Revision 1

Store at -20C

#13635

PSMB8/LMP7 (D1K7X) Rabbit mAb

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	Endogenous	23, 28	Rabbit IgG	#P28062	5696

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

PSMB8/LMP7 (D1K7X) Rabbit mAb recognizes endogenous levels of total PSMB8/LMP7 protein. This antibody recognizes both 28 kDa precursor and 23 kDa mature forms of PSMB8/LMP7 and does not cross-react with PSMB5 protein. This antibody recognizes proteins of unknown origin in the 80-100 kDa range.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human PSMB8/LMP7 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).
Constitutively expressed core particle subunits PSMB5, PSMB7, and PSMB6 provide chymotrypsin-like, trypsin-like, and caspase-like activities, respectively (3). In immune cells involved in antigen presentation, these subunits are replaced by highly homologous, induced β-subunits to form the immunoproteasome (4,5).

Proteasome subunit beta type-8 (PSMB8, LMP7) is expressed as a proenzyme that is cleaved to form the mature PSMB8 (LMP7) immunoproteasome core particle subunit (6). Interferon-γ induces expression of PSMB8, which functionally replaces the PSMB5 core particle subunit in immunoproteasome processing of MHC class I-restricted peptide antigens (7). Research studies suggest that reduced PSMB8 expression or expression of the non-functional LMP7-E1 isoform may impair immunoproteasome assembly, and that PSMB8 deficiency results in reduced MHC class I molecule expression (8-10). Inhibition of PSMB8 in murine rheumatoid arthritis models attenuates disease indicators, suggesting that PSMB8 is a potential therapeutic target in the treatment of some proinflammatory autoimmune diseases (11). Mutations in the corresponding PSMB8 gene can cause an autoinflammatory syndrome known as CANDLE Syndrome (12).

Background References

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4. Boes, B. et al. (1994) *J Exp Med* 179, 901-9.
5. Cardozo, C. and Kohanski, R.A. (1998) *J Biol Chem* 273, 16764-70.
6. Groettrup, M. et al. (2010) *Nat Rev Immunol* 10, 73-8.
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8. Heink, S. et al. (2006) *Cancer Res* 66, 649-52.
9. De, M. et al. (2003) *J Biol Chem* 278, 6153-9.
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11. Muchamuel, T. et al. (2009) *Nat Med* 15, 781-7.
12. Liu, Y. et al. (2012) *Arthritis Rheum* 64, 895-907.
13. Salter, R.D. et al. (1985) *Immunogenetics* 21, 235-46.

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

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Limited Uses