abcam

ab91528

Anti-mH2A1 antibody [14G7]

KO Validated

Key facts

Isotype	IgG2
Host species	Mouse
Storage buffer	pH: 7.4 Preservative: 0.02% Sodium azide Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	14G7
Purification technique	Affinity purification Protein G
Light chain type	lambda
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	1 µg/mL
Notes	-

ChIP

Tested

Species	Human
Dilution info	-
Notes	-

Flow Cyt (Intra)

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.

WB

Tested

Species	Human
Dilution info	10 µg/mL
Notes	-

Target data

See full target information MACROH2A1

Function

Variant histone H2A which replaces conventional H2A in a subset of nucleosomes where it represses transcription (PubMed:12718888, PubMed:15621527, PubMed:16428466). Nucleosomes wrap and compact DNA into chromatin, limiting DNA accessibility to the cellular machineries which require DNA as a template (PubMed:15897469). Histones thereby play a central role in transcription regulation, DNA repair, DNA replication and chromosomal stability (PubMed:15897469). DNA accessibility is regulated via a complex set of post-translational modifications of histones, also called histone code, and nucleosome remodeling. Involved in stable X chromosome inactivation (PubMed:15897469). Inhibits the binding of transcription factors, including NF-kappa-B, and interferes with the activity of remodeling SWI/SNF complexes (PubMed:12718888, PubMed:16428466). Inhibits histone acetylation by EP300 and recruits class I HDACs, which induces a hypoacetylated state of chromatin (PubMed:16107708,

PubMed:16428466). Isoform 1. Isoform that specifically binds poly-ADP-ribose and O-acetyl-ADP-ribose and plays a key role in NAD(+) metabolism (PubMed:15902274). Able to bind to the ends of poly-ADP-ribose chains created by PARP1 and cap them (By similarity). This prevents PARP1 from further addition of ADP-ribose and thus limits the consumption of nuclear NAD(+), allowing the cell to maintain proper NAD(+) levels in both the nucleus and the mitochondria to promote proper mitochondrial respiration (By similarity). Increases the expression of genes involved in redox metabolism, including SOD3 (PubMed:23022728). Isoform 2. In contrast to isoform 1, does not bind poly-ADP-ribose (PubMed:15902274). Represses SOD3 gene expression (PubMed:23022728).

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

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	MH2A1 also known as macroH2A1 is a histone variant with a distinguished structure characterized by an extended C-terminal macro domain. It has a molecular mass of approximately 42-45 kDa. This histone variant is widely expressed across various tissues showing particularly high levels in differentiated cells. mH2A1 incorporates into chromatin impacting nucleosome stability and chromatin dynamics. Researchers have also identified an isoform known as H2AFY which further highlights the structural complexity and versatile roles of mH2A1 in cellular regulation.
Biological function summary	MH2A1 plays significant roles in chromatin remodeling and gene expression regulation. It is part of the nucleosome replacing canonical histone H2A and influencing the accessibility of chromatin to transcriptional machinery. Through

	this function mH2A1 can repress or activate gene expression depending on cellular context and interacting partners. Its incorporation into chromatin is associated with the silencing of certain genomic regions such as inactive X chromosome in females with potential implications for epigenetic modifications and cellular differentiation.
Pathways	MH2A1 is notably involved in pathways regulating chromatin organization and cell differentiation. It plays a role in the Polycomb Repressive Complex 2 (PRC2) pathway affecting histone methylation and gene silencing. Furthermore mH2A1 interacts with proteins like EZH2 in PRC2 which carry out methylation at histone H3 on lysine 27. These interactions highlight mH2A1's involvement in maintaining repressive chromatin states and controlling gene expression patterns important for normal cell function.
Associated diseases and disorders	MH2A1 is connected with cancer and metabolic diseases. Its altered expression has been observed in various cancers where it might impact tumor progression by modulating genes linked to proliferation and differentiation. mH2A1 influences pathways shared with proteins like BRAC1 that are involved in DNA repair processes. Additionally changes in mH2A1 expression are linked to metabolic disorders especially those affecting lipid metabolism and insulin responses suggesting its potential role in regulating metabolic pathways and influencing disease progression.

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

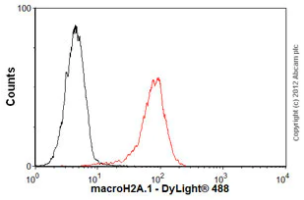
We do not recommend this combination. It is not covered by our product promise.

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.

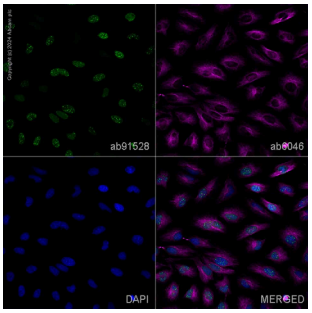
5 product images



Flow Cytometry (Intracellular) - Anti-mH2A1 antibody [14G7] (ab91528)

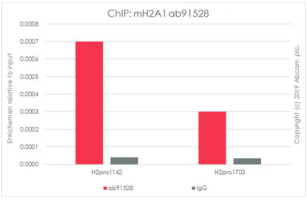
MH2A1 Flow Cytometry (Intracellular) staining using mouse Anti-mH2A1 antibody

Overlay histogram showing HeLa cells stained with ab91528 (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 (ab91528, 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.



