abcam

ab109411

Anti-HDAC1 antibody [EPR460(2)] - Nuclear Loading Control

Anti-HDAC1 antibody [EPR460(2)] (ab109411) is a rabbit monoclonal antibody detecting HDAC1 in **Western Blot, Flow Cytometry (Intra), IP, IHC-P, IHC-Fr, ICC/IF**. Suitable for **Human, Mouse, Rat**.

- KO validated for confirmed specificity
- Biophysical QC for unrivalled batch-batch consistency
- Over 30 publications

Recombinant | RabMAb | KO Validated | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
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	EPR460(2)
Purification technique	Affinity purification Protein A
Concentration	0.131 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/50 - 1/100
Notes	Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

Expected

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

Predicted

Species	Rat
Dilution info	-
Notes	-

IP

Expected

Species	Mouse
Dilution info	1/30
Notes	-

Species	Rat
Dilution info	1/30
Notes	-

Species	Human
Dilution info	1/30
Notes	-

WB

Tested

Species	Mouse
Dilution info	1/1000 - 1/10000
Notes	-

Species	Human
Dilution info	1/1000 - 1/10000
Notes	-

Predicted

Species	Rat
Dilution info	-
Notes	-

ICC/IF

Expected

Species	Mouse
Dilution info	1/50
Notes	-

Species	Rat
Dilution info	1/50
Notes	-

Species	Human
Dilution info	1/50
Notes	-

IHC-Fr

Tested

Species	Mouse
Dilution info	1/500

Notes	Heat mediated antigen retrieval using sodium citrate buffer (10mM citrate pH 6.0 + 0.05% Tween-20)

Expected

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

Predicted

Species	Rat
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/50
Notes	-

Expected

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

Predicted

Species	Rat
Dilution info	-
Notes	-

ChIP

Not recommended

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

Target data

See full target information HDAC1

Function

Histone deacetylase that catalyzes the deacetylation of lysine residues on the N-terminal part of the core histones (H2A, H2B, H3 and H4) (PubMed:16762839, PubMed:17704056, PubMed:28497810). Histone deacetylation gives a tag for epigenetic repression and plays an important role in transcriptional regulation, cell cycle progression and developmental events (PubMed:16762839, PubMed:17704056). Histone deacetylases act via the formation of large multiprotein complexes (PubMed:16762839, PubMed:17704056). Acts as a component of the histone deacetylase NuRD complex which participates in the remodeling of chromatin (PubMed:16428440, PubMed:28977666). As part of the SIN3B complex is recruited downstream of the constitutively active genes transcriptional start sites through interaction with histones and mitigates histone acetylation and RNA polymerase II progression within transcribed regions contributing to the regulation of transcription (PubMed:21041482). Also functions as a deacetylase for non-histone targets, such as NR1D2, RELA, SP1, SP3, STAT3, ZNF76 and TSHZ3 (PubMed:12837748, PubMed:16285960, PubMed:16337145, PubMed:16478997, PubMed:17996965, PubMed:19343227). Deacetylates SP proteins, SP1 and SP3, and regulates their function (PubMed:12837748, PubMed:16478997). Component of the BRG1-RB1-HDAC1 complex, which negatively regulates the CREST-mediated transcription in resting neurons (PubMed:19081374). Upon calcium stimulation, HDAC1 is released from the complex and CREBBP is recruited, which facilitates transcriptional activation (PubMed:19081374). Deacetylates TSHZ3 and regulates its transcriptional repressor activity (PubMed:19343227). Deacetylates 'Lys-310' in RELA and thereby inhibits the transcriptional activity of NF-kappa-B (PubMed:17000776). Deacetylates NR1D2 and abrogates the effect of KAT5-mediated relieving of NR1D2 transcription repression activity (PubMed:17996965). Component of a RCOR/GFI/KDM1A/HDAC complex that suppresses, via histone deacetylase (HDAC) recruitment, a number of genes implicated in multilineage blood cell development (By similarity). Involved in CIART-mediated transcriptional repression of the circadian transcriptional activator: CLOCK-BMAL1 heterodimer (By similarity). Required for the transcriptional repression of circadian target genes, such as PER1, mediated by the large PER complex or CRY1 through histone deacetylation (By similarity). In addition to protein deacetylase activity, also has protein-lysine deacylase activity: acts as a protein decrotonylase and delactylase by mediating decrotonylation ((2E)-butenoyl) and delactylation (lactoyl) of histones, respectively (PubMed:28497810, PubMed:35044827).

