Revision 1

Store at -20C

#7662

PSMD14 Antibody

Cell Signaling TECHNOLOGY®

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

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W	H M R Mk	Endogenous	34	Rabbit	#O00487	10213

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

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

Species predicted to react based on 100% sequence homology

Xenopus, Zebrafish, Dog

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Gly182 of human PSMD14 protein. Antibodies are purified by protein A and peptide affinity chromatography.

Background

The 26S proteasome is a highly abundant proteolytic complex involved in the degradation of ubiquitinated substrate proteins. It consists largely of two sub-complexes, the 20S catalytic core particle (CP) and the 19S/PA700 regulatory particle (RP) that can cap either end of the CP. The CP consists of two stacked heteroheptameric β-rings (β_{1-7}) that contain three catalytic β-subunits and are flanked on either side by two heteroheptameric α-rings (α_{1-7}). The RP includes a base and a lid, each having multiple subunits. The base, in part, is composed of a heterohexameric ring of ATPase subunits belonging to the AAA (ATPases Associated with diverse cellular Activities) family. The ATPase subunits function to unfold the substrate and open the gate formed by the α-subunits, thus exposing the unfolded substrate to the catalytic β-subunits. The lid consists of ubiquitin receptors and DUBs that function in recruitment of ubiquitinated substrates and modification of ubiquitin chain topology (1,2). Other modulators of proteasome activity, such as PA28/11S REG, can also bind to the end of the 20S CP and activate it (1,2).
Of the subunits that comprise the 19S RP lid, only PSMD14 (POH1) has a known function. PSMD14 is classified as a metalloenzyme DUB and its activity has been shown to be critical for proteasome function in both yeast and humans (3-6). Indeed, PSMD14 harbors an Mpr1-Pad1-N-terminal (MPN) domain with an embedded, highly conserved signature motif for metal-dependent isopeptidases that has been dubbed JAMM, from Jab1/Pad1/MPN domain metalloenzyme. The JAMM motif of PSMD14 consists of a pattern of four charged amino acids: a glutamate residue followed by two histidines and an aspartate ($EX_nHXHX_{10}D$). It has been proposed that the histidine residues, in concert with the aspartate, bind to a zinc ion that, together with the preceding glutamate, forms the catalytic site of PSMD14 (3,4). PSMD14 is thought to cleave ubiquitin chains with proximal specificity relative to the substrate, thus removing whole ubiquitin chains en bloc (3). Recent studies have implicated PSMD14 as an important regulator of ErbB2 (7) and c-Jun (8) protein levels.

Background References

1. Finley, D. (2009) *Annu Rev Biochem* 78, 477-513.
2. Lee, M.J. et al. (2011) *Mol Cell Proteomics* 10, R110.003871.
3. Verma, R. et al. (2002) *Science* 298, 611-5.
4. Yao, T. and Cohen, R.E. (2002) *Nature* 419, 403-7.
5. Maytal-Kivity, V. et al. (2002) *BMC Biochem* 3, 28.
6. Gallery, M. et al. (2007) *Mol Cancer Ther* 6, 262-8.
7. Liu, H. et al. (2009) *PLoS One* 4, e5544.
8. Nabhan, J.F. and Ribeiro, P. (2006) *J Biol Chem* 281, 16099-107.

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

W: Western Blotting

Cross-Reactivity Key

H: Human **M:** Mouse **R:** Rat **Mk:** Monkey

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