Revision 1

#6895 Store at -20C

COPS5 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, IP, IF-IC	H M R Mk	Endogenous	37	Rabbit	#Q92905	10987

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:50
Immunofluorescence (Immunocytochemistry)	1:50

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

COPS5 Antibody recognizes endogenous levels of total COPS5 protein. This antibody does not cross-react with PSMD14/POH1.

Species predicted to react based on 100% sequence homology:

Xenopus, Zebrafish, Bovine, Dog, Pig, Horse

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues near the amino-terminus of human COPS5 protein. Antibodies are purified by protein A and peptide affinity chromatography.

Background

The COP9 Signalosome (CSN) is a ubiquitously expressed multiprotein complex that is involved in a vast array of cellular and developmental processes, which is thought to be attributed to its control over the ubiquitin-proteasome pathway. Typically, the CSN is composed of eight highly conserved subunits (CSN1-CSN8), each of which is homologous to one of the eight subunits that form the lid of the 26S proteasome particle, suggesting that these complexes have a common evolutionary ancestor (1). CSN was first identified in *Arabidopsis thaliana* mutants with a light-grown seedling phenotype when grown in the dark (2-4). The subsequent cloning of the constitutive morphogenesis 9 (cop9) mutant from *Arabidopsis thaliana* was soon followed by the biochemical purification of the COP9-containing multiprotein complex (4). It is now widely accepted that the CSN directly interacts with cullin-RING ligase (CRL) families of ubiquitin E3 complexes, and that CSN is required for their proper function (5). In addition, CSN may also regulate protein homeostasis through its association with protein kinases and deubiquitinating enzymes. Collectively, these activities position the CSN as a pivotal regulator of the DNA-damage response, cell-cycle control, and gene expression (1).
COPS5/CSN5/Jab1 (c-Jun activation domain-binding protein-1) was originally identified as a transcriptional coactivator of c-Jun and subsequently discovered to be a fifth component and integral part of the CSN (6). As the catalytic center of the CSN, COPS5 is able to integrate multiple functions of the CSN complex such as cell-cycle control, transcription, and DNA-damage response by regulating the activity of CRLs through deneddylation of cullins (7). Indeed, COPS5 harbors a Mpr1-Pad1-N-terminal (MPN) domain with an embedded Jab1/CSN5 MPN domain metalloenzyme (JAMM) motif that is essential for the CSN isopeptidase activity responsible for deneddylation of CRLs. COPS5 is an evolutionarily conserved 38 kDa protein in humans, mice, fission yeast, and plants, which suggests that it is critical to cell survival and proliferation. A role for COPS5 as a positive regulator of cellular proliferation is supported by evidence that it functionally inactivates several key tumor suppressors such as p53, RUNX3, Smad4, and $p27^{Kip1}$ through altered subcellular localization, degradation, and deneddylation (8-12). These findings are underscored by the observation that COPS5 overexpression has been identified in a number of different tumor types and has been implicated in the initiation and progression of several types of cancer (13). Moreover, COPS5-deficient mice display an embryonically lethal phenotype highlighted by elevated expression of COPS5 targets such as p53 and p27 (14,15).

Background References

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3. Wei, N. et al. (1994) *Cell* 78, 117-24.
4. Chamovitz, D.A. et al. (1996) *Cell* 86, 115-21.
5. Cope, G.A. and Deshaies, R.J. (2003) *Cell* 114, 663-71.
6. Claret, F.X. et al. (1996) *Nature* 383, 453-7.
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8. Bech-Otschir, D. et al. (2001) *EMBO J* 20, 1630-9.
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10. Wan, M. et al. (2002) *EMBO Rep* 3, 171-6.
11. Tomoda, K. et al. (2002) *J Biol Chem* 277, 2302-10.
12. Kim, J.H. et al. (2009) *J Cell Biochem* 107, 557-65.
13. Shackleford, T.J. and Claret, F.X. (2010) *Cell Div* 5, 26.
14. Tian, L. et al. (2010) *Oncogene* 29, 6125-37.
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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 **IP:** Immunoprecipitation **IF-IC:** Immunofluorescence (Immunocytochemistry)

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