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	Stable for 12 months at -20°C

Notes

What is this antibody validated in?
Anti-HDAC1 antibody [EPR460(2)] (ab109411) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunoprecipitation (IP), Immunohistochemistry (IHC-P), Immunohistochemistry (IHC-Fr), Immunocytochemistry/immunofluorescence (ICC/IF) in Human, Mouse, Rat samples.

What is the molecular weight of HDAC1?
Anti-HDAC1 [EPR460(2)] (ab109411) specifically detects a band for HDAC1 (UniProt: Q13547) at a molecular weight of 55kDa.

Trusted by the scientific community
Anti-HDAC1 [EPR460(2)] (ab109411) was first used in a scientific publication in 2011 and has been cited over 30 times in peer-reviewed journals.

Reviewed by scientists
Anti-HDAC1 [EPR460(2)] (ab109411) has over 5 independent reviews from customers.

Specificity confirmed
The specificity of Anti-HDAC1 antibody [EPR460(2)] (ab109411) has been confirmed by Western blot testing in HDAC1 Knockout HAP1 cells.

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	HDAC1 also known as Histone Deacetylase 1 is a member of the histone deacetylase family with a molecular weight of approximately 55 kDa. Mechanically HDAC1 removes acetyl groups from lysine residues on histone proteins an action known as histone deacetylation. This process causes chromatin structure to become more compact which leads to transcriptional repression. HDAC1 is broadly expressed in various tissues particularly in the brain heart and kidneys and is vital for cellular development and differentiation.
Biological function summary	The enzymatic activity of histone deacetylase effectively controls gene expression. HDAC1 participates as a part of the multiprotein complexes including SIN3 and NuRD which play vital roles in the regulation of transcription. By altering the acetylation state of histones HDAC1 influences chromatin remodeling thereby affecting the accessibility of transcription factors to DNA and controlling genes necessary for cell cycle progression and proliferation.
Pathways	The function of HDAC1 fits into the regulation of the cell cycle and apoptosis pathways. In the cell cycle pathway HDAC1 interacts with other histone deacetylases (HDACs) and plays a role in controlling the progression of the cell division. The interplay between HDAC1 and proteins such as p53 further showcases its regulatory activity in apoptosis ensuring cell survival or programmed cell death when necessary.
Associated diseases and disorders	HDAC1 shows significant relevance to cancer and neurodegenerative diseases. In cancer the overexpression or abnormal regulation of HDAC1 can lead to uncontrolled cell proliferation often linked to the silencing of tumor suppressor genes. Within neurodegenerative conditions HDAC1-related disturbances in gene expression may result in impaired neuronal function and survival. The involvement of HDAC1 with proteins such as p53 and other HDACs illustrates its impact on complex disease mechanisms making it a critical target for therapeutic interventions.

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.

