#13207 Store at -20°C

PSMB7 (E1L5H) Rabbit mAb

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New 09/13

For Research Use Only. Not For Use In Diagnostic Procedures.

Entrez Gene ID #5695
UniProt ID #Q99436

Applications	Species Cross-Reactivity*	Molecular Wt.	Isotype
W Endogenous	H, M, Mk	28, 30 kDa	Rabbit IgG**

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.*

***Species cross-reactivity is determined by western blot.**

****Anti-rabbit secondary antibodies must be used to detect this antibody.**

Recommended Antibody Dilutions:

Western blotting	1:1000

For product specific protocols please see the web page for this product at www.cellsignal.com.

Please visit www.cellsignal.com for a complete listing of recommended companion products.

Background: The 26S proteasome is a highly abundant ~2 MDa complex that serves as the proteolytic arm of the ubiquitin-proteasome system. It consists largely of two sub-complexes, the 19S regulatory particle (RP) and the 20S catalytic core particle (CP); in many cases two RPs cap either end of a CP. The CP is made of two stacked β-rings that contain the catalytic sites, each of which is made of seven subunits (β_{1-7}), flanked on either side by two α-rings, which are also made of seven subunits each (α_{1-7}). Thus, the structure of the 20S CP is $\alpha_{1-7}\beta_{1-7}\beta_{1-7}\alpha_{1-7}$. The RP includes a base and a lid. The base, in part, is composed of a hexametric ring of ATPases that function to unfold the substrate and open the gate of the interlacing amino-terminal segments of the α-subunits, thus allowing entry of the unfolded substrate into the catalytic chamber. The lid is predominantly involved in specific recognition of the ubiquitin signal (1). In addition to the 19S cap, other proteins and complexes, such as proteasome activator 28 (PA28/11S), bind to the end of the 20S cylinder and activate it by facilitating opening of the gate. Furthermore, proteasome-associated DUBs and E3s can remodel substrate-anchored polyubiquitin chains, which may modulate their susceptibility to degradation (2).

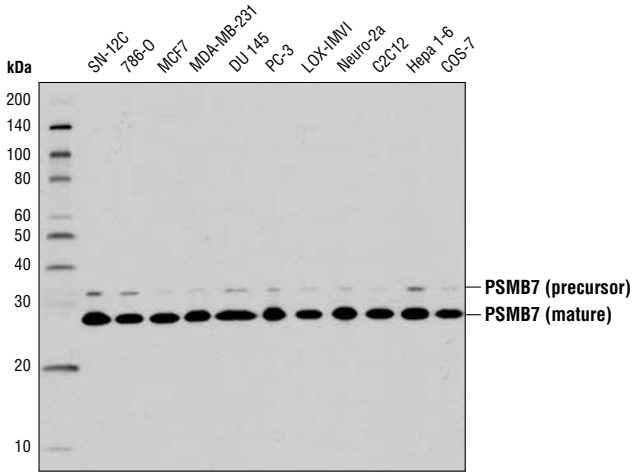
The core particle exhibits three distinct enzymatic activities, each catalyzed by a separate protein subunit. The constitutively expressed PSMB5, PSMB7 and PSMB6 subunits provide chymotrypsin-like, trypsin-like, and caspase-like activities, respectively. These catalytic subunits belong to the amino-terminal nucleophile (Ntn) hydrolase family and are characterized by a single-residue active site. The catalytic β-subunits are synthesized with amino-terminal propeptides, which are removed at the final step of proteasome biogenesis to expose the catalytic threonine residues (3). In immune cells involved in antigen presentation, the constitutively expressed PSMB6, PSMB7, and PSMB5 subunits are replaced by three highly homologous, induced β-subunits to form the immunoproteasome (4,5). PSMB7 is downregulated at the protein level by IFN-γ and replaced by PSMB10 to remodel the proteolytic specificity of the proteasome for more appropriate immunological processing of endogenous antigens (6). Research studies show that PSMB7 expression is upregulated in human colon adenocarcinomas, and suggest that high PSMB7 expression may serve as a potential prognostic marker in breast cancer (7,8).

Specificity/Sensitivity: PSMB7 (E1L5H) Rabbit mAb recognizes endogenous levels of total PSMB7 protein. This antibody reacts with precursor and mature forms of PSMB7, but does not cross-react with PSMB10.

Source/Purification: Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Lys237 of human PSMB7 protein.

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) Stringer, J.R. et al. (1977) *J Virol* 21, 889-901.
(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) Hisamatsu, H. et al. (1996) *J Exp Med* 183, 1807-16.
(7) Rho, J.H. et al. (2008) *J Proteome Res* 7, 2959-72.
(8) Munkácsy, G. et al. (2010) *Br J Cancer* 102, 361-8.



Western blot analysis of extracts from various cell lines using PSMB7 (E1L5H) Rabbit mAb.

IMPORTANT: For western blots, incubate membrane with diluted antibody in 5% w/v nonfat dry milk, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

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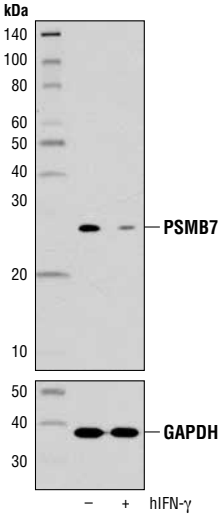
Applications Key: **W**—Western **IP**—Immunoprecipitation **IHC**—Immunohistochemistry **ChIP**—Chromatin Immunoprecipitation **IF**—Immunofluorescence **F**—Flow cytometry **E-P**—ELISA-Peptide
Species Cross-Reactivity Key: **H**—human **M**—mouse **R**—rat **Hm**—hamster **Mk**—monkey **Mi**—mink **C**—chicken **Dm**—D. melanogaster **X**—Xenopus **Z**—zebrafish **B**—bovine **Dg**—dog **Pg**—pig **Sc**—S. cerevisiae **Ce**—C. elegans **Hr**—horse **All**—all species expected Species enclosed in parentheses are predicted to react based on 100% homology.



Western blot analysis of extracts from HeLa cells, untreated (-) or treated with Human Interferon-γ (hIFN-γ) #8901 (100 ng/ml, 72 hr; +), using PSMB7 (E1L5H) Rabbit mAb (upper) and GAPDH (D16H11) XP® Rabbit mAb #5174 (lower).