Revision 1

Store at -20C

#14395

PSMC2 (D5T1T) Rabbit mAb

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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	47	Rabbit IgG	#P35998	5701

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, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. *Do not aliquot the antibody.*

Specificity/Sensitivity

PSMC2 (D5T1T) Rabbit mAb recognizes endogenous levels of total PSMC2 protein. This antibody does not cross-react with other AAA-ATPase subunits of the 19S proteasome regulatory particle.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the amino terminus of human PSMC2 protein.

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). PSMC2 (RPT1, MSS1) is a AAA-ATPase subunit of the 19S/PA700 RP. Research studies have shown that PSMC2 is associated with several components of the basal transcriptional machinery suggesting that PSMC2, in addition to participating in proteasome-dependent degradation of proteins, may also play a role in gene transcription (6). More recently, it has been shown that numerous human cancer cell lines have reduced PSMC2 expression resulting from loss of *PSMC2* copy number loss and display a strict threshold requirement for PSMC2 levels in order to sustain a proliferative advantage (7).

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. Groll, M. et al. (2000) *Nat Struct Biol* 7, 1062-7.
4. Braun, B.C. et al. (1999) *Nat Cell Biol* 1, 221-6.
5. Liu, C.W. et al. (2002) *J Biol Chem* 277, 26815-20.
6. Yanagi, S. et al. (2000) *Biochem Biophys Res Commun* 279, 568-73.
7. Nijhawan, D. et al. (2012) *Cell* 150, 842-54.

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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