#12197 Store at -20°C

PSMB7 Antibody

☑ 100 µl
(10 western blots)

Cell Signaling TECHNOLOGY®

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New 11/12

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

Entrez-Gene ID #5695
Swiss-Prot Acc. #Q99436

Applications	Species Cross-Reactivity*	Molecular Wt.	Source
W Endogenous	H, Mk	28 kDa	Rabbit**

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.*

***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.

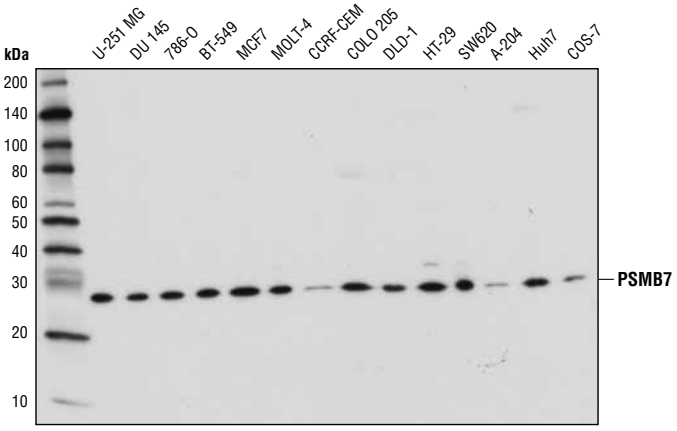
Please visit www.cellsignal.com for a complete listing of recommended complementary products.

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), and 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 ($\beta_{1\text{-}7}$), flanked on either side by two α-rings, which are also made of seven subunits each ($\alpha_{1\text{-}7}$). Thus, the structure of the 20S CP is $\alpha_{1\text{-}7}\beta_{1\text{-}7}\beta_{1\text{-}7}\alpha_{1\text{-}7}$. 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 N-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 performs three types of catalytic activities inside its chamber: chymotrypsin-like, trypsin-like, and caspase-like activities, which are provided by the constitutively expressed PSMB5 (β5/MB1/X/LMPX/Macropain epsilon chain), PSMB7 (β2/Z/Macropain chain Z) and PSMB6 (β1/Y/LMPY/Macropain delta chain) subunits, respectively. These catalytic subunits belong to the N-terminal nucleophile (Ntn) hydrolase family and are characterized by an unusual, essentially single-residue active site: the N-terminal threonine of each proteolytic subunit provides both the catalytic nucleophile (on its side chain) and the primary proton acceptor (on the main chain N-terminus). The catalytic β-subunits are synthesized with N-terminal propeptides, which are removed at the final step of proteasome biogenesis by limited proteolysis to expose the catalytic threonine residues (3). In immune responsive cells the constitutively expressed PSMB6, PSMB7, and PSMB5 subunits are replaced by three highly homologous induced β-subunits: PSMB9 (β1i/LMP2/RING12), PSMB10 (β2i/MECL-1/LMP10), and PSMB8 (β5i/LMP7/RING10), respectively, to form the immunoproteasome that has higher chymotrypsin-like and trypsin-like activities known to be favorable for antigen processing (4,5). Indeed, PSMB7 is downregulated at the protein level by IFN-γ and replaced by PSMB10/MECL-1 in order to remodel the proteolytic specificity of the proteasome for more appropriate immunological processing of endogenous antigens (6). Investigators have shown that PSMB7 expression is upregulated in human colon adenocarcinomas (7). Furthermore, research studies have implicated high expression of PSMB7 as a potential prognostic marker in breast cancer (8).

Specificity/Sensitivity: PSMB7 Antibody recognizes endogenous levels of total PSMB7 protein. Based upon sequence alignment, this antibody is predicted to react with precursor and mature forms of PSMB7.

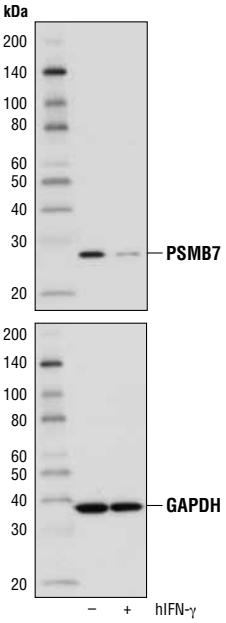
Source/Purification: Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human PSMB7 protein. Antibodies are purified by protein A and peptide affinity chromatography.



Western blot analysis of extracts from various cell lines using PSMB7 Antibody.

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

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 Antibody (upper) or GAPDH (D16H11) XP® Rabbit mAb #5174 (lower).

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.