Revision 1

Store at -20C

#13923

PSMC3/TBP1 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	46, 48	Rabbit	#P17980	5702

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

PSMC3/TBP1 recognizes endogenous levels of total PSMC3 (TBP1) protein. This antibody does not cross-react with other AAA-ATPase subunits of the 19S proteasome regulatory particle.

Species predicted to react based on 100% sequence homology

Bovine, Pig, Horse

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Glu106 of human PSMC3 (TBP1) 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).
The base of the eukaryotic proteasome 19S/PA700 RP contains six AAA-ATPase subunits (PSMC1-PSMC6) that bind directly to the 20S CP α-ring. These 19S RP ATPases are thought to assemble into a heterohexameric, pore-like structure that forms part of the substrate translocation channel. Energy derived from ATP hydrolysis by the AAA-ATPases is utilized for substrate unfolding and translocation, which is required for degradation of ubiquitinated folded proteins within the central chamber of the 20S CP formed by β-subunits (3-5). The human immunodeficiency virus Tat-Binding Protein 1 (PSMC3, TBP1) is a 19S AAA-ATPase subunit that functions as a transcriptional activator (6-8). Research studies demonstrate that PSMC3/TBP1 may act as a tumor suppressor by promoting pVHL-dependent degradation of HIF1α (9) and protecting p14-ARF from proteasomal degradation (10).

Background References

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4. Braun, B.C. et al. (1999) *Nat Cell Biol* 1, 221-6.
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6. Nelbock, P. et al. (1990) *Science* 248, 1650-3.
7. Ohana, B. et al. (1993) *Proc Natl Acad Sci U S A* 90, 138-42.
8. Satoh, T. et al. (2009) *Endocrinology* 150, 3283-90.
9. Corn, P.G. et al. (2003) *Nat Genet* 35, 229-37.
10. Pollice, A. et al. (2007) *Oncogene* 26, 5154-62.

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 nonfat dry milk, 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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Limited Uses