abcam

ab22551

Anti-gamma H2A.X (phospho S139) antibody [3F2]

Anti-gamma H2A.X (phospho S139) antibody [3F2] (ab22551) is a mouse monoclonal antibody detecting gamma H2A.X in **Western Blot, Flow Cytometry, IHC-P, ICC/IF**. Suitable for **Human, Mouse**.

- Over 160 publications
- Trusted since 2005

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	Preservative: 0.05% Sodium azide Constituents: PBS, 0.1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	Synthetic Peptide within Human H2AX pS139. The exact immunogen used to generate this antibody is proprietary information. Database link P16104
Clone number	3F2
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

ICC/IF

Tested

Species	Human
Dilution info	2-4 µg/mL
Notes	-

Expected

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

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

WB

Tested

Species	Human
Dilution info	1 µg/mL
Notes	-

Expected

Species	Mouse

Dilution info	Use at an assay dependent concentration.
Notes	-

IHC-P

Tested

Species	Mouse, Human
Dilution info	-
Notes	-

Target data

See full target information H2AX pS139

Function	Variant histone H2A which replaces conventional H2A in a subset of nucleosomes. Nucleosomes wrap and compact DNA into chromatin, limiting DNA accessibility to the cellular machineries which require DNA as a template. Histones thereby play a central role in transcription regulation, DNA repair, DNA replication and chromosomal stability. DNA accessibility is regulated via a complex set of post-translational modifications of histones, also called histone code, and nucleosome remodeling. Required for checkpoint-mediated arrest of cell cycle progression in response to low doses of ionizing radiation and for efficient repair of DNA double strand breaks (DSBs) specifically when modified by C-terminal phosphorylation.

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

Notes

Anti-gamma H2A.X (phospho S139) antibody [3F2] (ab22551) is a House Mouse Monoclonal antibody and is validated for use in Flow Cyt, ICC/IF, IHC-P, WB in chinese hamster, human, mouse, rat samples.

Anti-gamma H2A.X (phospho S139) antibody [3F2] (ab22551) has been cited over 161 times in peer reviewed journals and is trusted by the scientific community.

Abcams high quality validation processes ensure Anti-gamma H2A.X (phospho S139) antibody [3F2] (ab22551) has high sensitivity and specificity.

Anti-gamma H2A.X (phospho S139) antibody [3F2] (ab22551) has 13 independent reviews from customers.

Anti-gamma H2A.X (phospho S139) antibody [3F2] (ab22551) specifically detects gamma H2A.X Phospho-S139 (UniProt ID: P16104; Molecular weight: 15kDa) and is sold in 100 ug selling sizes.

Supplementary info

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

Activity summary	Gamma H2A.X also known as phospho H2A.X or γH2A.X is a phosphorylated form of the histone variant H2A.X. It has a molecular weight of about 14 kilodaltons and occurs primarily in they nucleus. When DNA double-strand breaks (DSBs) occur serine 139 in H2A.X undergoes rapid phosphorylation resulting in gamma H2A.X. This modification happens swiftly at the site of damage and gamma H2A.X spreads over a large chromatin area facilitating the recruitment of DNA repair proteins. Gamma H2A.X staining typically evaluated using gamma H2A.X immunofluorescence techniques aids in identifying the presence and extent of DNA damage.
Biological function summary	Gamma H2A.X plays a role in DNA damage response and repair. It does not operate alone; it acts as part of a complex with other repair proteins. The formation of gamma H2A.X foci at DNA damage sites creates a signal attracting repair factors that help maintain genome stability. Its interaction with MDC1 and ATM proteins exemplifies its significant role in orchestrating an effective response to DNA damage. Beyond DNA repair gamma H2A.X influences cell cycle checkpoints permitting cells to pause and repair before proceeding with division.
Pathways	Gamma H2A.X plays a pivotal role in the DNA damage response (DDR) pathway. This pathway is essential for detecting and repairing DNA lesions to uphold genomic integrity. Within the DDR pathway gamma H2A.X is closely associated with proteins such as NBS1 and BRCA1 which assist in repairing double-strand breaks. In addition gamma H2A.X is integral to the ATM-ATR signaling pathway where its activation promotes cell survival following genotoxic stress by signaling for damage repair or triggering apoptosis.
Associated diseases and disorders	Gamma H2A.X has connections to cancer and neurodegeneration. Aberrant DNA repair pathways often indicated by persistent gamma H2A.X signals correlate with tumor formation and progression. For instance a failure to repair DNA damage effectively can lead to mutations that drive cancer development. Gamma H2A.X also links to neurodegenerative diseases where dysregulated DNA repair contributes to neuronal cell death. Proteins like p53 which regulate cell cycle and apoptosis further connect to gamma H2A.X bridging its role in disease pathogenesis.

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

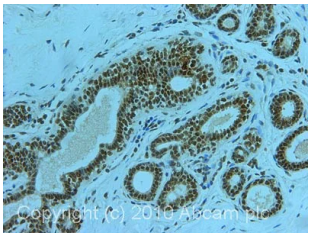
We do not recommend this combination. It is not covered by our product promise.

