abcam

ab308609

Anti-p53 antibody [G59-12]

Lab Essentials | Recombinant | KO Validated

Key facts

Isotype	IgG1
Host species	Mouse
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	G59-12
Purification technique	Affinity purification Protein A
Concentration	1.028 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

WB

Tested

Species	Human
Dilution info	1/1000
Notes	-

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/100
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/1000
Notes	-

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

IP

Tested

Species	Human
Dilution info	1/30 for 2 µg
Notes	-

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/1000
Notes	-

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

Target data

See full target information TP53

Function Multifunctional transcription factor that induces cell cycle arrest, DNA repair or apoptosis upon binding to its target DNA sequence (PubMed:11025664, PubMed:12524540, PubMed:12810724, PubMed:15186775, PubMed:15340061, PubMed:17317671, PubMed:17349958, PubMed:19556538, PubMed:20673990, PubMed:20959462, PubMed:22726440, PubMed:24051492, PubMed:24652652, PubMed:35618207, PubMed:36634798, PubMed:38653238, PubMed:9840937). Acts as a tumor suppressor in many tumor types; induces growth arrest or apoptosis depending on the physiological circumstances and cell type (PubMed:11025664, PubMed:12524540, PubMed:12810724, PubMed:15186775, PubMed:15340061, PubMed:17189187, PubMed:17317671, PubMed:17349958, PubMed:19556538, PubMed:20673990, PubMed:20959462, PubMed:22726440, PubMed:24051492, PubMed:24652652, PubMed:38653238, PubMed:9840937). Negatively regulates

cell division by controlling expression of a set of genes required for this process (PubMed:11025664, PubMed:12524540, PubMed:12810724, PubMed:15186775, PubMed:15340061, PubMed:17317671, PubMed:17349958, PubMed:19556538, PubMed:20673990, PubMed:20959462, PubMed:22726440, PubMed:24051492, PubMed:24652652, PubMed:9840937). One of the activated genes is an inhibitor of cyclin-dependent kinases. Apoptosis induction seems to be mediated either by stimulation of BAX and FAS antigen expression, or by repression of Bcl-2 expression (PubMed:12524540, PubMed:17189187). Its pro-apoptotic activity is activated via its interaction with PPP1R13B/ASPP1 or TP53BP2/ASPP2 (PubMed:12524540). However, this activity is inhibited when the interaction with PPP1R13B/ASPP1 or TP53BP2/ASPP2 is displaced by PPP1R13L/iASPP (PubMed:12524540). In cooperation with mitochondrial PPIF is involved in activating oxidative stress-induced necrosis; the function is largely independent of transcription. Induces the transcription of long intergenic non-coding RNA p21 (lincRNA-p21) and lincRNA-Mkln1. LincRNA-p21 participates in TP53-dependent transcriptional repression leading to apoptosis and seems to have an effect on cell-cycle regulation. Implicated in Notch signaling cross-over. Prevents CDK7 kinase activity when associated to CAK complex in response to DNA damage, thus stopping cell cycle progression. Isoform 2 enhances the transactivation activity of isoform 1 from some but not all TP53-inducible promoters. Isoform 4 suppresses transactivation activity and impairs growth suppression mediated by isoform 1. Isoform 7 inhibits isoform 1-mediated apoptosis. Regulates the circadian clock by repressing CLOCK-BMAL1-mediated transcriptional activation of PER2 (PubMed:24051492).

Storage

Shipped at conditions	Blue Ice
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 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.

Want a custom formulation?
This antibody clone is manufactured by Abcam. If you require a custom buffer formulation or conjugation for your experiments, please contact orders@abcam.com

Supplementary info

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

Activity summary	The protein p53 also known as TP53 or tumor protein p53 has a molecular weight of approximately 53 kDa. It acts as a transcription factor and plays a major role in cell cycle regulation apoptosis and maintaining genomic stability. This protein mainly expresses in the nucleus of cells and acts as a critical regulator of cellular responses to stress signals including DNA damage. Scientists commonly use p53 antibodies in various assays like western blot and p53 immunofluorescence to detect and study its expression and functional status in cells.
Biological function summary	P53 functions to control cell division and apoptosis serving as a guardian of the genome by preventing mutation accumulation. It does not form part of a larger complex under normal conditions but interacts with various other molecules to execute its functions. p53 can activate or suppress the transcription of numerous genes involved in cell cycle arrest DNA repair and programmed cell death allowing it to halt the progression of damaged cells and trigger repair mechanisms or eliminate those that cannot be repaired.
Pathways	P53 acts within several key biological pathways such as the p53 signaling pathway and the intrinsic apoptotic pathway. Its activity involves interaction with proteins like MDM2 which regulates p53 through ubiquitin-mediated degradation and ATM kinase which phosphorylates p53 in response to DNA damage. These interactions ensure appropriate cellular responses during stress and are vital for maintaining homeostasis.
Associated diseases and disorders	P53 mutation or inactivation is often associated with the development of cancer given its role in controlling cell division and preventing tumor formation. Specifically its dysfunction has been linked to cancers such as breast cancer and lung cancer. Additionally p53 can interact with other mutant proteins like Ras compounding mutations that contribute to tumor progression and aggressive cancer phenotypes. Understanding these interactions and the status of p53 can be important in developing targeted cancer therapies.

