abcam

ab79849

Anti-Hsp90 alpha antibody [2G5.G3]

KO Validated

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	Preservative: 0.09% Sodium azide Constituents: PBS, 50% Glycerol (glycerin, glycerine)
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Full Length Protein corresponding to Human HSP90AA1. Database link P07900
Clone number	2G5.G3
Purification technique	Affinity purification Protein G
Light chain type	kappa
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	1 µg for 10^6 Cells

Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Expected

Species	Rat
Dilution info	-
Notes	-

Species	Mouse
Dilution info	1 µg for 10^6 Cells
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

IHC-P

Tested

Species	Human
Dilution info	0.5 µg/mL
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Expected

Species	Rat
Dilution info	-
Notes	-

Species	Mouse
Dilution info	0.5 µg/mL
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

ICC/IF

Tested

Species	Human
Dilution info	1/100
Notes	-

Expected

Species	Rat
Dilution info	-
Notes	-

Species	Mouse
Dilution info	1/100
Notes	-

WB

Tested

Species	Human
Dilution info	1/1000 - 1/2000
Notes	-

Species	Rat
Dilution info	-
Notes	-

Expected

Species	Mouse
Dilution info	1/1000 - 1/2000
Notes	-

Target data

See full target information HSP90AA1

Function	Molecular chaperone that promotes the maturation, structural maintenance and proper regulation of specific target proteins involved for instance in cell cycle control and signal transduction. Undergoes a functional cycle that is linked to its ATPase activity which is essential for its chaperone activity. This cycle probably induces conformational changes in the client proteins, thereby causing their activation. Interacts dynamically with various co-chaperones that modulate its substrate recognition, ATPase cycle and chaperone function (PubMed:11274138, PubMed:12526792, PubMed:15577939, PubMed:15937123, PubMed:27353360, PubMed:29127155). Engages with a range of client protein classes via its interaction with various co-chaperone proteins or complexes, that act as adapters, simultaneously able to interact with the specific client and the central chaperone itself (PubMed:29127155). Recruitment of ATP and co-chaperone followed by client protein forms a functional chaperone. After the completion of the chaperoning process, properly folded client protein and co-chaperone leave HSP90 in an ADP-bound partially open conformation and finally, ADP is released from HSP90 which acquires an open conformation for the next cycle (PubMed:26991466, PubMed:27295069). Plays a critical role in mitochondrial import, delivers preproteins to the mitochondrial import receptor TOMM70 (PubMed:12526792). Apart from its chaperone activity, it also plays a role in the regulation of the transcription machinery. HSP90 and its co-chaperones modulate transcription at least at three different levels (PubMed:25973397). In the first place, they alter the steady-state levels of certain transcription factors in response to various physiological cues (PubMed:25973397). Second, they modulate the activity of certain epigenetic modifiers, such as histone deacetylases or DNA methyl transferases, and thereby respond to the change in the environment (PubMed:25973397). Third, they participate in the eviction of histones from the promoter region of certain genes and thereby turn on gene expression (PubMed:25973397). Binds bacterial lipopolysaccharide (LPS) and mediates LPS-induced inflammatory response, including TNF secretion by monocytes (PubMed:11276205). Antagonizes STUB1-mediated inhibition of TGF-beta signaling via inhibition of STUB1-mediated SMAD3 ubiquitination and degradation (PubMed:24613385). Mediates the association of TOMM70 with IRF3 or TBK1 in mitochondrial outer membrane which promotes host antiviral response (PubMed:20628368, PubMed:25609812). (Microbial infection) Seems to interfere with N.meningitidis NadA-mediated invasion of human cells. Decreasing HSP90 levels increases adhesion and entry of E.coli expressing NadA into human Chang cells; increasing its levels leads to decreased adhesion and invasion.

