abcam

ab242061

Anti-Proteasome 20S LMP2 antibody [EPR22042]

Recombinant | RabMAb | KO Validated | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR22042
Purification technique	Affinity purification Protein A
Concentration	0.535 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Human
Dilution info	1/30
Notes	-

Expected

Species	Mouse, Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

WB

Tested

Species	Mouse
Dilution info	1/1000
Notes	-

Species	Rat
Dilution info	1/1000
Notes	-

Species	Human
Dilution info	1/1000
Notes	-

ICC/IF

Tested

Species	Mouse
Dilution info	1/100
Notes	-

Species	Human
Dilution info	1/100
Notes	-

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.

Notes	-

Flow Cyt (Intra)

Tested

Species	Mouse
Dilution info	1/500
Notes	-

Species	Human
Dilution info	1/500
Notes	-

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

IHC-P

Tested

Species	Mouse
Dilution info	1/2000
Notes	-

Species	Rat
Dilution info	1/2000
Notes	-

Species	Human
Dilution info	1/2000
Notes	-

Target data

See full target information PSMB9

Function	The proteasome is a multicatalytic proteinase complex which is characterized by its ability to cleave peptides with Arg, Phe, Tyr, Leu, and Glu adjacent to the leaving group at neutral or slightly basic pH (PubMed:33727065, PubMed:34819510). The proteasome has an ATP-dependent proteolytic activity. This subunit is involved in antigen processing to generate class I binding peptides. Replacement of PSMB6 by PSMB9 increases the capacity of the immunoproteasome to cleave model peptides after hydrophobic and basic residues.

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	The proteasome LMP2 also known as proteasome subunit beta type-1 or PSMB9 is a component important in the functioning of the 20S proteasome complex. This molecular entity with a mass of approximately 23 kDa is predominantly expressed in immune cells including lymphocytes. LMP2 incorporates into the immunoproteasome a specialized variant of the proteasome that participates prominently in the processing of class I MHC peptides enhancing the immune response.
Biological function summary	LMP2 is integral to protein catabolism and regulation of the cellular protein homeostasis. As part of the larger proteasome complex the LMP2 protein functions in degradative pathways that recycle amino acids from ubiquitin-tagged proteins. This proteasome takes part in antigen processing helping convert proteins into peptides that are presented on the surface of cells for immune system recognition.
Pathways	LMP2 is significantly involved in the ubiquitin-proteasome pathway and immune system processes. It interacts with other immunoproteasome subunits like LMP7 and MECL-1 which work together to enhance the proteolytic capacity for antigen presentation. The presence of LMP2 in these pathways demonstrates its role in adaptive immunity contributing to the clearance of misfolded or damaged proteins and therefore maintaining cell health.
Associated diseases and disorders	LMP2 associates with immune-related conditions and some cancer types. Dysregulation of LMP2 expression or function can impact antigen presentation potentially leading to autoimmune disorders due to inappropriate immune activation. Moreover alterations in LMP2 expression have been observed in certain cancers such as melanoma where it affects proteasome activity and influences tumor progression. In these contexts interactions with proteins like TAP1 and TAP2 which aid in peptide transport mark its relevance in disease pathogenesis.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

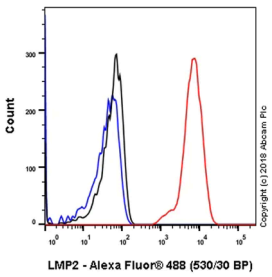
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

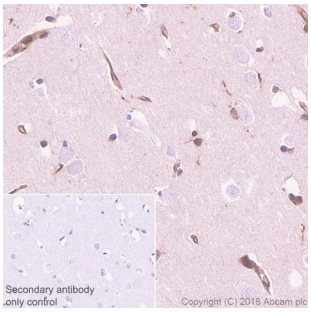
13 product images



Flow Cytometry (Intracellular) - Anti-Proteasome 20S LMP2 antibody [EPR22042] (ab242061)

Proteasome 20S LMP2 Flow Cytometry (Intracellular) staining using rabbit Anti-Proteasome 20S LMP2 antibody

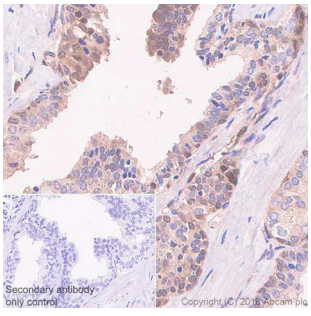
Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed, 90% methanol permeabilized Ramos (Human Burkitt's lymphoma B lymphocyte) cell line labeling Proteasome 20S LMP2 with ab242061 at 1/500 (red) compared with a Rabbit monoclonal IgG (ab172730) (black) and an unlabeled control (cells without incubation with primary antibody and secondary antibody) (blue). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077), at 1/2000 dilution was used as the secondary antibody.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Proteasome 20S LMP2 antibody [EPR22042] (ab242061)

Proteasome 20S LMP2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Proteasome 20S LMP2 antibody

Immunohistochemical analysis of paraffin-embedded human cerebrum tissue labeling Proteasome 20S LMP2 with ab242061 at 1/2000 dilution, followed by a ready to use Goat Anti-Rabbit IgG H&L (HRP). Cytoplasmic and nuclear staining in human cerebrum (PMID:20174631) is observed. Counterstained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is a ready to use Goat Anti-Rabbit IgG H&L (HRP).
Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0).