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.

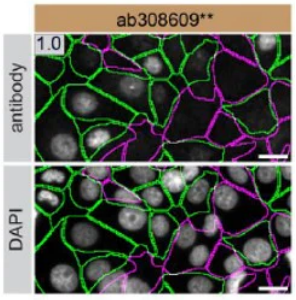
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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.

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11 product images

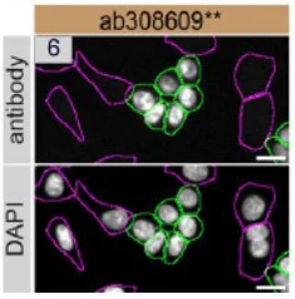


Immunocytochemistry/ Immunofluorescence - Anti-p53 antibody [G59-12] (ab308609)

P53 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-p53 antibody

ab308609 was shown to react with TP53 in wild-type MCF7 cells in immunocytochemistry with loss of signal observed in TP53 knockout cell line ab286440. Wild-type and knockout cells were mixed and pelleted at a 1:1 ratio on coverslips. The cells were fixed with 4% paraformaldehyde (15 min) then permeabilized with 0.1% Triton X-100 (10min) and then blocked with 1x PBS, 0.01% Triton X-100, 5% BSA, 5% NGS. The cells were then incubated with ab308609 at 1/1000 dilution overnight at 4°C followed by a further incubation at room temperature for 1h with a goat anti-rabbit secondary antibody to (Alexa Fluor® 555) at 0.5 µg/ml. Acquisition of the green (wild-type), red (antibody staining) and far-red (knockout) channels was performed. Representative grayscale images of the red channel are shown. Wild-type and knockout cells are outlined with yellow and magenta dashed line, respectively. Schematic representation of the mosaic strategy used is shown on the bottom-right panel. Image was acquired with a Zeiss(LSM-880).

This data was provided by YCharOS Inc., an open science company with the mission of characterizing commercially available antibody reagents for all human proteins. Abcam and YCharOS are working together to help address the reproducibility crisis by enabling the life science community to better evaluate commercially available antibodies.



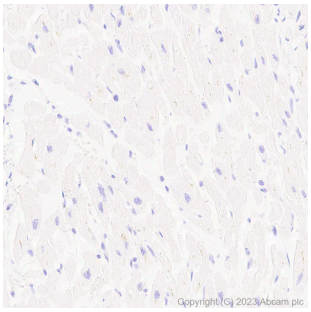
Immunocytochemistry/ Immunofluorescence - Anti-p53 antibody [G59-12] (ab308609)

P53 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-p53 antibody

ab308609 was shown to react with TP53 in wild-type HAP1 cells in immunocytochemistry with loss of signal observed in a TP53 knockout cell line. Wild-type and knockout cells were mixed and pelleted at a 1:1 ratio on coverslips. The cells were fixed with 4% paraformaldehyde (15 min) then

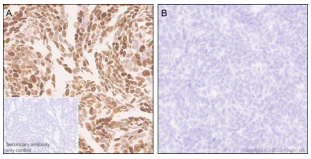
permeabilized with 0.1% Triton X-100 (10min) and then blocked with 1x PBS, 0.01% Triton X-100, 5% BSA, 5% NGS. The cells were then incubated with ab308609 at 1/1000 dilution overnight at 4°C followed by a further incubation at room temperature for 1h with a goat anti-rabbit secondary antibody to (Alexa Fluor® 555) at 0.5 µg/ml. Acquisition of the green (wild-type), red (antibody staining) and far-red (knockout) channels was performed. Representative grayscale images of the red channel are shown. Wild-type and knockout cells are outlined with yellow and magenta dashed line, respectively. Schematic representation of the mosaic strategy used is shown on the bottom-right panel. Image was acquired with a Zeiss(LSM-880).

