abcam

ab181606

Anti-Hsp70 antibody [EPR16892]

Anti-Hsp70 antibody [EPR16892] (ab181606) is a rabbit monoclonal antibody detecting Hsp70 in **Western Blot, Flow Cytometry (Intra), IHC-P, ICC/IF**. Suitable for **Human, Mouse, Rat**.

- Biophysical QC for unrivalled batch-batch consistency
- Over 80 publications

Lab Essentials | Recombinant | RabMAb | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	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	EPR16892
Purification technique	Affinity purification Protein A
Concentration	1.198 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

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	Human
Dilution info	1/50
Notes	-

Expected

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

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/230
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Expected

Species	Mouse, Rat

Dilution info	Use at an assay dependent concentration.
Notes	-

IHC-P

Tested

Species	Mouse
Dilution info	1/1000
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Rat
Dilution info	1/1000
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Human
Dilution info	1/1000
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Target data

See full target information Hspa1b

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 co-chaperones have been shown to not only regulate different steps of the ATPase cycle, but they also have an individual specificity such that one co-chaperone may promote folding of a substrate while another may promote degradation. 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. The co-chaperones are of three types: J-domain co-chaperones such as HSP40s (stimulate

ATPase hydrolysis by HSP70), the nucleotide exchange factors (NEF) such as BAG1/2/3 (facilitate conversion of HSP70 from the ADP-bound to the ATP-bound state thereby promoting substrate release), and the TPR domain chaperones such as HOPX and STUB1. Maintains protein homeostasis during cellular stress through two opposing mechanisms: protein refolding and degradation. Its acetylation/deacetylation state determines whether it functions in protein refolding or protein degradation by controlling the competitive binding of co-chaperones HOPX and STUB1. During the early stress response, the acetylated form binds to HOPX which assists in chaperone-mediated protein refolding, thereafter, it is deacetylated and binds to ubiquitin ligase STUB1 that promotes ubiquitin-mediated protein degradation. Regulates centrosome integrity during mitosis, and is required for the maintenance of a functional mitotic centrosome that supports the assembly of a bipolar mitotic spindle. Enhances STUB1-mediated SMAD3 ubiquitination and degradation and facilitates STUB1-mediated inhibition of TGF-beta signaling. Essential for STUB1-mediated ubiquitination and degradation of FOXP3 in regulatory T-cells (Treg) during inflammation.

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

What is this antibody validated in?
Anti-Hsp70 antibody [EPR16892] (ab181606) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunohistochemistry (IHC-P), Immunocytochemistry/immunofluorescence (ICC/IF) in Human, Mouse, Rat samples.

What is the molecular weight of Hsp70?
Anti-Hsp70 [EPR16892] (ab181606) specifically detects a band for Hsp70 (UniProt: P17879) at a molecular weight of 70kDa.

Trusted by the scientific community
Anti-Hsp70 [EPR16892] (ab181606) was first used in a scientific publication in 2014 and has been cited over 80 times in peer-reviewed journals.

Other related products
We have a range of other formats of antibody clone [EPR16892] also available for your convenience: ab181606, Alexa Fluor® 488 - ab204690, Alexa Fluor® 647 - ab204691, HRP - ab205485, PE - ab208878, Carrier free - ab219597

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.

Trial sizes available!
Test your antibody or perform pre-screening before committing to a larger quantity. Sold in 20µl. Discover our selection of trial-size antibodies.

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

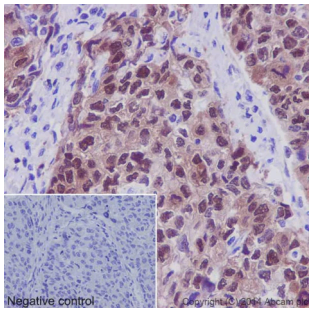
We do not recommend this combination. It is not covered by our product promise.

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.