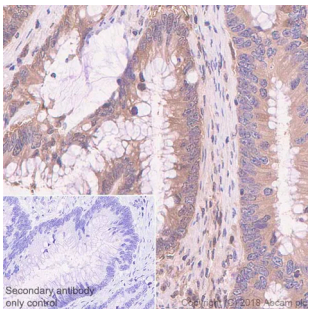


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Proteasome 20S LMP2 antibody [EPR22042] (ab242061)

Proteasome 20S LMP2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Proteasome 20S LMP2 antibody

Immunohistochemical analysis of paraffin-embedded human prostatic hyperplasia tissue labeling Proteasome 20S LMP2 with ab242061 at 1/2000 dilution, followed by a ready to use Goat Anti-Rabbit IgG H&L (HRP). Cytoplasmic and nuclear staining in human prostatic hyperplasia (PMID:22677907) is observed. Counterstained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is a

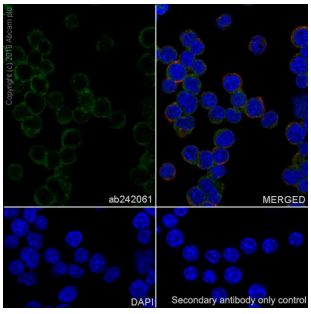
ready to use Goat Anti-Rabbit IgG H&L (HRP).
Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Proteasome 20S LMP2 antibody [EPR22042] (ab242061)

Proteasome 20S LMP2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Proteasome 20S LMP2 antibody

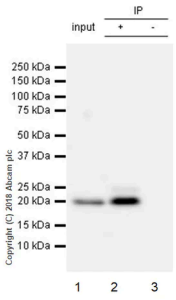
Immunohistochemical analysis of paraffin-embedded human colon cancer tissue labeling Proteasome 20S LMP2 with ab242061 at 1/2000 dilution, followed by a ready to use Goat Anti-Rabbit IgG H&L (HRP). Cytoplasmic and nuclear staining in human colon cancer (PMID:24040045) is observed. Counterstained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is a ready to use Goat Anti-Rabbit IgG H&L (HRP).
Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0).



Immunocytochemistry/ Immunofluorescence - Anti-Proteasome 20S LMP2 antibody [EPR22042] (ab242061)

Proteasome 20S LMP2 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Proteasome 20S LMP2 antibody

Immunofluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized Ramos (Human Burkitt's lymphoma B lymphocyte) cells labeling Proteasome 20S LMP2 with ab242061 at 1/100 dilution, followed by Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green). Confocal image showing cytoplasmic and weakly nuclear staining in Ramos cells. The nuclear counter stain is DAPI (blue).
Counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) at a 1/200 dilution (red).
The negative control is the secondary antibody only.

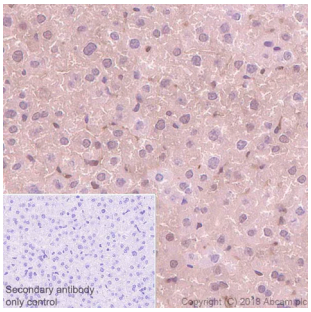


Immunoprecipitation - Anti-Proteasome 20S LMP2 antibody [EPR22042] (ab242061)

Proteasome 20S LMP2 was immunoprecipitated from 0.35 mg THP-1 (Human monocytic leukemia monocyte) whole cell lysate with ab242061 at 1/30 dilution. Western blot was performed from the immunoprecipitate using ab242061 at 1/1000 dilution. VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/5000 dilution.
Lane 1: THP-1 whole cell lysate 10 µg (Input).
Lane 2: ab242061 IP in THP-1 whole cell lysate.
Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab242061 in THP-1 whole cell lysate.
Blocking/Dilution buffer: 5% NFDM/TBST.
Exposure time: 10 seconds.
All lanes:
Immunoprecipitation - Anti-Proteasome 20S LMP2 antibody [EPR22042] (ab242061)

Predicted band size: 23 kDa

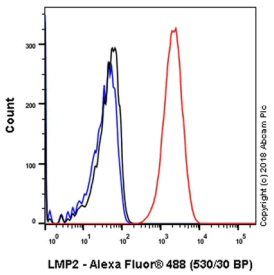
Observed band size: 21 kDa, 23 kDa



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Proteasome 20S LMP2 antibody [EPR22042] (ab242061)