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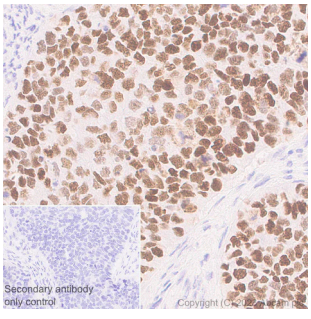
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-p53 antibody [G59-12] (ab308609)

Immunohistochemical analysis of paraffin-embedded human cardiac muscle tissue labeling p53 with ab308609 at 1/100 (10.28 ug/ml) followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Negative control: No staining on human cardiac muscle. The section was incubated with ab308609 for 30 mins at room temperature, followed by anti-mouse IgG1 antibody (ab125913) for 8 mins during the LeicaDS9800 kit staining procedure. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. Counterstained with Hematoxylin. Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 20 mins.



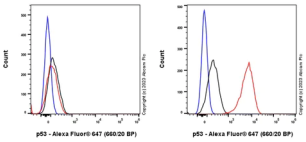
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-p53 antibody [G59-12] (ab308609)

Immunohistochemical analysis of paraffin-embedded cells labeling p53 with ab308609 at 1/100 (10.28 ug/ml) followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Mainly nuclear staining on (A) wild-type HAP1 cell pellet, no staining on (B) p53 knockout HAP1 cell pellet. The section was incubated with ab308609 for 30 mins at room temperature, followed by anti-mouse IgG1 antibody (ab125913) for 8 mins during the LeicaDS9800 kit staining procedure. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. Counterstained with Hematoxylin. Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 20 mins.



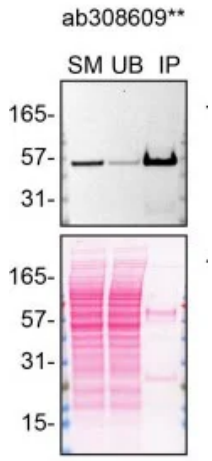
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-p53 antibody [G59-12] (ab308609)

Immunohistochemical analysis of paraffin-embedded human endometrial cancer tissue labeling p53 with ab308609 at 1/100 (10.28 ug/ml) followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Mainly nuclear staining on human endometrial cancer. The section was incubated with ab308609 for 30 mins at room temperature, followed by anti-mouse IgG1 antibody (ab125913) for 8 mins during the LeicaDS9800 kit staining procedure. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. Counterstained with Hematoxylin. Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 20 mins.



Flow Cytometry (Intracellular) - Anti-p53 antibody [G59-12] (ab308609)

Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized p53 KO HAP1 (human p53 knockout chronic myelogenous leukemia near-haploid cell, Left) / Parental HAP1 (Right) cells labelling p53 with ab308609 at 1/1000 dilution (0.1 ug) (Red) compared with a Mouse monoclonal IgG (Black) isotype control and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (Blue). A Goat Anti-Mouse IgG (Alexa Fluor® 647, ab150119) at 1/5000 dilution was used as the secondary antibody.

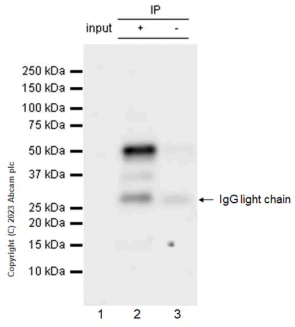


Immunoprecipitation - Anti-p53 antibody [G59-12] (ab308609)

Immunoprecipitation of TP53 in HAP1 cells. Lysates were prepared and immunoprecipitation was performed using 2 µg of ab308609 pre-coupled to Protein A beads. Samples were then washed and processed for western blot.

This data was provided by YCharOS Inc., an open science company with the mission of characterizing commercially available antibody reagents for all human proteins. Abcam and YCharOS are working together to help address the reproducibility crisis by enabling the life science community to better evaluate commercially available antibodies.
All lanes:
Immunoprecipitation - Anti-p53 antibody [G59-12] (ab308609) at 2 µg

All lanes:
HAP1 cells



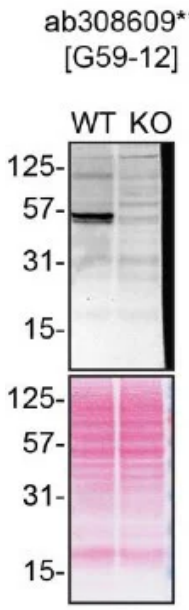
Immunoprecipitation - Anti-p53 antibody [G59-12] (ab308609)

p53 was immunoprecipitated from 0.35 mg HEK-293 (human embryonic kidney epithelial cell) whole cell lysate with ab308609 at 1/30 dilution (2ug in 0.35mg lysates). Western blot was performed on the immunoprecipitate using ab308609 at 1/1000 dilution. mouse IgG for IP (HRP) (ab131368) was used at 1/5000 dilution. Lane 1: HEK-293 whole cell lysate Lane 2: ab308609 IP in HEK-293 whole cell lysate Lane 3: Mouse IgG1 monoclonal isotype control (ab18443) instead of ab308609 in HEK-293 whole cell lysate Blocking and dilution buffer and concentration: 5% NFDM/TBST. Exposure time: 23 seconds. The binding pattern observed is consistent with what has been described in the literature (PMID: 31045216; PMID: 16131611).
All lanes:
Immunoprecipitation - Anti-p53 antibody [G59-12] (ab308609) at 1/1000 dilution

