abcam

ab150399

Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control

Recombinant | RabMAb | Advanced Validation | 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	EPR5517(2)
Purification technique	Affinity purification Protein A
Concentration	0.516 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

ChIC/CUT&RUN-seq

Tested

Species	Human
Dilution info	5 µg
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/50 - 1/100
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

IP

Tested

Species	Human
Dilution info	1/10 - 1/100
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/500
Notes	-

WB

Tested

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

ICC/IF

Tested

Species	Human

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 conditions	+4°C
Appropriate long-term storage conditions	-20°C

Notes

Species reactivity
Mouse, Rat: We have preliminary internal testing data to indicate this antibody may not react with these species. Please contact us for more information.

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.

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

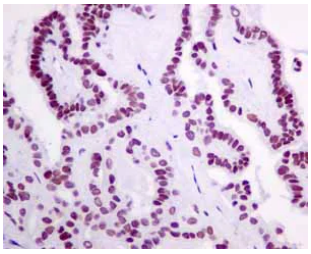
We do not recommend this combination. It is not covered by our product promise.

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.

15 product images

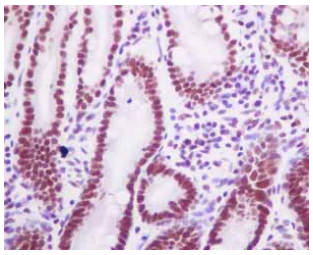


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

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

Immunohistochemical analysis of paraffin embedded Human Thyroid gland carcinoma tissue using ab150399 showing +ve staining.

Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

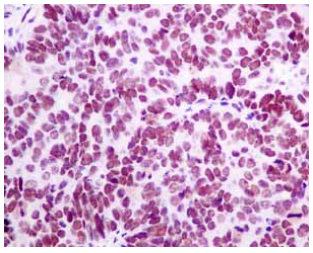


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

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

Immunohistochemical analysis of paraffin embedded normal Human stomach tissue using ab150399 showing +ve staining.

Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

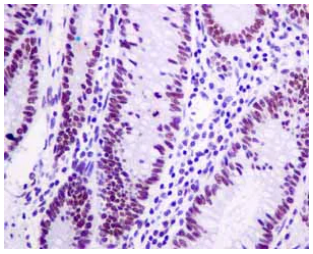


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

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

Immunohistochemical analysis of paraffin embedded Human Ovarian carcinoma tissue using ab150399 showing +ve staining.

Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

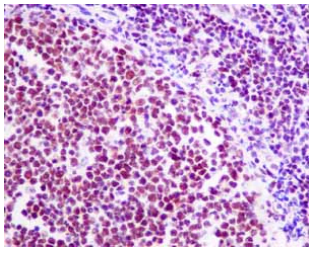


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

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

Immunohistochemical analysis of paraffin embedded normal Human colon tissue using ab150399 showing +ve staining.

Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

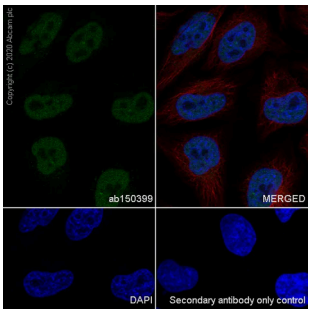


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

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

Immunohistochemical analysis of paraffin embedded normal Human tonsil tissue using ab150399 showing +ve staining.

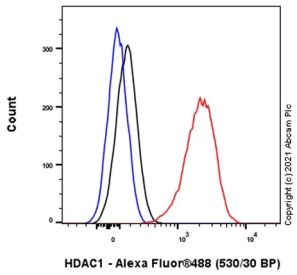
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Immunocytochemistry/ Immunofluorescence - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

HDAC1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-HDAC1 antibody

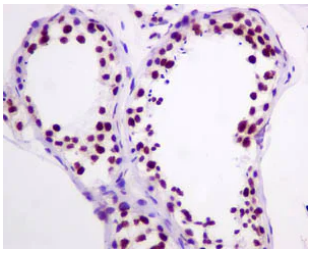
Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized HeLa cells labelling HDAC1 with ab150399 at 1/100 (5.17 ug/ml) dilution, followed by ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) antibody at 1/1000 2ug/ml dilution (Green). Confocal image showing nuclear staining in 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.