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Storage information	Stable for 12 months at -20°C

Supplementary info

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

Activity summary	Hsp90 alpha also known as Hsp90AA1 or 5G5 is a molecular chaperone with an approximate molecular weight of 90 kDa. It plays an important role in the folding stability and function of many client proteins. This protein is expressed ubiquitously in eukaryotic cells with high levels in the cytoplasm and the endoplasmic reticulum. Hsp90 alpha operates through a unique ATPase-driven chaperone cycle that modulates protein conformations helping in the assembly and disassembly of protein complexes.
Biological function summary	Hsp90 alpha assists in maintaining protein homeostasis and is part of a larger chaperome complex including co-chaperones and other chaperones such as Hsp70. It plays an important role in stress response by stabilizing proteins and preventing aggregation. Hsp90 alpha is essential for the normal function of several kinases and transcription factors which are important for cell signaling and regulation processes. It functions as a mediator for cellular response to environmental cues.
Pathways	Hsp90 alpha is an integral component in the signal transduction and cell cycle control pathways. It interacts with various signaling proteins and receptors like AKT and steroid hormone receptors to facilitate their proper folding and activation. Furthermore Hsp90 alpha influences the MAPK/ERK pathway playing a role in cell proliferation and differentiation. Its interaction with Hsp90 protein clients creates a regulatory framework across multiple pathways allowing precise control over cellular function.
Associated diseases and disorders	Hsp90 alpha is linked to cancer and neurodegenerative diseases. Its enhanced expression in tumors correlates with the stabilization of oncogenic client proteins such as HER2 contributing to cancer progression. Additionally Hsp90 alpha relates to disorders like Alzheimer's disease due to its role in handling misfolded proteins. The protein interacts with co-chaperones like H1L1 which may influence its impact on disease outcomes highlighting the therapeutic potential of targeting Hsp90 alpha in 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

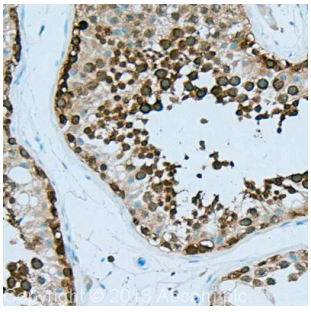
We do not recommend this combination. It is not covered by our product promise.

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.

5 product images

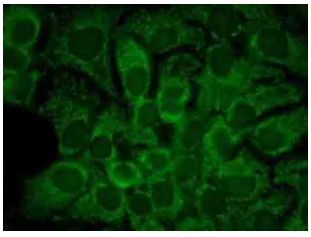


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Hsp90 alpha antibody [2G5.G3] (ab79849)

Hsp90 alpha Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-Hsp90 alpha antibody

IHC image of Hsp90 alpha staining in Human Testis formalin fixed paraffin embedded tissue section, performed on a Leica Bond™ system using the standard protocol F. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH6, epitope retrieval solution 1) for 20 mins. The section was then incubated with ab79849, 0.5 µg/ml, for 15 mins at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.

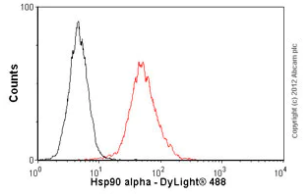
For other IHC staining systems (automated and non-automated) customers should optimize variable parameters such as antigen retrieval conditions, primary antibody concentration and antibody incubation times.



Immunocytochemistry/ Immunofluorescence - Anti-Hsp90 alpha antibody [2G5.G3] (ab79849)

Hsp90 alpha Immunocytochemistry/ Immunofluorescence staining using mouse Anti-Hsp90 alpha antibody

ab79849 at 1/100 dilution staining Hsp90 alpha in human keratinocyte cell line HaCaT by Immunocytochemistry/ immunofluorescence. A Fluorophore conjugated goat anti mouse was used as secondary at 1/50 dilution.