All lanes:
HEK-293 whole cell lysate at 10 µg

Secondary

All lanes:
Immunoprecipitation - Anti-mouse IgG for IP (HRP) (ab131368) at 1/5000 dilution



Western blot - Anti-p53 antibody [G59-12] (ab308609)

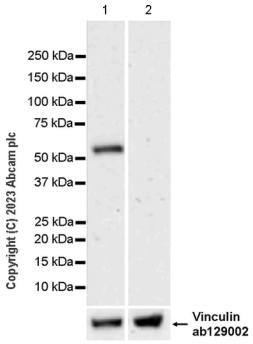
P53 Western blot staining using mouse Anti-p53 antibody

ab308609 was shown to react with TP53 in wild-type HAP1 cells in Western blot with loss of signal observed in a TP53 knockout cell line. Wild-type HAP1 and TP53 knockout cell lysates were subjected to SDS-PAGE. Membranes were blocked in 5% milk in TBST for 1 hr before incubation with ab308609 overnight at 4 °C at a 1/1000 dilution. Blots were incubated with secondary antibodies at 0.2 µg/mL before imaging.

This data was provided by YCharOS Inc., an open science company with the mission of characterizing commercially available antibody reagents for all human proteins. Abcam and YCharOS are working together to help address the reproducibility crisis by enabling the life science community to better evaluate commercially available antibodies.
All lanes:
Western blot - Anti-p53 antibody [G59-12] (ab308609) at 1/1000 dilution

Lane 1:
Wild-type HAP1 lysate at 20 µg

Lane 2:
TP53 knock-out HAP1 lysate at 20 µg



Western blot - Anti-p53 antibody [G59-12] (ab308609)

P53 Western blot staining using mouse Anti-p53 antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST. Negative control: Saos-2 (PMID: 17202229; PMID: 9786925). In Western blot, anti- Vinculin antibody (ab129002) loading control staining at 1/10000 dilution. Exposure time: 180 seconds.
All lanes:
Western blot - Anti-p53 antibody [G59-12] (ab308609) at 1/1000 dilution

Lane 1:
HEK-293 (human embryonic kidney epithelial cell) whole cell lysate at 20 µg

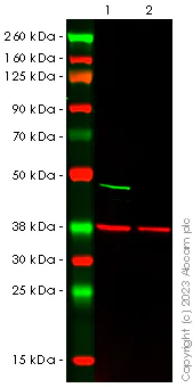
Lane 2:
Saos-2 (human osteosarcoma epithelial cell) whole cell lysate at 20 µg

Secondary

All lanes:
Peroxidase-Conjugated Goat anti-Mouse IgG (H+L) at 1/10000 dilution

Observed band size: 53 kDa

Exposure time: 180s



Western blot - Anti-p53 antibody [G59-12] (ab308609)

P53 Western blot staining using mouse Anti-p53 antibody

Blocking and diluting buffer and concentration: Intercept® (TBS) Blocking Buffer diluted with an equal volume of TBS. Lysates at 20 µg per lane. The samples were run on a Bis-Tris gel under reducing conditions. Western blot: Anti-p53 antibody (ab308609) staining at 1/1000 dilution, shown in green; Mouse anti-GAPDH antibody (ab181602) loading control staining at 1/2000 dilution, shown in red. In Western blot, ab308609 was shown to bind specifically to p53. Target of interest was observed at 53 kDa in wild-type HAP1 cell lysates (lane 1) with no signal observed at this size in p53 knockout cell lysates (lane 2). To generate this image, samples were first run on an SDS-PAGE gel then transferred onto an immobilon-FL PVDF membrane. Membranes were blocked in a fluorescent western blot (TBS-based) blocking solution before incubation with primary antibodies overnight at 4 °C. Blots were washed in TBS-T, incubated with secondary antibodies Goat Anti-Mouse IgG H&L (IRDye® 800CW) and Goat Anti-Rabbit IgG H&L (IRDye® 680RD) at 1/20000 dilution for 1 h at room temperature, washed again then imaged.
All lanes:
Western blot - Anti-p53 antibody [G59-12] (ab308609) at 1/1000 dilution

Lane 1:
Wild-type HAP1 whole cell lysate at 20 µg

Lane 2:
p53 knockout HAP1 whole cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat anti-Mouse IgG H&L (IRDye® 800CW) preadsorbed (ab216772) at 1/20000 dilution

Observed band size: 53 kDa

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