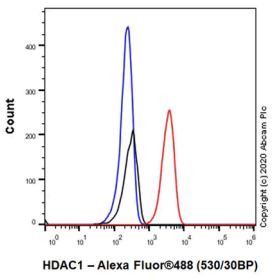
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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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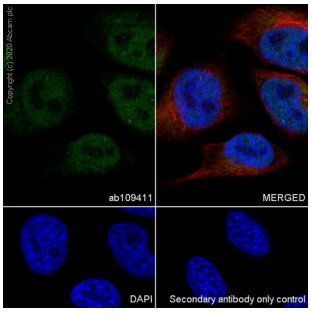
11 product images



Flow Cytometry (Intracellular) - Anti-HDAC1 antibody [EPR460(2)] - Nuclear Loading Control (ab109411)

HDAC1 Flow Cytometry (Intracellular) staining using rabbit Anti-HDAC1 antibody

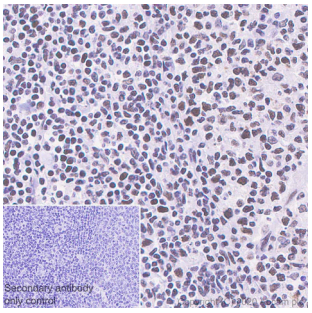
Flow Cytometry analysis of Jurkat (Human T cell leukemia T lymphocyte) cells labelling HDAC1 with Purified ab109411 at 1:20 dilution (5 µg/ml) (Red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150081) secondary antibody was used at 1:2000. Isotype control - Rabbit monoclonal IgG (Black). Unlabelled control - Cell without incubation with primary antibody and secondary antibody (Blue).



Immunocytochemistry/ Immunofluorescence - Anti-HDAC1 antibody [EPR460(2)] - Nuclear Loading Control (ab109411)

HDAC1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-HDAC1 antibody

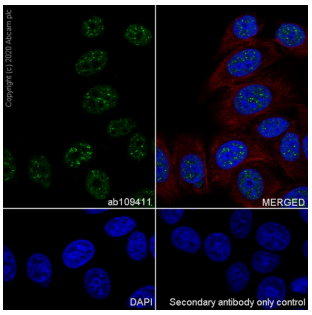
Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized HeLa cells labelling HDAC1 with ab109411 at 1/50 (10.92 ug/ml) dilution, followed by ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) antibody at 1/1000 2ug/ml dilution (Green). Confocal image showing mainly nuclear staining in HeLa cell line ab195889 Anti-alpha Tubulin mouse monoclonal antibody - Microtubule Marker (Alexa Fluor® 594) was used to counterstain tubulin at 1/200 2.5ug/ml dilution (Red). The Nuclear counterstain was DAPI (Blue). Secondary antibody only control: Secondary antibody is ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) at 1000 2ug/ml dilution.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HDAC1 antibody [EPR460(2)] - Nuclear Loading Control (ab109411)

HDAC1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-HDAC1 antibody

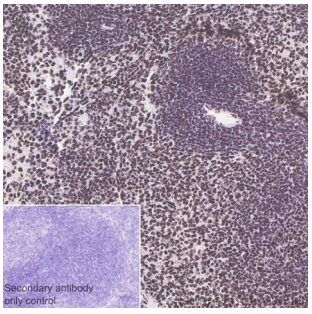
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human tonsil tissue sections labeling HDAC1 with Purified ab109411 at 1:100 dilution (1.2 µg/ml). Heat mediated antigen retrieval was performed using . Tissue was counterstained with Hematoxylin. Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0) secondary antibody was used at 1:0 dilution. PBS instead of the primary antibody was used as the negative control.



Immunocytochemistry/ Immunofluorescence - Anti-HDAC1 antibody [EPR460(2)] - Nuclear Loading Control (ab109411)

HDAC1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-HDAC1 antibody

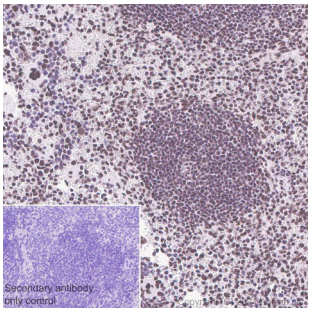
Immunocytochemistry analysis of MCF7 (Human breast adenocarcinoma epithelial cell) cells labeling HDAC1 with Purified ab109411 at 1:50 dilution (2.4 µg/ml). Cells were fixed in 100% Methanol and permeabilized with 0.1% tritonX-100. Cells were counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1:200 (2.5 µg/ml). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody at 1:1000 (2 µg/ml) dilution. DAPI (blue) was used as nuclear counterstain. PBS instead of the primary antibody was used as the secondary antibody only control.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HDAC1 antibody [EPR460(2)] - Nuclear Loading Control (ab109411)

