abcam

ab214769

Anti-beta 2 Microglobulin antibody [EP2978Y] - BSA and Azide free

Recombinant | RabMAb | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EP2978Y
Purification technique	Affinity purification Protein A
Concentration	1.035 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Human
Dilution info	-

Notes	-

Expected

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

WB

Tested

Species	Human
Dilution info	-
Notes	Can be blocked with beta 2 Microglobulin peptide (ab189068).

Species	Mouse
Dilution info	-
Notes	Can be blocked with beta 2 Microglobulin peptide (ab189068).

Species	Rat
Dilution info	-
Notes	Can be blocked with beta 2 Microglobulin peptide (ab189068).

IHC-P

Not recommended

Species	Mouse, Rat, Human
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human

Dilution info	-
Notes	-

Expected

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

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	ab199376 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Species	Mouse
Dilution info	-
Notes	ab199376 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Expected

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

Target data

See full target information B2M

Function	Component of the class I major histocompatibility complex (MHC). Involved in the presentation of peptide antigens to the immune system. Exogenously applied M.tuberculosis EsxA or EsxA-EsxB (or EsxA expressed in host) binds B2M and decreases its export to the cell surface (total protein levels do not change), probably leading to defects in class I antigen presentation (PubMed:25356553).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Storage information	Do Not Freeze

Notes

ab214769 is the carrier-free version of ab75853.

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.

Conjugation ready

Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility

This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

Supplementary info

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

Activity summary	Beta-2-Microglobulin (B2M) is a component of the class I major histocompatibility complex (MHC I) and plays an important role in presenting peptides to the immune system. B2M weighs approximately 11.8 kDa and is found abundantly in all nucleated cells. It has alternate names such as B2 microglobulin or beta-2-

	microglobulin. This protein is present in the cell membrane as a part of the MHC I which is important for immune surveillance. Additionally B2M is detectable in various biological fluids including serum and its levels can reflect physiological and pathological states.
Biological function summary	Beta-2-microglobulin is important for the stability and transport of MHC class I molecules to the cell surface. As part of the MHC class I complex B2M assists in binding peptides allowing immune cells to identify and target pathogen-infected cells. Without B2M the MHC class I molecules are not properly expressed on the cell surface disrupting immune recognition. In laboratory settings researchers often use anti-beta-2-microglobulin antibodies to investigate its role in MHC class I function.
Pathways	Beta-2-microglobulin interacts significantly with the immune system most notably in the antigen processing and presentation pathway. It works alongside proteins such as the heavy chain of MHC class I. B2M is important in the pathway that involves the transport of antigens to the endoplasmic reticulum where they are loaded onto MHC class I molecules for inspection by cytotoxic T cells. Another related pathway is the tapasin-mediated processing of antigen peptides highlighting the indispensable role of B2M in immune response regulation.
Associated diseases and disorders	Beta-2-microglobulin is associated with conditions such as beta-2-microglobulin amyloidosis and certain lymphoproliferative disorders. Elevated levels of B2M in serum serve as a marker for diseases like multiple myeloma where the protein level correlates with disease severity. B2M-related amyloidosis frequently occurs in patients undergoing long-term dialysis where amyloid deposits accumulate in tissues. Linking B2M to immune system dysfunction studies have shown interactions with other proteins including components of the immune system like HLA-A and HLA-B highlighting B2M's relevance in diagnosing and understanding these conditions.

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

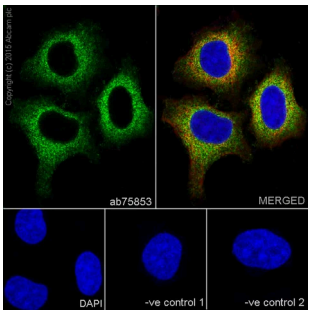
We do not recommend this combination. It is not covered by our product promise.

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.

7 product images



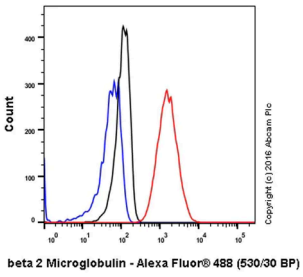
Immunocytochemistry/ Immunofluorescence - Anti-beta 2 Microglobulin antibody [EP2978Y] - BSA and Azide free (ab214769)

Beta 2 Microglobulin Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-beta 2 Microglobulin antibody

Immunocytochemistry/Immunofluorescence analysis of HeLa cells labelling beta 2 Microglobulin with purified ab75853 at 1/100. Cells were fixed with 100% methanol and permeabilized with 0.1% Triton X-100. ab150077, an Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/1000) was used as the secondary antibody. DAPI (blue) was used as the nuclear counterstain. ab7291, a mouse anti-tubulin (1/1000) and ab150120, an Alexa Fluor® 594-conjugated goat anti-mouse IgG (1/1000) were also used.
Control 1: primary antibody (1/100) and secondary antibody, ab150120, an Alexa Fluor® 594-conjugated goat anti-mouse IgG (1/1000).