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

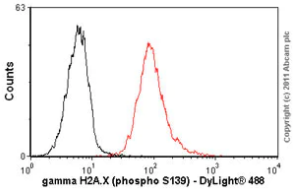


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-gamma H2A.X (phospho S139) antibody [3F2] (ab22551)

Gamma H2A.X (phospho S139) Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-gamma H2A.X (phospho S139) antibody

IHC image of ab22551 staining in Human breast 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 ab22551, 5µg/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.



Flow Cytometry - Anti-gamma H2A.X (phospho S139) antibody [3F2] (ab22551)

Gamma H2A.X (phospho S139) Flow Cytometry staining using mouse Anti-gamma H2A.X (phospho S139) antibody

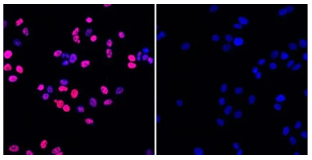
Overlay histogram showing HeLa cells stained with ab22551 (red line). The cells were fixed with 100% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab22551, 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.



Immunocytochemistry/ Immunofluorescence - Anti-gamma H2A.X (phospho S139) antibody [3F2] (ab22551)

Gamma H2A.X (phospho S139) Immunocytochemistry/ Immunofluorescence staining using mouse Anti-gamma H2A.X (phospho S139) antibody

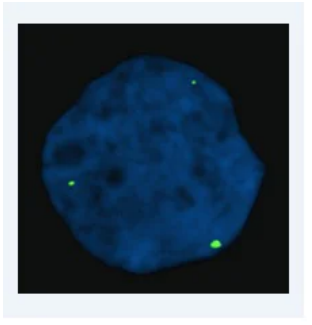
ICC/IF image of ab22551 stained HepG2 cells. The cells were 100% methanol fixed (5 min) and then incubated in 1%BSA / 10% normal goat serum / 0.3M glycine in 0.1% PBS-Tween for 1h to permeabilise the cells and block non-specific protein-protein interactions. The cells were then incubated with the antibody (ab22551, 10µg/ml) overnight at +4°C. The secondary antibody (green) was DyLight® 488 goat anti-mouse IgG - H&L, pre-adsorbed (ab96879) used at a 1/250 dilution for 1h. Alexa Fluor® 594 WGA was used to label plasma membranes (red) at a 1/200 dilution for 1h. DAPI was used to stain the cell nuclei (blue) at a concentration of 1.43µM.



Immunocytochemistry/ Immunofluorescence - Anti-gamma H2A.X (phospho S139) antibody [3F2] (ab22551)

Gamma H2A.X (phospho S139) Immunocytochemistry/ Immunofluorescence staining using mouse Anti-gamma H2A.X (phospho S139) antibody

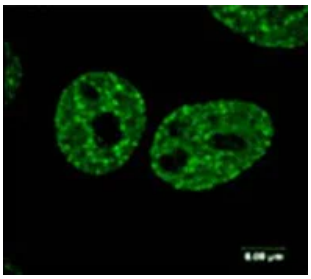
Immunofluorescence staining of Phospho-H2AX with ab22551 at 4 ug/ml in A549 cells. Cells were treated with vehicle (control; 0.1% DMSO in media) (right) or with 50 µM etoposide for 1 hour (left).



Immunocytochemistry/ Immunofluorescence - Anti-gamma H2A.X (phospho S139) antibody [3F2] (ab22551)

A431 cell nucleus (DAPI signal) showing three gamma-H2AX foci structures.
Primary anitibody H2A.X (phospho S139) antibody [3F2], ab22551, 100ug.
Secondary antibody Mouse IgG-Fc (FITC), ab97264, 1mg.

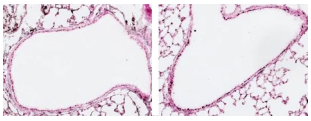
This image is courtesy of Jorge E. Gonzalez (CPHR, La Habana, Cuba), Joan F. Barquinero(UAB, Barcelona,Spain) and Jessica Martinez (UAB,



Immunocytochemistry/ Immunofluorescence - Anti-gamma H2A.X (phospho S139) antibody [3F2] (ab22551)

Gamma H2A.X (phospho S139) Immunocytochemistry/ Immunofluorescence staining using mouse Anti-gamma H2A.X (phospho S139) antibody

ab22551 labelling gamma H2A.X (phospho S139) in gamma irradiated HeLa cells by immunocytochemistry/immunofluorescence.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-gamma H2A.X (phospho S139) antibody [3F2] (ab22551)

Gamma H2A.X (phospho S139) Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-gamma H2A.X (phospho S139) antibody

Immunohistochemistry analysis of phospho-Histone H2A.X pSer140 labelled with ab22551 in postnatal mouse (PN19) lung sections. Antigen retrieval from 4% PFA, paraffin embedded sections was performed using heat induced epitope retrieval (HIER) method with sodium citrate buffer (pH 6.0). Following antigen retrieval, tissues were blocked and probed withab22551 at a dilution of 1:400. Increased staining intensity was observed in a genetic mouse model with DNA damage in airway cells.
Left: Control; Right: A genetic model with DNA damage in airway cells

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