Proteasome 20S LMP2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Proteasome 20S LMP2 antibody

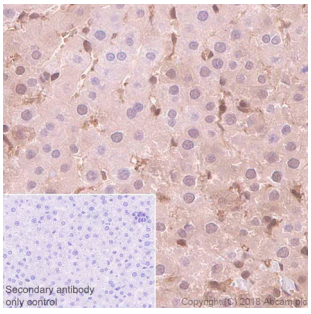
Immunohistochemical analysis of paraffin-embedded mouse liver tissue labeling Proteasome 20S LMP2 with ab242061 at 1/2000 dilution, followed by a ready to use Goat Anti-Rabbit IgG H&L (HRP). Cytoplasmic and nuclear staining in mouse liver (PMID:8365398) is observed. Counterstained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is a ready to use Goat Anti-Rabbit IgG H&L (HRP).
Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0).



Flow Cytometry (Intracellular) - Anti-Proteasome 20S LMP2 antibody [EPR22042] (ab242061)

Proteasome 20S LMP2 Flow Cytometry (Intracellular) staining using rabbit Anti-Proteasome 20S LMP2 antibody

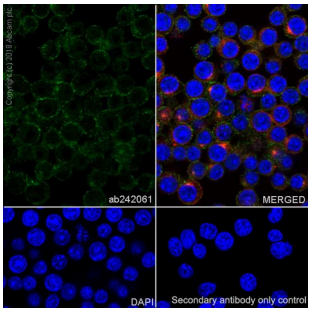
Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed, 90% methanol permeabilized RAW264.7 (Mouse Abelson murine leukemia virus-induced tumor macrophage) cell line labeling Proteasome 20S LMP2 with ab242061 at 1/500 (red) compared with a Rabbit monoclonal IgG (ab172730) (black) and an unlabeled control (cells without incubation with primary antibody and secondary antibody) (blue). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077), at 1/2000 dilution was used as the secondary antibody.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Proteasome 20S LMP2 antibody [EPR22042] (ab242061)

Proteasome 20S LMP2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Proteasome 20S LMP2 antibody

Immunohistochemical analysis of paraffin-embedded rat liver tissue labeling Proteasome 20S LMP2 with ab242061 at 1/2000 dilution, followed by a ready to use Goat Anti-Rabbit IgG H&L (HRP). Cytoplasmic and nuclear staining in rat liver (PMID:8365398) is observed. Counterstained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is a ready to use Goat Anti-Rabbit IgG H&L (HRP).
Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0).

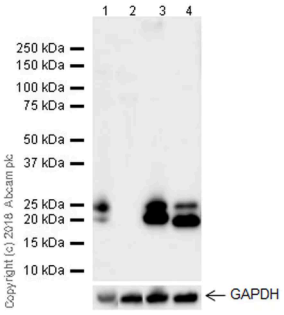


Immunocytochemistry/ Immunofluorescence - Anti-Proteasome 20S LMP2 antibody [EPR22042] (ab242061)

Proteasome 20S LMP2 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Proteasome 20S LMP2 antibody

Immunofluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized RAW 264.7 (mouse Abelson murine leukemia virus-induced tumor macrophage) cells labeling Proteasome 20S LMP2 with ab242061 at 1/100 dilution, followed by Goat Anti-Rabbit IgG H&L

(Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green). Confocal image showing cytoplasmic and weakly nuclear staining in RAW 264.7 cells. The nuclear counter stain is DAPI (blue).
Counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) at a 1/200 dilution (red).
The negative control is the secondary antibody only.



Western blot - Anti-Proteasome 20S LMP2 antibody [EPR22042] (ab242061)

Proteasome 20S LMP2 Western blot staining using rabbit Anti-Proteasome 20S LMP2 antibody

ab242061 was shown to specifically react with Proteasome 20S LMP2 in wild-type HAP1 cells as signal was lost in Proteasome 20S LMP2 knockout cells. Wild-type and Proteasome 20S LMP2 knockout samples were subjected to SDS-PAGE. ab242061 and ab181602 (Rabbit anti-GAPDH loading control) were incubated 1 hour at room temperature at 1/1000 dilution and 1/200,000 dilution respectively. Blots were developed with Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated (ab97051) secondary antibody at 1/50,000 dilution for 1 hour at room temperature before imaging. The blot was developed on a BIO-RAD® ChemiDoc™ MP instrument using the ECL technique.
The expression profile observed is consistent with what has been described in the literature (PMID:22355695; PMID:15284441).