Control 2: ab7291 (1/1000) and secondary antibody, ab150077, an Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/1000).

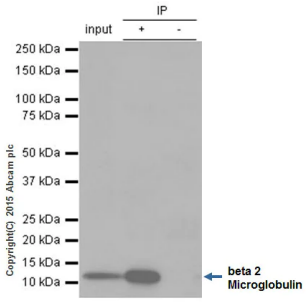
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab75853).



Flow Cytometry (Intracellular) - Anti-beta 2 Microglobulin antibody [EP2978Y] - BSA and Azide free (ab214769)

Beta 2 Microglobulin Flow Cytometry (Intracellular) staining using rabbit Anti-beta 2 Microglobulin antibody

Intracellular Flow Cytometry analysis of HeLa (human cervix adenocarcinoma) cells labelling beta 2 Microglobulin with purified ab75853 at 1/20 (red). Cells were fixed with 4% paraformaldehyde and permeabilised with 90% methanol. An Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/2000) was used as the secondary antibody. Black - Isotype control, rabbit monoclonal IgG. Blue - Unlabelled control, cells without incubation with primary and secondary antibodies.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab75853).



Immunoprecipitation - Anti-beta 2 Microglobulin antibody [EP2978Y] - BSA and Azide free (ab214769)

ab75853 (purified) at 1/20 immunoprecipitating beta 2 Microglobulin in Raji whole cell lysate. Lane 1 (input): Raji whole cell lysate (10µg)

Lane 2 (+): ab75853 + Raji whole cell lysate (10µg).

Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab75853 in Raji whole cell lysate.

For western blotting, ab131366 VeriBlot for IP (HRP) was used as the secondary antibody (1/10000).

Blocking buffer and concentration: 5% NFDM/TBST.

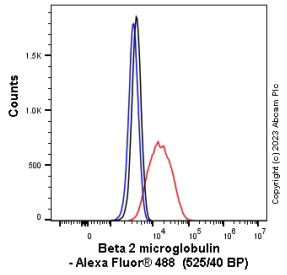
Diluting buffer and concentration: 5% NFDM /TBST.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab75853).

All lanes:
Immunoprecipitation - Anti-beta 2 Microglobulin antibody [EP2978Y] (ab75853)

Predicted band size: 14 kDa

Observed band size: 14 kDa



Flow Cytometry (Intracellular) - Anti-beta 2 Microglobulin antibody [EP2978Y] - BSA and Azide free (ab214769)

Beta 2 Microglobulin Flow Cytometry (Intracellular) staining using rabbit Anti-beta 2 Microglobulin antibody

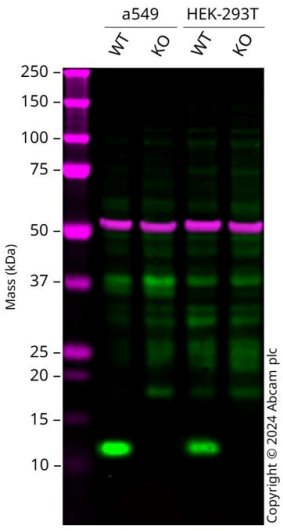
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab75853).

Flow cytometry overlay histogram showing C57 BL/6 mouse splenocytes stained with ab75853 (red line). Cells were fixed and permeabilised with BD Cytofix/Cytoperm™ for 20 min. The cells were incubated in 1x PBS containing 10µg/ml anti CD16/CD32 and 10% normal goat serum to block FC receptors and non-specific protein-protein interaction followed by the antibody (ab75853) (1x 106 in 100µl at 0.2 µg/ml (1/11300)) for 30min on ice.

The secondary antibody Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed was incubated at 1/4000 for 30min on ice

Isotype control antibody (black line) was Recombinant Rabbit IgG, monoclonal [EPR25A] - Isotype Control used at the same concentration and conditions as the primary antibody. Unlabelled sample (blue line) was also used as a control.

Acquisition of >5000 events were collected using a 50 mW Blue laser (488nm) and 525/40 bandpass filter.



