abcam

ab53496

Anti-Hsp70 antibody [BB70]

Key facts

Isotype	IgG2a
Host species	Mouse
Storage buffer	pH: 7.2 Preservative: 0.09% Sodium azide Constituents: PBS, 50% Glycerol (glycerin, glycerine)
Form	Liquid
Clonality	Monoclonal
Clone number	BB70
Purification technique	Affinity purification Protein G
Specificity	Detects ~72 (Hsp) and ~73kDa (Hsc).
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	0.5 µg for 10^6 Cells
Notes	ab170191 - Mouse monoclonal IgG2a, is suitable for use as an isotype control with this antibody.

Expected

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

WB

Tested

Species	Human
Dilution info	1/1000
Notes	Detects 72kDa and 73kDa proteins corresponding to the molecular mass of inducible hsp and hsc70 on SDS PAGE immunoblots.

Species	Cow
Dilution info	1/1000
Notes	Detects 72kDa and 73kDa proteins corresponding to the molecular mass of inducible hsp and hsc70 on SDS PAGE immunoblots.

Expected

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

IHC-P

Tested

Species	Mouse
Dilution info	1/200
Notes	-

Species	Rat
Dilution info	1/200
Notes	-

Species	Human

Dilution info	1/200
Notes	-

Expected

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

ICC/IF

Tested

Species	Rat
Dilution info	1/200
Notes	-

Expected

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

Target data

See full target information Heat shock 70 kDa protein

Function	Molecular chaperone implicated in a wide variety of cellular processes, including protection of the proteome from stress, folding and transport of newly synthesized polypeptides, activation of proteolysis of misfolded proteins and the formation and dissociation of protein complexes. Plays a pivotal role in the protein quality control system, ensuring the correct folding of proteins, the re-folding of misfolded proteins and controlling the targeting of proteins for subsequent degradation. This is achieved through cycles of ATP binding, ATP hydrolysis and ADP release, mediated by co-chaperones. The affinity for polypeptides is regulated by its nucleotide bound state. In the ATP-bound form, it has a low affinity for substrate proteins. However, upon hydrolysis of the ATP to ADP, it undergoes a conformational change that increases its affinity for substrate proteins. It goes through repeated cycles of ATP hydrolysis and nucleotide exchange, which permits cycles of substrate binding and release.

Storage

Shipped at conditions	Blue Ice
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

Supplementary info

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

Activity summary	Hsp70 also known as Heat Shock Protein 70 or HSPA1B is a molecular chaperone with a mass of approximately 70 kDa. It plays a mechanical role by assisting in the proper folding of nascent polypeptide chains and the refolding of misfolded proteins. Researchers often detect Hsp70 using Western blot and immunohistochemistry (IHC) techniques. Hsp70 is widely expressed in many tissues particularly during stress conditions like heat shock where its expression level increases significantly.
Biological function summary	Hsp70 operates by stabilizing intermediate states of folding proteins preventing aggregation and facilitating the correct folding process. It often forms a complex with co-chaperones such as Hsp40 and nucleotide exchange factors. This complex is essential for the protein's activity and function. Additionally Hsp70 participates in protein degradation pathways by guiding misfolded proteins to the proteasome for degradation maintaining cellular homeostasis.
Pathways	This molecular chaperone plays significant roles in the heat shock response and unfolded protein response pathways. Hsp70 interacts closely with proteins such as Hsp90 and co-chaperones which together help protect cells from stress-induced damage. The protein also participates in the JAK/STAT signaling pathway influencing cell proliferation and apoptosis. These interactions suggest an integral role in maintaining cellular integrity during stress conditions.
Associated diseases and disorders	Overexpression of Hsp70 has been associated with various cancers and neurodegenerative diseases. In cancer Hsp70 helps tumor cells survive the hostile tumor microenvironment partly by interacting with anti-apoptotic proteins such as Bcl-2. In neurodegenerative disorders such as Alzheimer's disease Hsp70 associates with amyloid-beta peptides potentially mitigating their aggregation toxicity. These interactions highlight Hsp70's importance in both protective and pathological cellular processes.

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

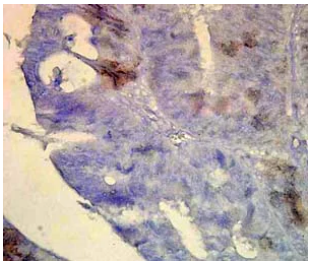
We do not recommend this combination. It is not covered by our product promise.

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.

8 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Hsp70 antibody [BB70] (ab53496)

Hsp70 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-Hsp70 antibody

ab53496 at 100,000 dilution staining Hsp70 + Hsc70 in human colon cancer tissue section by immunohistochemistry (Formalin/ PFA fixed paraffin-embedded tissue sections). A antibody amplifier™ system was used for staining.