11 product images

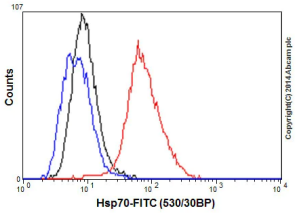


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Hsp70 antibody [EPR16892] (ab181606)

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

Immunohistochemical analysis of paraffin-embedded Human squamous cell carcinoma of cervix tissue labeling Hsp70 with ab181606 at 1/1000 dilution, followed by prediluted HRP Polymer for Rabbit/Mouse IgG. Nucleus and cytoplasm staining on tumor cells of Human squamous cell carcinoma of cervix is observed. Counter stained with Hematoxylin.
Negative control: Using PBS instead of primary ab, secondary ab is prediluted HRP Polymer for Rabbit/Mouse IgG.

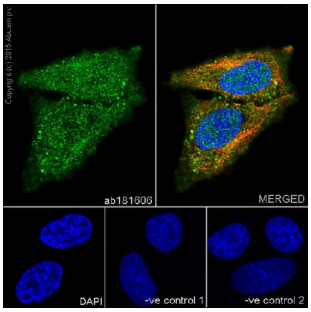
Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



Flow Cytometry (Intracellular) - Anti-Hsp70 antibody [EPR16892] (ab181606)

Hsp70 Flow Cytometry (Intracellular) staining using rabbit Anti-Hsp70 antibody

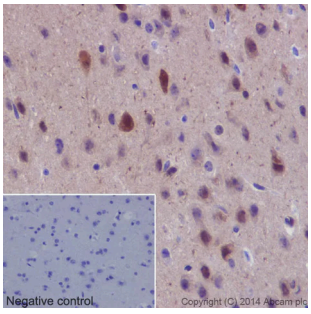
Intracellular flow cytometric analysis of 2% paraformaldehyde-fixed K562 (Human chronic myelogenous leukemia cells from bone marrow) cells labeling Hsp70with ab181606 at 1/230 dilution (red) compared with a rabbit monoclonal IgG control (black) and an unlabelled control (cells without incubation with primary antibody and secondary antibody; blue). Goat anti rabbit IgG (FITC) at 1/150 dilution was used as the secondary antibody.



Immunocytochemistry/ Immunofluorescence - Anti-Hsp70 antibody [EPR16892] (ab181606)

Hsp70 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Hsp70 antibody

Immunofluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized HeLa (Human epithelial cells from cervix adenocarcinoma) cells labeling Hsp70 with ab181606 at 1/50 dilution, followed by Goat anti-rabbit IgG (Alexa Fluor® 488) (ab150077) secondary antibody at 1/400 dilution (green). Nuclear and cytoplasm staining on HeLa cell line is observed. The nuclear counter stain is DAPI (blue). Tubulin is detected with ab7291 (Tubulin mouse mAb) at 1/500 and ab150120 (AlexaFluor®594 Goat anti-Mouse secondary) at 1/500 dilution (red).
The negative controls are as follows;
1. ab181606 at 1/50 dilution followed by ab150120 (AlexaFluor®594 Goat anti-Mouse secondary) at 1/500 dilution.
2. ab7291 (anti-Tubulin mouse mAb) at 1/500 dilution followed by ab 150077 (Goat anti rabbit IgG (Alexa Fluor®488) secondary antibody at 1/400 dilution.

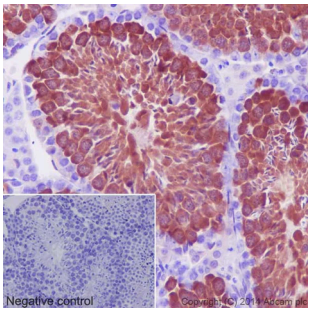


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Hsp70 antibody [EPR16892] (ab181606)

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

Immunohistochemical analysis of paraffin-embedded Mouse cerebral cortex tissue labeling Hsp70 with ab181606 at 1/1000 dilution, followed by prediluted HRP Polymer for Rabbit/Mouse IgG. Cytoplasm and Nucleus staining on neuron cells of mouse cerebral cortex tissue is observed. Counter stained with Hematoxylin.
Negative control: Using PBS instead of primary ab, secondary ab is prediluted HRP Polymer for Rabbit/Mouse IgG.