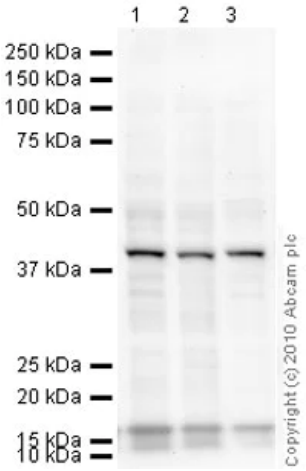
Immunocytochemistry/ Immunofluorescence - Anti-mH2A1 antibody [14G7] (ab91528)

ab91528 staining mH2A1 in HeLa cells. The cells were fixed with 100% methanol (5 min), permeabilized with 0.1% PBS-Triton X-100 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1%PBS-Tween for 1h. The cells were then incubated overnight at 4°C with ab91528 at 1µg/ml and ab6046, Rabbit polyclonal to beta Tubulin - Loading Control. Cells were then incubated with ab150117, Goat polyclonal Secondary Antibody to Mouse IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 dilution (shown in green) and ab150080, Goat polyclonal Secondary Antibody to Rabbit IgG - H&L (Alexa Fluor® 594) at 1/1000 dilution (shown in pseudocolour magenta). Nuclear DNA was labelled with DAPI (shown in blue). Also suitable in cells fixed with 4% paraformaldehyde (10 min).Image was acquired with a high-content analyser (Operetta CLS, Perkin Elmer) and a maximum intensity projection of confocal sections is shown.



ChIP - Anti-mH2A1 antibody [14G7] (ab91528)

Chromatin was prepared from SK-OV-3 cells according to the Abcam Dual-X-ChIP protocol. Cells were fixed with 1.5 mM EGS for 30mins and then formaldehyde for 10min.
The ChIP was performed with 25 µg of chromatin, 5 µg of ab91528 (red), or 5 µg of mouse normal IgG1 ab18443 (gray) and 25 µl of Protein A/G Dyna beads. The immunoprecipitated DNA was quantified by real time PCR (Taqman approach for active and inactive loci, Sybr green approach for heterochromatic loci).
Primers and probes are commercial primers from Paper PMID: 22589551



Western blot - Anti-mH2A1 antibody [14G7] (ab91528)

All lanes:
Western blot - Anti-mH2A1 antibody [14G7] (ab91528) at 10 µg/mL

Lane 1:
HeLa (Human epithelial carcinoma cell line) Whole Cell Lysate at 20 µg

Lane 2:
HepG2 (Human hepatocellular liver carcinoma cell line) Whole Cell Lysate at 20 µg

Lane 3:
MCF7 (Human breast adenocarcinoma cell line) Whole Cell Lysate at 20 µg

Secondary

All lanes:
Goat polyclonal Secondary Antibody to Mouse IgG - H&L (HRP), pre-adsorbed at 1/3000 dilution

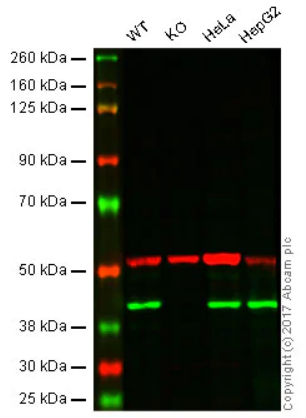
Developed using the ECL technique.

Performed under reducing conditions.

Predicted band size: 40 kDa

Observed band size: 14 kDa, 18 kDa, 40 kDa

Exposure time: 2min



Western blot - Anti-mH2A1 antibody [14G7] (ab91528)

MH2A1 Western blot staining using mouse Anti-mH2A1 antibody

Lane 1: Wild-type HAP1 whole cell lysate (20 µg)
Lane 2: mH2A1 knockout HAP1 whole cell lysate (20 µg)
Lane 3: HeLa whole cell lysate (20 µg)
Lane 4: HepG2 whole cell lysate (20 µg)
Lanes 1 - 4: Merged signal (red and green). Green - ab91528 observed at 40 kDa. Red - loading control, ab176560, observed at 50 kDa.

ab91528 was shown to specifically recognize mH2A1 in wild-type HAP1 cells. No band was observed when mH2A1 knockout cells were examined. Wild-type and mH2A1 knockout samples were subjected to SDS-PAGE. ab91528 and ab176560 (Rabbit anti-alpha Tubulin loading control) were incubated overnight at 4°C at 10 µg/ml and 1/10,000 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 1/10,000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-mH2A1 antibody [14G7] (ab91528)

Predicted band size: 40 kDa

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