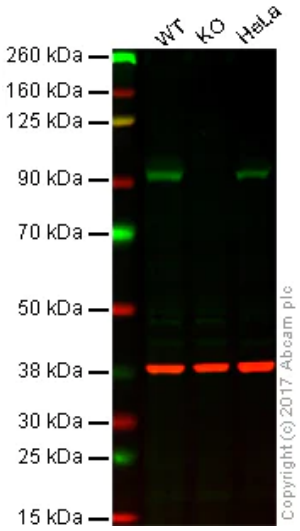


Flow Cytometry - Anti-Hsp90 alpha antibody [2G5.G3] (ab79849)

Hsp90 alpha Flow Cytometry staining using mouse Anti-Hsp90 alpha antibody

Overlay histogram showing HeLa cells stained with ab79849 (red line). The cells were fixed with 80% methanol (5 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 (ab79849, 1µg/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 IgG1 [ICIGG1] (ab91353,

2µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed.



Western blot - Anti-Hsp90 alpha antibody [2G5.G3] (ab79849)

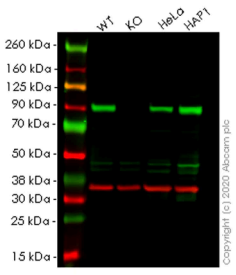
Hsp90 alpha Western blot staining using mouse Anti-Hsp90 alpha antibody

Lane 1: Wild-type HAP1 whole cell lysate (20 µg)
Lane 2: Hsp90 alpha knockout HAP1 whole cell lysate (20 µg)
Lane 3: HeLa whole cell lysate (20 µg)
Lanes 1 - 3: Merged signal (red and green). Green - ab79849 observed at 90 kDa. Red - loading control, ab181602, observed at 37 kDa.

ab79849 was shown to specifically react with Hsp90 alpha in wild-type HAP1 cells as signal was lost in Hsp90 alpha knockout cells. Wild-type and Hsp90 alpha knockout samples were subjected to SDS-PAGE. ab79849 and ab181602 (Rabbit anti GAPDH loading control) were incubated overnight at 4°C at 1/2000 dilution and 1/20,000 dilution respectively. Blots were developed with Goat anti-Mouse IgG H&L (IRDye® 800CW) preabsorbed (ab216772) and Goat anti-Rabbit IgG H&L (IRDye® 680RD) preabsorbed (ab216777) secondary antibodies at 1/20,000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-Hsp90 alpha antibody [2G5.G3] (ab79849)

Predicted band size: 85 kDa



Western blot - Anti-Hsp90 alpha antibody [2G5.G3] (ab79849)

Hsp90 alpha Western blot staining using mouse Anti-Hsp90 alpha antibody

Lanes 1-4: Merged signal (red and green). Green - ab79849 observed at 90 kDa. Red - loading control ab181602 observed at 36 kDa.
ab79849 Anti-Hsp90 alpha antibody [2G5.G3] was shown to specifically react with Hsp90 alpha in wild-type HEK-293T cells. Loss of signal was observed when knockout cell line ab266591 (knockout cell lysate ab258458) was used. Wild-type and Hsp90 alpha knockout samples were subjected to SDS-PAGE. ab79849 and Anti-GAPDH antibody[EPR16891] - Loading Control (ab181602) 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® 680RD) preadsorbed (ab216777) and Goat anti-Mouse IgG H&L (IRDye® 800CW) preadsorbed (ab216772) secondary antibodies at 1 in 20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-Hsp90 alpha antibody [2G5.G3] (ab79849) at 1/1000 dilution

Lane 1:
Wild-type HEK-293T (Human epithelial cell line from embryonic kidney transformed with large T antigen) whole cell lysate at 20 µg

Lane 2:
HSP90AA1 knockout HEK-293T (Human epithelial cell line from embryonic kidney transformed with large T antigen) whole cell lysate at 20 µg

Lane 2:
Western blot - Human HSP90AA1 (Hsp90 alpha) knockout HEK-293T cell line (ab266591)

Lane 3:
HeLa (Human epithelial cell line from cervix adenocarcinoma) whole cell lysate at 20 µg

Lane 4:
HAP1 whole cell lyate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (IRDye® 680RD) preadsorbed (ab216777) at 1/10000 dilution

Predicted band size: 85 kDa

Observed band size: 90 kDa

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