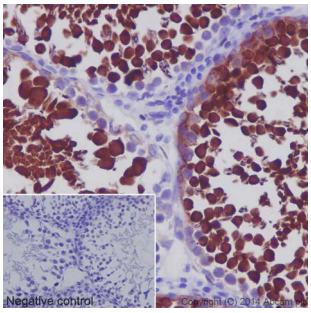
Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Hsp70 antibody [EPR16892] (ab181606)

Immunohistochemical analysis of paraffin-embedded Mouse testis tissue labeling Hsp70 with ab181606 at 1/1000 dilution, followed by prediluted HRP Polymer for Rabbit/Mouse IgG. Cytoplasm staining on epithelial cells of mouse testis is observed. Counter stained with Hematoxylin.
Negative control: Using PBS instead of primary ab, secondary ab is prediluted HRP Polymer for Rabbit/Mouse IgG.

Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

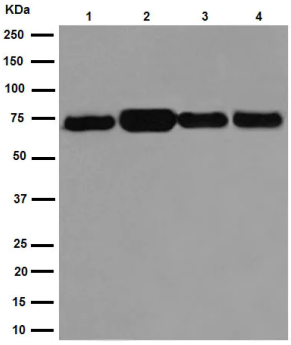


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Hsp70 antibody [EPR16892] (ab181606)

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

Immunohistochemical analysis of paraffin-embedded Rat testis tissue labeling Hsp70 with ab181606 at 1/1000 dilution, followed by prediluted HRP Polymer for Rabbit/Mouse IgG. Nucleus and cytoplasm staining on epithelial cells of rat testis is observed. Counter stained with Hematoxylin.
Negative control: Using PBS instead of primary ab, secondary ab is prediluted HRP Polymer for Rabbit/Mouse IgG.

Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



Western blot - Anti-Hsp70 antibody [EPR16892] (ab181606)

Blocking/Dilution buffer: 5% NFDM/TBST.
All lanes:
Western blot - Anti-Hsp70 antibody [EPR16892] (ab181606) at 1/10000 dilution

Lane 1:
HeLa (Human epithelial cells from cervix adenocarcinoma) whole cell lysates at 20 µg

Lane 2:
293T (Human epithelial cells from embryonic kidney) whole cell lysates at 20 µg

Lane 3:
A431 (Human epidermoid carcinoma) whole cell lysates at 20 µg

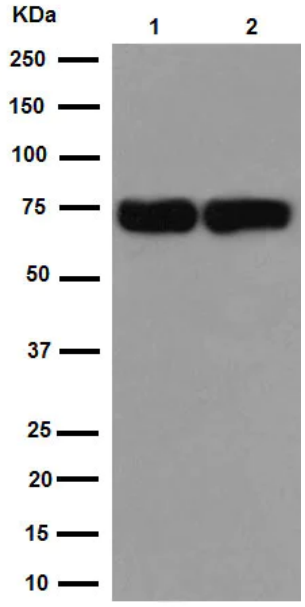
Lane 4:
K562 (Human chronic myelogenous leukemia cells from bone marrow) whole cell lysates at 20 µg

Secondary

All lanes:
Goat Anti-Rabbit IgG, (H+L),Peroxidase conjugated at 1/1000 dilution

Predicted band size: 70 kDa

Observed band size: 70 kDa



Western blot - Anti-Hsp70 antibody [EPR16892] (ab181606)

Hsp70 Western blot staining using rabbit Anti-Hsp70 antibody

Blocking/Dilution buffer: 5% NFDM/TBST.
All lanes:
Western blot - Anti-Hsp70 antibody [EPR16892] (ab181606) at 1/1000 dilution

Lane 1:
Human fetal heart lysate at 10 µg

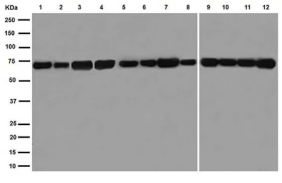
Lane 2:
Human fetal kidney lysate at 10 µg

Secondary

All lanes:
Goat Anti-Rabbit IgG, (H+L),Peroxidase conjugated at 1/1000 dilution

Predicted band size: 70 kDa

Observed band size: 70 kDa



Western blot - Anti-Hsp70 antibody [EPR16892] (ab181606)

