Proteasome activator 11S α subunit polyclonal antibody

The proteasome is widely recognised as the central enzyme of non-lysosomal protein degradation. It is responsible for intracellular protein turnover and it is also critically involved in many regulatory processes and, in higher eukaryotes, in antigen processing. An enzymatic cascade is responsible for the attachment of multiple ubiquitin molecules to lysine residues of proteins targeted for degradation. The 26S proteasome is the key enzyme of the ubiquitin/ATP-dependent pathway of protein degradation.

The catalytic core of this unusually large (2000kDa, 450Å in length) complex (31 subunits) is formed by the 20S proteasome, a barrel shaped structure shown by electron microscopy to comprise of four rings each containing seven subunits. 20S Proteasomes degrade only unfolded proteins in an energy-independent manner, whereas 26S proteasomes degrade native and ubiquitinylated proteins in an ATP-dependent manner. The native protein substrates are recognised by subunits, some with ATP binding sites, of the outer 19S caps of the 26S proteasome. The 19S regulatory subunit recognizes ubiquitinated proteins and plays an essential role in unfolding and translocating targets into the lumen of the 20S subunit. A second activator which can associate with the 20S proteasome in the absence of ATP is known as PA28 or the 11S regulator. The pure PA28 activator is a complex of two alternating subunits, PA28α and PA28β, which share approximately 50% homology but also show considerable similarity (30-40%) to a nuclear protein of unknown function, the Ki autoantigen (recently referred to as PA28γ). These subunits, with an apparent relative molecular weight of approximately 29kDa, form ringlike heteromeric complexes of ~200kDa possibly with an $\alpha_3\beta_3$ stoichiometry. Electron microscopic studies have shown PA28 to be a ring shaped particle which, like the 19S, caps the 20S proteasome, by binding to the α-rings, at both or either end. The complex may, however, be readily dissociated. The finding that PA28 modulates the proteasome-catalysed production of antigenic peptides presented to the immune system on MHC class I molecules indicates a cellular function of this activator in antigen processing. Several genetic diseases are associated with defects in the ubiquitin-proteasome pathway. Some examples of affected proteins include those linked to cystic fibrosis, Angelman's syndrome, and Liddle syndrome.

This antibody is covered by our Worry-Free Guarantee.