All lanes:
Western blot - Anti-Proteasome 20S LMP2 antibody [EPR22042] (ab242061) at 1/1000 dilution

Lane 1:
Wild-type HAP1 at 40 µg

Lane 2:
Proteasome 20S LMP2 knockout HAP1 whole cell lysate at 40 µg

Lane 3:
Ramos (human Burkitt's lymphoma B lymphocyte), whole cell lysate at 20 µg

Lane 4:
RAW264.7 (mouse Abelson murine leukemia virus-induced tumor macrophage), whole cell lysate at 20 µg

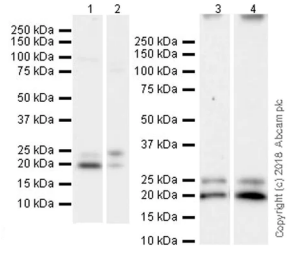
Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Predicted band size: 23 kDa

Observed band size: 21 kDa, 23 kDa

Exposure time: 59s



Western blot - Anti-Proteasome 20S LMP2 antibody [EPR22042] (ab242061)

Proteasome 20S LMP2 Western blot staining using rabbit Anti-Proteasome 20S LMP2 antibody

Blocking/Dilution buffer: 5% NFDM/TBST.
Exposure times: Lanes 1-2: 15 seconds, Lanes 3:3 minutes, Lane 4: 59 seconds.

The expression profile observed is consistent with what has been described in the literature (PMID:22355695; PMID:15284441).
All lanes:
Western blot - Anti-Proteasome 20S LMP2 antibody [EPR22042] (ab242061) at 1/1000 dilution

Lane 1:
C6 (rat glial tumor glial cell), whole cell lysate at 10 µg

Lane 2:
NIH/3T3 (mouse embryonic fibroblast), whole cell lysate at 10 µg

Lane 3:
HL-60 (human Acute Promyelocytic Leukemia promyeloblast), whole cell lysate at 20 µg

Lane 4:
Raji (human Burkitt's lymphoma B lymphocyte), whole cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Predicted band size: 23 kDa

Observed band size: 21 kDa, 23 kDa

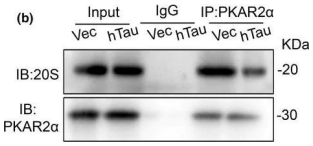


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Western blot - Anti-Proteasome 20S LMP2 antibody [EPR22042] (ab242061)

Proteasome 20S LMP2 Western blot staining using rabbit Anti-Proteasome 20S LMP2 antibody

Proteasome 20S LMP2 western blot using anti-Proteasome 20S LMP2 antibody [EPR22042] ab242061. Publication image and figure legend from Ye, J., Yin, Y., et al., 2020, Aging Cell, PubMed 31668016.

ab242061 was used in this publication in western blot. This may not be the same as the application(s) guaranteed by Abcam. For a full list of applications guaranteed by Abcam for ab242061 please see the product overview.

Overexpressing hTau disrupts PA28γ-20S proteasome complex formation and downregulating PKAR2α or upregulating PA28γ attenuates hTau-induced PKA/CREB inhibition. (a) Overexpressing hTau increases association of PKAR2α with PA28γ. The cultured hippocampal neurons infected with lenti-syn-hTau-mCherry virus for 7 days, and PA28γ was co-immunoprecipitated by anti-PA28γ antibody and detected by Western blot using anti-PKAR2α and anti-PA28γ antibody. For all co-immunoprecipitations, results are received from three independent experiments. (b) Overexpressing hTau decreases association of PKAR2α with 20S proteasome subunit. PKAR2α was co-immunoprecipitated using anti-PKAR2α antibody and detected by Western blot using anti-20S proteasome subunit and anti-PKAR2α antibody. (c) Overexpressing hTau decreases association of PA28γ with 20S proteasome subunit. 20S proteasome subunit was co-immunoprecipitated using anti-20S protease subunit and detected by Western blot using anti-PA28γ antibody and anti-20S proteasome subunit. (d) Tau dose not bind to PA28γ. The cultured hippocampal neuron extract was co-immunoprecipitated using anti-PA28γ, and tau was not detected in the precipitates by Tau5. (e, f) Downregulating PKAR2α by shRNA attenuates hTau-induced CREB dephosphorylation. The primary cultured hippocampal neurons (5 div) were co-infected with hTau and shPKAR2α lentivirus. After 7 days, the indicated proteins were measured by Western blot. (g, h) Upregulating PA28γ attenuates hTau-induced PKAR2α elevation and CREB dephosphorylation. The hTau and PA28γ lentivirus were co-infected in primary cultured hippocampal neurons (5 div) for 7 days, and the indicated proteins were measured by Western blot. Data were expressed as mean ± SEM. For

Western blot, the n number was 9 (from nine different batches of cultured hippocampal neurons). *p < .05, **p < .01, versus Vec, &p < .05, versus hTau in (f), #p < .05, ##p < .01, versus hTau in (h)

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