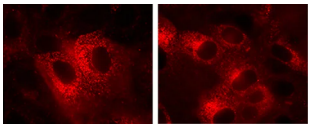
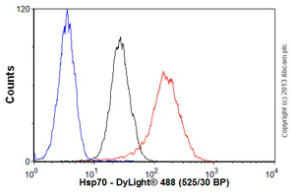


Image from Rice WL et al., PLoS One. 2012;7(2):e32843. Epub 2012 Feb 28. Fig 6.; doi:10.1371/journal.pone.0032843; February 28, 2012, PLoS ONE 7(2): e32843.

Immunocytochemistry/ Immunofluorescence - Anti-Hsp70 antibody [BB70] (ab53496)

ab53496 staining Hsp70 in LLC-PK1 cells expressing Hsp70 under cold block conditions, by Immunocytochemistry/ Immunofluorescence.

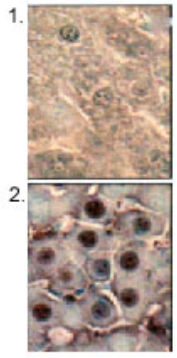
Cells were fixed with 4% paraformaldehyde, permeabilized with 0.01% Triton X-100 in PBS for 4 minutes and blocked with 1% BSA/PBS for 20 minutes. Samples were incubated with primary antibody overnight at 4°C.



Flow Cytometry - Anti-Hsp70 antibody [BB70] (ab53496)

Hsp70 Flow Cytometry staining using mouse Anti-Hsp70 antibody

Overlay histogram showing Jurkat cells stained with ab53496 (red line). The cells were fixed with 4% paraformaldehyde (10 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab53496, 0.5µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG2a [ICIGG2A] (ab91361, 1µg/1x10^6 cells) used under the same conditions. Unlabelled sample (blue line). Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 525/30 bandpass filter. This antibody gave a positive signal in Jurkat cells fixed with 80% methanol (5 min)/permeabilized with 0.1% PBS-Tween for 20 min used under the same conditions.

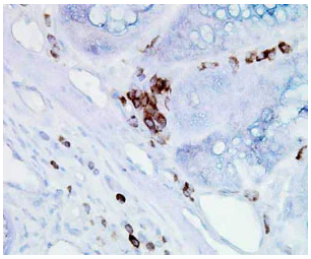


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Hsp70 antibody [BB70] (ab53496)

Hsp70 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-Hsp70 antibody

ab53496, at a dilution of 1/200, staining Hsp70 + Hsc70 in liver smears of rat hepatocytes by Immunohistochemistry Formalin fixed Parafin embedded tissue.
1. Control

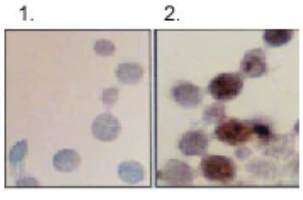
2. Two hours after exposure tp hyperthermic stress



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Hsp70 antibody [BB70] (ab53496)

Hsp70 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-Hsp70 antibody

ab53496 at 100,000 dilution staining Hsp70 + Hsc70 in mouse colon cancer tissue section by immunohistochemistry (Formalin/ PFA fixed paraffin-embedded tissue sections). A antibody amplifier™ system was used for staining. A HRP-conjugated secondary antibody was used at 1/10 dilution.

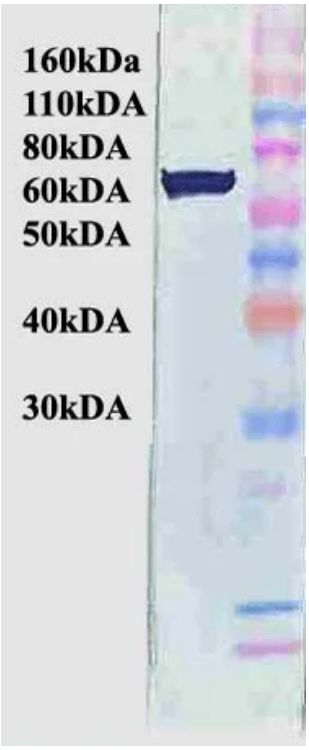


Immunocytochemistry/ Immunofluorescence - Anti-Hsp70 antibody [BB70] (ab53496)

Hsp70 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-Hsp70 antibody

ab53496, at a 1/200 dilution, staining Hsp70 + Hsc70 in nuclear smears of rat hepatocytes by immunocytochemistry.
1. Control

2.Five hours after exposure to hyperthermic stress

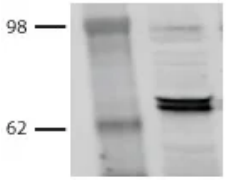


Western blot - Anti-Hsp70 antibody [BB70] (ab53496)

All lanes:
Western blot - Anti-Hsp70 antibody [BB70] (ab53496) at 1/1000 dilution

All lanes:
HeLa (human epithelial cell line from cervix adenocarcinoma) cell lysate

Predicted band size: 70 kDa



Western blot - Anti-Hsp70 antibody [BB70] (ab53496)

Hsp70 Western blot staining of Bovine MDBK cells using mouse Anti-Hsp70 antibody

All lanes:
Western blot - Anti-Hsp70 antibody [BB70] (ab53496) at 1/1000 dilution

All lanes:
Bovine MDBK cells

Predicted band size: 70 kDa

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