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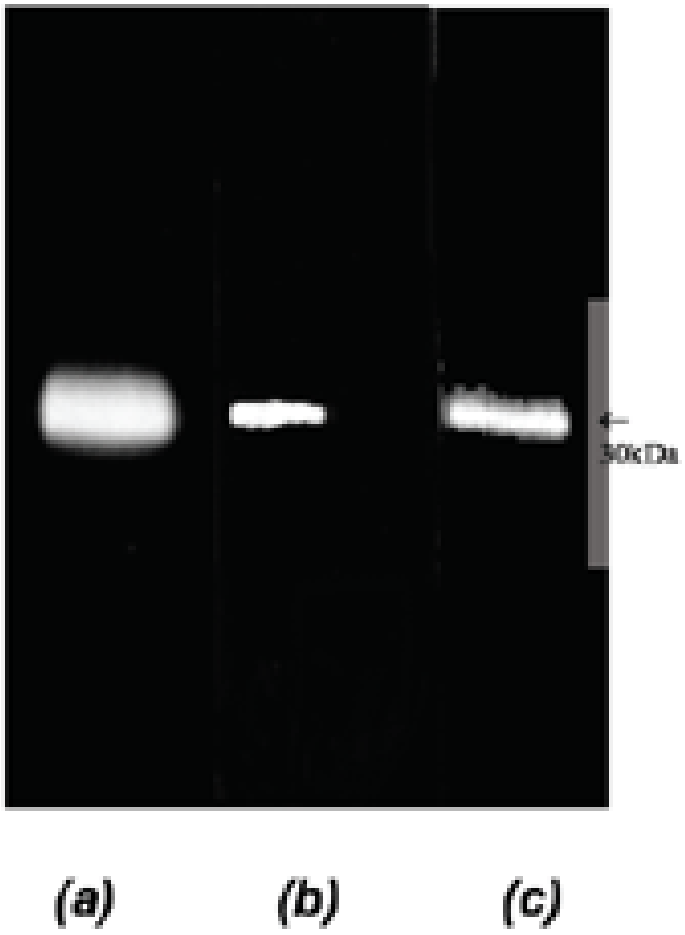
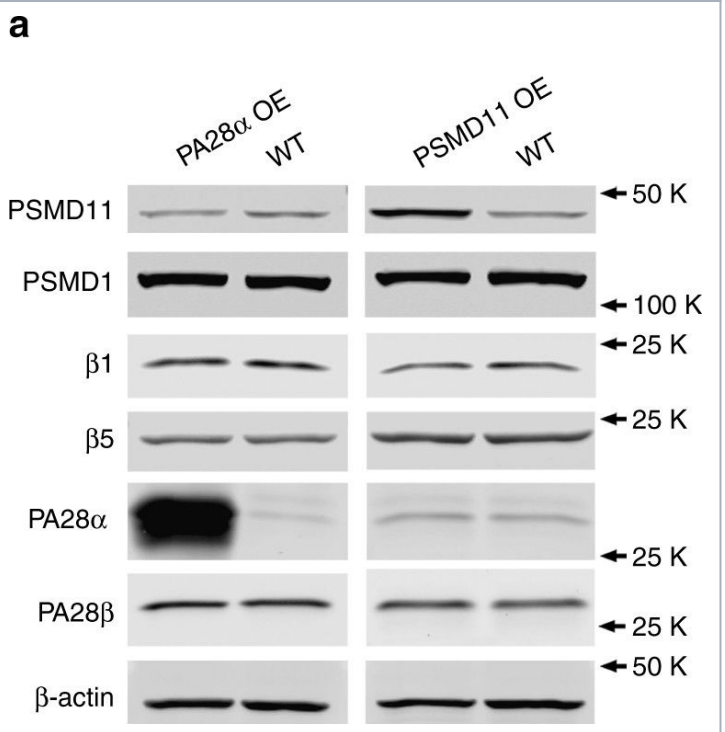
BML-PW8185-0025	25µl
BML-PW8185-0100	100µl

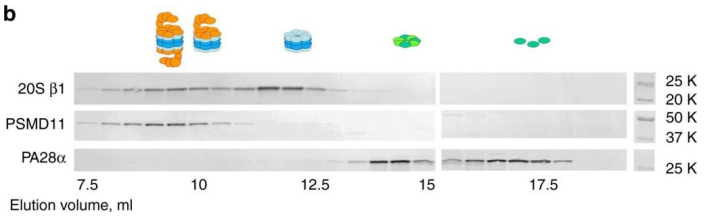
Manuals, SDS & CofA View Online »



Luminograph of (a) mouse liver preparation, (b) human placental proteasome preparation, and (c) HeLa cell lysate after PAGE followed by blotting onto nitrocellulose and probing with antibody BML-PW8185. Antibody dilution 1:1000 using ECL procedure (1 min exposure).



Characterization of PA28α and PSMD11 overexpressing (OE) mice. a Western blots of proteasomal subunits in retinal lysates containing 30 µg total protein. Bands were visualized using the LiCor Odyssey imaging system. Each protein was analyzed in at least 3 pairs of 1-month-old WT and overexpressing animals. b Retinal morphology of 3-month-old overexpressing and WT mice. Retinas were embedded in plastic, 1 µm cross-sections were stained by toluidine blue and analyzed by light microscopy. Data are taken from one of the five similar experiments; scale bar: 20 µm. c Chymotrypsin-like proteasomal activity in retinal extracts from 1-month-old overexpressing and WT mice; measurements were performed in the presence or absence of ATP, as indicated. The number of measurements was 10, 7, and 5 for WT, PA28α overexpressing, and PSMD11 overexpressing mice, respectively. The data are shown as mean ± SEM; p values determined across individual preparations are indicated in the text. d Fractionation of proteasomal components in retinal extracts from 2-month-old overexpressing and WT mice by size-exclusion chromatography on a Superose-6 Increase column. Proteins in 0.5 ml fractions were probed by western blotting using antibodies against the β1 subunit of the 20S proteasome core, PSMD11 subunit of the 19S proteasome cap, and PA28α subunit of the11S cap. Data are taken from one of the three similar experiments