HDAC1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-HDAC1 antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of rat spleen tissue sections labeling HDAC1 with Purified ab109411 at 1:100 dilution (1.2 µg/ml). Heat mediated antigen retrieval was performed using . Tissue was counterstained with Hematoxylin. Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0) secondary antibody was used at 1:0 dilution. PBS instead of the primary antibody was used as the negative control.

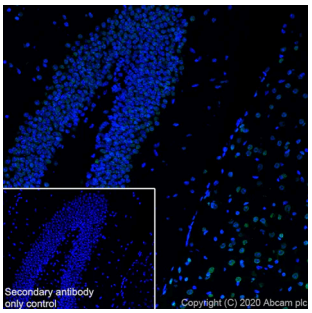


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HDAC1 antibody [EPR460(2)] - Nuclear Loading Control (ab109411)

HDAC1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-HDAC1 antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of mouse spleen tissue sections labeling HDAC1 with Purified ab109411 at 1:100 dilution (1.2 µg/ml). Heat mediated antigen retrieval was performed using . Tissue was counterstained with Hematoxylin. Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0) secondary

antibody was used at 1:0 dilution. PBS instead of the primary antibody was used as the negative control.

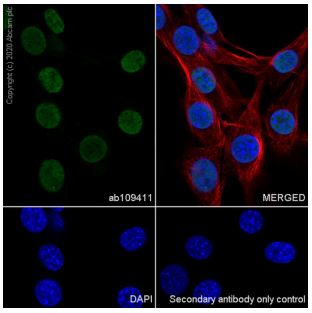


Immunohistochemistry (Frozen sections) - Anti-HDAC1 antibody [EPR460(2)] - Nuclear Loading Control (ab109411)

HDAC1 Immunohistochemistry (Frozen sections) staining using rabbit Anti-HDAC1 antibody

Immunohistochemical analysis of 4% PFA-fixed, 0.2% Triton X-100 permeabilized frozen Mouse hippocampus tissue labeling HDAC1 with ab109411 at 1/500 (5.55 ug/ml) dilution followed by ab150077 AlexaFluor®488 Goat anti-Rabbit secondary at 1/1000 (2 ug/ml) dilution (Green). Nuclear staining on mouse hippocampus. is observed. The nuclear counterstain was DAPI (Blue). Secondary antibody control: Secondary antibody is ab150077 AlexaFluor®488 Goat anti-Rabbit secondary at 1000 (2 ug/ml) dilution.

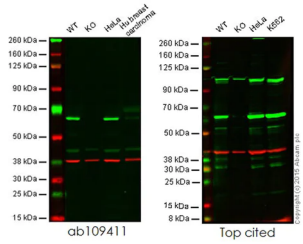
Heat mediated antigen retrieval using sodium citrate buffer (10mM citrate pH 6.0 + 0.05% Tween-20).



Immunocytochemistry/ Immunofluorescence - Anti-HDAC1 antibody [EPR460(2)] - Nuclear Loading Control (ab109411)

HDAC1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-HDAC1 antibody

Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized NIH/3T3 cells labelling HDAC1 with ab109411 at 1/50 (10.92 ug/ml) dilution, followed by ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) antibody at 1/1000 2ug/ml dilution (Green). Confocal image showing nuclear staining in NIH/3T3 cell line ab195889 Anti-alpha Tubulin mouse monoclonal antibody - Microtubule Marker (Alexa Fluor® 594) was used to counterstain tubulin at 1/200 2.5ug/ml dilution (Red). The Nuclear counterstain was DAPI (Blue). Secondary antibody only control: Secondary antibody is ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) at 1000 2ug/ml dilution.



