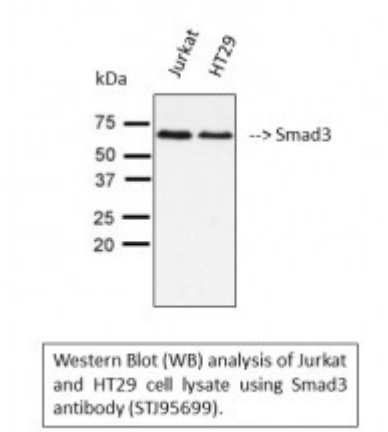
Anti-Smad3 antibody



Western Blot (WB) analysis of Jurkat and HT29 cell lysate using Smad3 antibody (STJ95699).

Description	Smad3 is a protein encoded by the SMAD3 gene which is approximately 48 kDa. Smad3 is localised to the cytoplasm and nucleus. It is involved in SMAD2/3 MH2 domain mutants in cancer, the cell cycle and toll-like receptor signalling pathway. It an intracellular signal transducer and transcriptional modulator activated by TGF-beta and activin type 1 receptor kinases. It 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. Smad3 is expressed in the nervous system, pancreas, lung, kidney and intestine. Mutations in the SMAD3 gene may result in colorectal cancer and Loeys-Dietz syndrome. STJ95699 was affinity-purified from rabbit antiserum by affinity-chromatography using epitope-specific immunogen. This polyclonal antibody detects endogenous levels of Smad3 protein.

Model	STJ95699
Host	Rabbit
Reactivity	Human, Mouse, Rat
Applications	ELISA, IHC, WB
Immunogen	Synthesized peptide derived from human Smad3 around the non-phosphorylation site of T179.
Immunogen Region	120-200 aa
Gene ID	4088
Gene Symbol	SMAD3
Dilution range	WB 1:500-1:2000IHC 1:100-1:300ELISA 1:10000

Specificity	Smad3 Polyclonal Antibody detects endogenous levels of Smad3 protein.
Purification	The antibody was affinity-purified from rabbit antiserum by affinity-chromatography using epitope-specific immunogen.
Note	For Research Use Only (RUO).
Protein Name	Mothers against decapentaplegic homolog 3 MAD homolog 3 Mad3 Mothers against DPP homolog 3 hMAD-3 JV15-2 SMAD family member 3 SMAD 3 Smad3 hSMAD3
Molecular Weight	50 kDa
Clonality	Polyclonal
Conjugation	Unconjugated
Isotype	IgG
Formulation	Liquid in PBS containing 50% glycerol, 0.5% BSA and 0.02% sodium azide.
Concentration	1 mg/ml
Storage Instruction	Store at -20°C, and avoid repeat freeze-thaw cycles.
Database Links	HGNC:6769OMIM:114500
Alternative Names	Mothers against decapentaplegic homolog 3 MAD homolog 3 Mad3 Mothers against DPP homolog 3 hMAD-3 JV15-2 SMAD family member 3 SMAD 3 Smad3 hSMAD3
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.
Sequence and Domain Family	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.
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 . Through the action of the phosphatase PPM1A, released from the SMAD2/SMAD4 complex, and exported out of the nucleus by interaction with RANBP1 . Co-localizes with LEMD3 at the nucleus inner membrane . MAPK-mediated phosphorylation appears to have no effect on nuclear import . PDPK1 prevents its nuclear translocation in response to TGF-beta .

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. Poly-ADP-ribosylated by PARP1 and PARP2. ADP-ribosylation negatively regulates SMAD3 transcriptional responses during the course of TGF-beta signaling. Ubiquitinated. Monoubiquitinated, leading to prevent DNA-binding . Deubiquitination by USP15 alleviates inhibition and promotes activation of TGF-beta target genes . Ubiquitinated by RNF111, leading to its degradation: only SMAD3 proteins that are 'in use' are targeted by RNF111, RNF111 playing a key role in activating SMAD3 and regulating its turnover . Undergoes STUB1-mediated ubiquitination and degradation .