Revision 1

Store at -20C

#13378

PSMG1/PAC1 Antibody

Cell Signaling TECHNOLOGY®

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Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W, IP	H Mk	Endogenous	30	Rabbit	#O95456	8624

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:200

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

PSMG1/PAC1 Antibody recognizes endogenous levels of total PSMG1 (PAC1) protein in human and monkey cells. This antibody weakly cross-reacts with murine and rat PSMG1 (PAC1) protein. This antibody does not cross-react with PSMG2 (PAC2) protein.

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues near the amino terminus of human PSMG1 (PAC1) 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).
Proteasome assembly chaperone 1 (PSMG1, PAC1) is an evolutionarily conserved, ubiquitously expressed chaperone protein that promotes proper biogenesis of the α-ring of the 20S CP of the eukaryotic proteasome (3,4). PSMG1 (PAC1) functions in a heterodimeric complex with PSMG2 (PAC2) and was originally identified as a proteasome subunit binding partner (4). Intact PSMG1-PSMG2 heterodimers both promote heteroheptameric α-ring assembly and/or stability and prevent accumulation of non-productive α-ring dimers (4). Research studies targeting the disruption of the murine *Psmg1* locus have substantiated the importance of proteasome chaperones in contributing to normal proteasome maturation and cellular homeostasis by demonstrating that loss of Psmg1/Pac1 function leads to embryonic lethality (5).

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. Vidal-Taboada, J.M. et al. (2000) *Biochem Biophys Res Commun* 272, 156-63.
4. Hirano, Y. et al. (2005) *Nature* 437, 1381-5.
5. Sasaki, K. et al. (2010) *Mol Cell Biol* 30, 3864-74.

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 **IP:** Immunoprecipitation

Cross-Reactivity Key

H: Human **Mk:** Monkey

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