Western blot - Anti-beta 2 Microglobulin antibody [EP2978Y] - BSA and Azide free (ab214769)

Beta 2 Microglobulin Western blot staining using rabbit Anti-beta 2 Microglobulin antibody

Western blot: Anti-B2M antibody [EP2978Y] (ab75853) staining at 1/5000 dilution, shown in green; Mouse anti-Alpha Tubulin [DM1A] (ab7291) loading control staining at 1/20000 dilution, shown in magenta. In Western blot, ab75853 was shown to bind specifically to B2M. A band was observed at 13 kDa in wild-type A549 cell lysates with no signal observed at this size in B2M knockout cell line. To generate this image, wild-type and B2M knockout A549 cell lysates were analysed. First, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in fluorescent western blot (TBS-based) blocking solution before incubation with primary antibodies overnight at 4 °C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged. Secondary antibodies used were Goat anti-Rabbit IgG H&L 800CW and Goat anti-Mouse IgG H&L 680RD at 1/20000 dilution.
All lanes:
Western blot - Anti-beta 2 Microglobulin antibody [EP2978Y] (ab75853) at 1/5000 dilution

Lane 1:
Wild-type A549 cell lysate at 20 µg

Lane 2:
B2M knockout A549 cell lysate at 20 µg

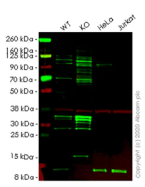
Lane 3:
Wild-type HEK-293T ab255553 cell lysate at 20 µg

Lane 4:
B2M knockout HEK-293T ab266828 cell lysate at 20 µg

Secondary

All lanes:
Goat anti-Rabbit IgG H&L 800CW and Goat anti-Mouse IgG H&L 680RD at 1/20000 dilution

Performed under reducing conditions.



Western blot - Anti-beta 2 Microglobulin antibody [EP2978Y] - BSA and Azide free (ab214769)

Beta 2 Microglobulin Western blot staining using rabbit Anti-beta 2 Microglobulin antibody

This data was developed using the same antibody clone in a different buffer formulation (ab75853).
Lanes 1-4: Merged signal (red and green). Green - ab75853 observed at 14 kDa. Red - loading control ab8245 observed at 36 kDa.

ab75853 Anti-beta 2 Microglobulin antibody [EP2978Y] was shown to specifically react with beta 2 Microglobulin in wild-type HepG2 cells. Loss of signal was observed when knockout cell line ab262325 (knockout cell lysate ab256846) was used. Wild-type and beta 2 Microglobulin knockout samples were subjected to SDS-PAGE. ab75853 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) were incubated overnight at 4°C at 1 in 1000 dilution and 1 in 20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preadsorbed (ab216776) secondary antibodies at 1 in 20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-beta 2 Microglobulin antibody [EP2978Y] (ab75853) at 1/1000 dilution

Lane 1:
Wild-type HepG2 cell lysate at 20 µg

Lane 2:
B2M knockout HepG2 cell lysate at 20 µg

Lane 2:
Western blot - Human B2M (beta 2 Microglobulin) knockout Hep G2 cell line (ab262325)

Lane 3:
HeLa cell lysate at 20 µg

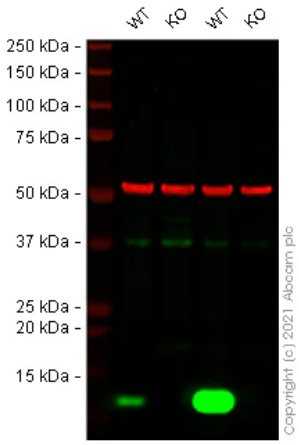
Lane 4:
Jurkat cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) at 1/10000 dilution

Predicted band size: 14 kDa

Observed band size: 14 kDa



Western blot - Anti-beta 2 Microglobulin antibody [EP2978Y] - BSA and Azide free (ab214769)

Beta 2 Microglobulin Western blot staining using rabbit Anti-beta 2 Microglobulin antibody

False colour image of Western blot: Anti-beta 2 Microglobulin antibody [EP2978Y] staining at 1/5000 dilution, shown in green; Mouse anti-Alpha Tubulin [DM1A] (ab7291) loading control staining at 1/20000 dilution, shown in red. In Western blot, ab75853 was shown to bind specifically to beta 2 Microglobulin. A band was observed at 12 kDa in wild-type HEK-293T cell lysates with no signal observed at this size in B2M knockout cell line ab266828 (knockout cell lysate ab256845). To generate this image, wild-type and B2M knockout HEK-293T cell lysates were analysed. First, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in fluorescent western blot (TBS-based) blocking solution before incubation with primary antibodies overnight at 4°C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged.Secondary antibodies used were Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed (ab216776) at 1/20000 dilution.
All lanes:
Western blot - Anti-beta 2 Microglobulin antibody [EP2978Y] (ab75853) at 1/5000 dilution

Lane 1:
Wild-type HEK-293T cell lysate at 20 µg

Lane 2:
Western blot - Human B2M (beta 2 Microglobulin) knockout HEK-293T cell lysate (ab256845) at 20 µg

Lane 3:
Wild-type A431 cell lysate at 20 µg

Lane 4:
Western blot - Human B2M (beta 2 Microglobulin) knockout A-431 cell lysate (ab261702) at 20 µg

Performed under reducing conditions.

Predicted band size: 14 kDa

Observed band size: 12 kDa

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.