:</b> Mouse, Rat, Chicken, Cow, Pig, Zebrafish
<b>Immunogen</b>	Synthetic peptide: PSIRCSSVS conjugated to KLH, corresponding to C terminal amino acids 417-425 of Human Smad3 (NP_005893.1).  <a href="#">Run BLAST with</a> <a href="#">Run BLAST with</a>
<b>Positive control</b>	Human skin tissue.

### Properties

<b>Form</b>	Liquid
<b>Storage instructions</b>	Shipped at 4°C. Upon delivery aliquot and store at -20°C. Avoid repeated freeze / thaw cycles.
<b>Storage buffer</b>	pH: 7.20 Preservative: 0.01% Sodium azide Constituents: 0.27% Potassium phosphate, 0.88% Sodium chloride
<b>Purity</b>	Protein A purified
<b>Clonality</b>	Polyclonal
<b>Isotype</b>	IgG

### Applications

Our [Abpromise guarantee](#) covers the use of **ab118825** in the following tested applications.

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

Application	Abreviews	Notes
ELISA		1/25000 - 1/100000.
WB		1/2000 - 1/20000. Predicted molecular weight: 48 kDa.
IHC-P		Use a concentration of 2.5 µg/ml. Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.
ICC/IF		Use at an assay dependent concentration.

## Target

### 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

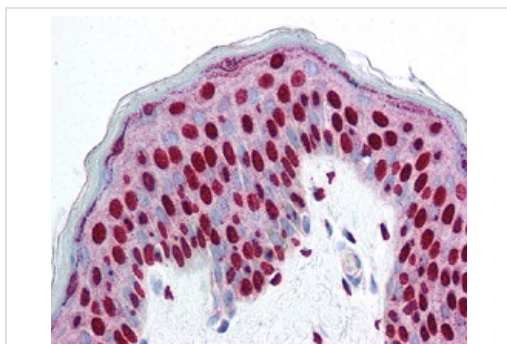
Cytoplasm. Nucleus. Cytoplasmic and nuclear in the absence of TGF-beta. On TGF-beta stimulation, migrates to the nucleus when complexed with SMAD4 (PubMed:15799969).

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



ab118825, at 2.5 µg/ml, staining Smad3 (phospho S423 + S425) in formalin fixed, paraffin embedded Human skin tissue by Immunohistochemistry followed by biotinylated secondary antibody, alkaline phosphatase-streptavidin and chromogen.

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Smad3 (phospho S423 + S425) antibody (ab118825)

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