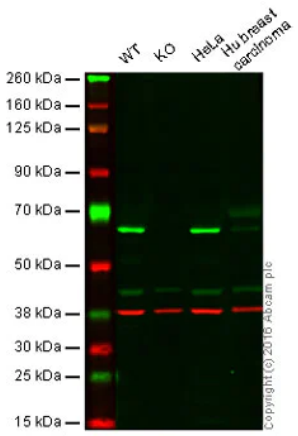
Western blot - Anti-HDAC1 antibody [EPR460(2)] - Nuclear Loading Control (ab109411)

HDAC1 Western blot staining using rabbit Anti-HDAC1 antibody

Lane 1: Wild-type HAP1 cell lysate (20 µg)
Lane 2: HDAC1 knockout HAP1 cell lysate (20 µg)
Lane 3: HeLa cell lysate (20 µg)
Lane 4: Human breast carcinoma lysate (20 µg) or K562 lysate (20 µg)
Lanes 1 - 4: Merged signal (red and green). Green - ab109411 observed at 65 kDa. Red - loading control, ab8245, observed at 37 kDa.
This western blot image is a comparison between ab109411 and a competitor's top cited rabbit polyclonal antibody.

All lanes:
Western blot - Anti-HDAC1 antibody [EPR460(2)] - Nuclear Loading Control (ab109411)

Predicted band size: 41 kDa, 55 kDa, 88 kDa

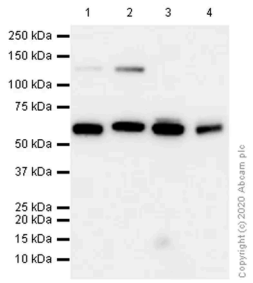


Western blot - Anti-HDAC1 antibody [EPR460(2)] - Nuclear Loading Control (ab109411)

HDAC1 Western blot staining using rabbit Anti-HDAC1 antibody

Lane 1: Wild-type HAP1 cell lysate (20 µg)
Lane 2: HDAC1 knockout HAP1 cell lysate (20 µg)
Lane 3: HeLa cell lysate (20 µg)
Lane 4: Human breast carcinoma lysate (20 µg)
Lanes 1 - 4: Merged signal (red and green). Green - ab109411 observed at 65 kDa. Red - loading control, ab8245, observed at 37 kDa.
ab109411 was shown to recognize HDAC1 when HDAC1 knockout samples were used, along with additional cross-reactive bands. Wild-type and HDAC1 knockout samples were subjected to SDS-PAGE. ab109411 and ab8245 (loading control to GAPDH) were diluted 1/1000 and 1/10,000 respectively and incubated overnight at 4°C. Blots were developed withGoat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preadsorbed (ab216776) secondary antibodies at 1/10,000 dilution for 1 h at room temperature before imaging
All lanes:
Western blot - Anti-HDAC1 antibody [EPR460(2)] - Nuclear Loading Control (ab109411)

Predicted band size: 55 kDa



Western blot - Anti-HDAC1 antibody [EPR460(2)] - Nuclear Loading Control (ab109411)

HDAC1 Western blot staining using rabbit Anti-HDAC1 antibody

All lanes:
Western blot - Anti-HDAC1 antibody [EPR460(2)] - Nuclear Loading Control (ab109411) at 1/1000 dilution

Lane 1:
Jurkat (Human T cell leukemia T lymphocyte) whole cell lysate at 20 µg

Lane 2:
HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate at 20 µg

Lane 3:
NIH/3T3 (Mouse embryonic fibroblast) whole cell lysate at 20 µg

Lane 4:
C6 (Rat glial tumor glial cell) whole cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 55 kDa

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