Hsp70 Western blot staining using rabbit Anti-Hsp70 antibody

Blocking/Dilution buffer: 5% NFDM/TBST.
All lanes:
Western blot - Anti-Hsp70 antibody [EPR16892] (ab181606) at 1/1000 dilution

Lane 1:
Mouse brain lysate at 10 µg

Lane 2:
Mouse heart lysate at 10 µg

Lane 3:
Mouse kidney lysate at 10 µg

Lane 4:
Mouse spleen lysate at 10 µg

Lane 5:
Rat brain lysate at 10 µg

Lane 6:
Rat heart lysate at 10 µg

Lane 7:
Rat kidney lysate at 10 µg

Lane 8:
Rat spleen lysate at 10 µg

Lane 9:
C6 (Rat glial tumor cells) whole cell lysates at 10 µg

Lane 10:
RAW 264.7 (Mouse macrophage cells transformed with Abelson murine leukemia virus) whole cell lysates at 10 µg

Lane 11:
PC-12 (Rat adrenal gland pheochromocytoma) whole cell lysates at 10 µg

Lane 12:
NIH/3T3 (Mouse embyro fibroblast cells) whole cell lysates at 10 µg

Secondary

All lanes:
Goat Anti-Rabbit IgG, (H+L),Peroxidase conjugated at 1/1000 dilution

Predicted band size: 70 kDa

Observed band size: 70 kDa

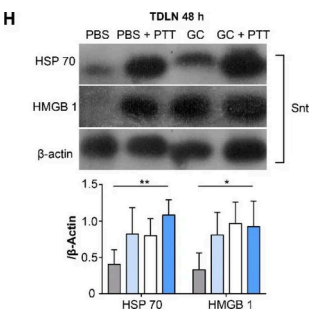


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Western blot - Anti-Hsp70 antibody [EPR16892] (ab181606)

Hsp70 Western blot staining using rabbit Anti-Hsp70 antibody

Western Blotting using Anti-Hsp70 antibody [EPR16892], ab181606. Publication image from Qi, S. et al., 2020, Theranostics, 32042338. Legend direct from paper.

Immunological responses induced by LIT in the tumors, serum, and TDLNs. (A) Schematics of the procedures and timeline of GC + PTT treatment for CFP-B16 and analysis of LIT-induced antitumor immune response. (B) Proportions of neutrophils in immune cells in the treated primary tumors after various treatments at different times. (C) Proportions of neutrophils in immune cells with GC-RB (gated by CD45+ and RB+) in the tumors treated with GC-RB + PTT at different times. Data are presented as mean ± SD (n = 3-5 mice, two independent experiments). (D-F) Cytokine levels in serum (TNF-α, IL-6, and IL-1β) from mice at different times after various treatments. Data are presented as mean ± SD (n = 3-4 mice, two independent experiments). (G) HSP70 protein

expression in the treated primary tumors 24 h after various treatments was analyzed using WB. (H) HSP70 and HMGB1 expressions in TDLNs at 48 h after different treatments were analyzed using WB (n = 3, two independent experiments). (I, J) The frequency of CD69+ in the CD4+(I) and CD8+(J) T cells of TDLNs 24 h after different treatments. (K) The frequency of mature DCs (CD11c+CD80+CD86+) in TDLNs 72 h after various treatments. Data are presented as mean ± SD (n = 4-7 mice, three independent experiments). Statistical analysis was performed using the unpaired t-test, and the one-way ANOVA test followed by the Bonferroni post-test. * P < 0.05, ** P < 0.01, *** P < 0.001, ns: not significant.

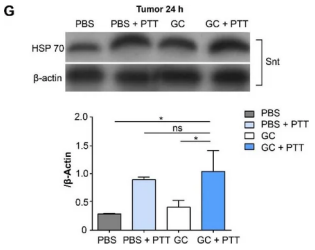


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Western blot - Anti-Hsp70 antibody [EPR16892] (ab181606)

Hsp70 Western blot staining using rabbit Anti-Hsp70 antibody

Western Blotting using Anti-Hsp70 antibody [EPR16892], ab181606. Publication image from Qi, S. et al., 2020, Theranostics, 32042338. Legend direct from paper.

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