Proteasome composition of the mouse retina. a The molar ratio among 20S, 19S, and 11S proteasomal components determined by quantitative mass spectrometry. Data are shown as mean ± SEM; n = 3. b Fractionation of proteasome components in retinal extracts from 1-month-old mice (200 µg total protein) by size-exclusion chromatography on a Superose-6 column. Proteins in 0.5 ml fractions were probed by western blotting using antibodies against β1 subunit of the 20S proteasome core, PSMD11 subunit of the 19S proteasome cap, and PA28α subunit of the 11S cap. Data are taken from one of the four similar experiments. c The distribution of β1, PSMD11, and PA28α in 20 µm serial tangential sections throughout the entire WT mouse retina. Each section was solubilized in 30 µl SDS-PAGE sample buffer for analysis. Proteins were visualized by western blotting using the ECL technique. Rhodopsin was used as a photoreceptor outer segment marker; phosducin was used as a marker of the entire photoreceptor layer. Data are taken from one of two similar experiments. A representative retinal cross-section is shown below western blot panes; the corresponding position of the photoreceptor cells is illustrated by a cartoon

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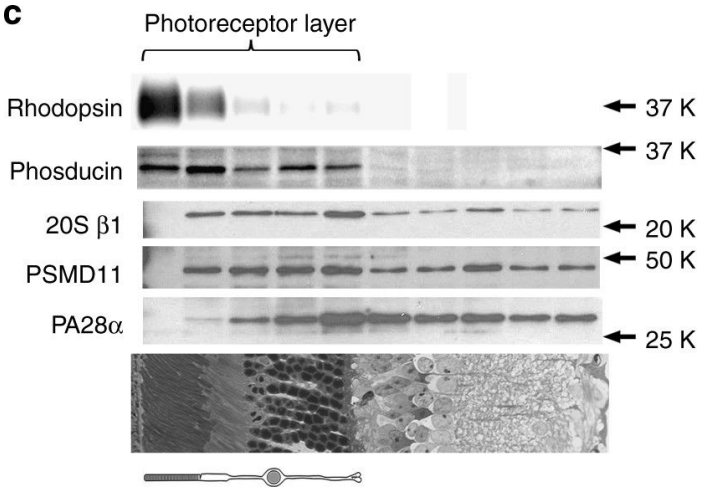

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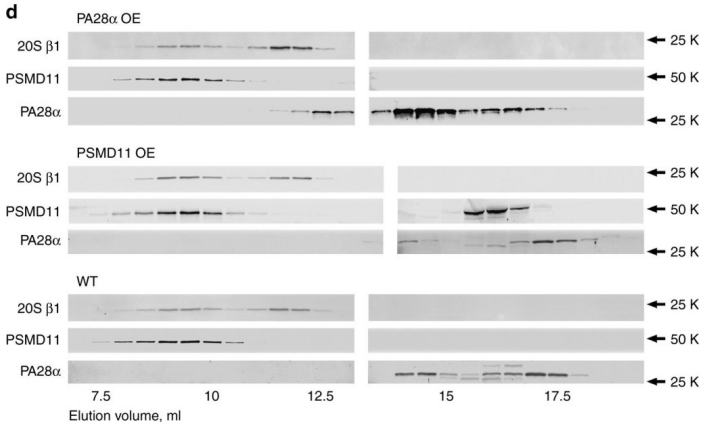

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Handling & Storage

Handling	Avoid freeze/thaw cycles.
Long Term Storage	-20°C
Shipping	Blue Ice

Regulatory Status

RUO - Research Use Only

Product Details

Alternative Name	PA28α, Proteasome activator complex subunit 1
Application	WB
Formulation	Liquid. Antiserum containing 10mM sodium azide.
GenBank ID	1698570 (mouse)
Host	Rabbit
Immunogen	Synthetic peptide corresponding to aa 5-19 of mouse PA28α.
Species Reactivity	Human, Mouse, Rat
Specificity	Recognizes the α subunit of proteasome activator 11S.
UniProt ID	P97371 (mouse), Q06323 (human)
Worry-free Guarantee	**This antibody is covered by our Worry-Free Guarantee .**

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