Revision 5

#3104 Store at -20C

Phospho-SMAD2 (Ser245/250/255) Antibody

Cell Signaling TECHNOLOGY®

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For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source:	UniProt ID:	Entrez-Gene Id:
WB	H M R Mk	Endogenous	60	Rabbit	#Q15796	4087

Product Usage Information

Application	Dilution
Western Blotting	1:1000

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at –20°C. Do not aliquot the antibody.

Specificity / Sensitivity

Phospho-SMAD2 (Ser245/250/255) Antibody detects endogenous levels of SMAD2 only when phosphorylated at serines 245, 250 or 255.

Species predicted to react based on 100% sequence homology:

Rat

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic phosphopeptide corresponding to residues surrounding serines 245/250/255 of human SMAD2. Antibodies are purified by protein A and peptide affinity chromatography.

Background

Members of the SMAD family of signal transduction molecules are components of a critical intracellular pathway that transmit TGF-β signals from the cell surface into the nucleus. Three distinct classes of SMADs have been defined: the receptor-regulated SMADs (R-SMADs), which include SMAD1, 2, 3, 5, and 9; the common-mediator SMAD (co-SMAD), SMAD4; and the antagonistic or inhibitory SMADs (I-SMADs), SMAD6 and 7 (1-5). Activated type I receptors associate with specific R-SMADs and phosphorylate them on a conserved carboxy-terminal SSXS motif. The phosphorylated R-SMADs dissociate from the receptor and form a heteromeric complex with SMAD4, initiating translocation of the heteromeric SMAD complex to the nucleus. Once in the nucleus, SMADs recruit a variety of DNA binding proteins that function to regulate transcriptional activity (6-8).

Oncogenic Ras antagonizes TGF-beta signaling and inhibits the nuclear accumulation of Smad2 and Smad3, which may be explained through MAP kinase dependent phosphorylation of these Smads (9).Cell stimulation with EGF leads to phosphorylation of Smad2 at a cluster of serine-proline sites within its linker region, including Ser245, 250, and 255 (9).

Background References

1. Heldin, C.H. et al. (1997) *Nature* 390, 465-71.
2. Attisano, L. and Wrana, J.L. (1998) *Curr Opin Cell Biol* 10, 188-94.
3. Derynck, R. et al. (1998) *Cell* 95, 737-40.
4. Massagué, J. (1998) *Annu Rev Biochem* 67, 753-91.
5. Whitman, M. (1998) *Genes Dev* 12, 2445-62.
6. Wrana, J.L. (2000) *Sci STKE* 2000, re1.
7. Attisano, L. and Wrana, J.L. (2002) *Science* 296, 1646-7.
8. Moustakas, A. et al. (2001) *J Cell Sci* 114, 4359-69.
9. Kretzschmar, M. et al. (1999) *Genes Dev* 13, 804-16.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

WB: Western Blotting

Cross-Reactivity Key

H: human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **Mi:** mink **C:** chicken **Dm:** D. melanogaster **X:** Xenopus **Z:** zebrafish **B:** bovine **Dg:** dog **Pg:** pig **Sc:** S. cerevisiae **Ce:** C. elegans **Hr:** horse **GP:** Guinea Pig **Rab:** rabbit **All:** all species expected

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Limited Uses