Flow Cytometry (Intracellular) - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

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

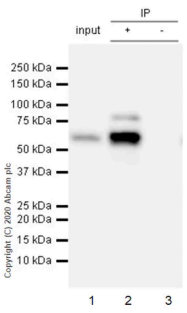
Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized HeLa (Human cervix adenocarcinoma epithelial cell) cells labelling HDAC1 with ab150399 at 1/500 dilution (0.1ug) (Red) compared with a Rabbit monoclonal IgG (ab172730) (Black) isotype control and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (Blue). A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) at 1/2000 dilution was used as the secondary antibody.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

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

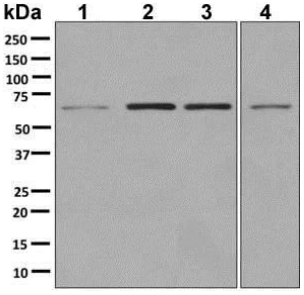
Immunohistochemical analysis of paraffin-embedded Human testis tissue labelling HDAC1 with ab150399 at 1/50 dilution.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Immunoprecipitation - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

Purified ab150399 at 1/30 dilution (2µg) immunoprecipitating HDAC1 in Jurkat whole cell lysate.
Lane 1 (input): Jurkat (Human T cell leukemia T lymphocyte) whole cell lysate 10µg
Lane 2 (+): ab150399 + Jurkat whole cell lysate.
Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab150399 in Jurkat whole cell lysate.
VeriBlot for IP Detection Reagent (HRP) (ab131366) (1/1000 dilution) was used for Western blotting.
Blocking Buffer and concentration: 5% NFDM/TBST.
Diluting buffer and concentration: 5% NFDM/TBST.
Observed band size: 62 kDa
Faint band above 62kDa could be Sumoylated HDAC1. (PMID: 28186506)
All lanes:
Immunoprecipitation - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

Predicted band size: 55 kDa



Western blot - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

HDAC1 Western blot staining using rabbit Anti-HDAC1 antibody

All lanes:
Western blot - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399) at 1/1000 dilution

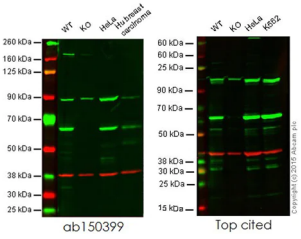
Lane 1:
K562 cell lysate at 10 µg

Lane 2:
Jurkat cell lysate at 10 µg

Lane 3:
MCF7 cell lysate at 10 µg

Lane 4:
HeLa cell lysate at 10 µg

Predicted band size: 55 kDa



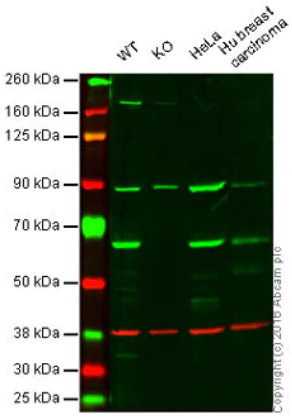
Western blot - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

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 - ab150399 observed at 65 kDa. Red - loading control, ab8245, observed at 37 kDa.
This western blot image is a comparison between ab150399 and a competitor's top cited rabbit polyclonal antibody.

All lanes:
Western blot - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

Predicted band size: 55 kDa



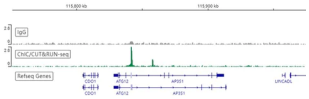
Western blot - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

HDAC1 Western blot staining using rabbit Anti-HDAC1 antibody

Lane 1: Wild-type HAP1 cell lysate (20 µg)
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Lanes 1 - 4: Merged signal (red and green). Green - ab150399 observed at 65 kDa. Red - loading control, ab8245 observed at 37 kDa.

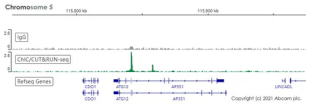
ab150399 was shown to recognize HDAC1 when HDAC1 knockout samples were used, along with additional cross-reactive bands. Wild-type and HDAC1 knockout samples were subjected to SDS-PAGE. ab150399 and ab8245 (loading control to GAPDH) were diluted 1/1000 and 1/10000 respectively and incubated overnight at 4°C. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preadsorbed (ab216776)
secondary antibodies at 1/10000 dilution for 1 h at room temperature before imaging.
All lanes:
Western blot - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

Predicted band size: 55 kDa



ChIC/CUT&RUN sequencing - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

ChIC/CUT&RUN was performed using a pAG-MNAse at a final concentration of 700 ng/mL, 2 x 10^5 HeLa (Human cervix adenocarcinoma epithelial cell line) cells and 5 µg of ab150399 [EPR5517(2)]. The resulting DNA was sequenced on the Illumina NovaSeq 6000 to a depth of 10 million reads. The negative IgG control ab172730 is also shown. Additional screenshots of mapped reads can be found in the Protocol booklet in the Product Protocol section. The University of Geneva owns patents relevant to ChIC (Chromatin Immuno-Cleavage) methods.



ChIC/CUT&RUN sequencing - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

CUT&RUN was performed using a ChIC/CUT&RUN pAG-MNAse, 2.5 x 10^5 HeLa cells, and 5µg of ab150399 [EPR5517(2)]. The resulting DNA was sequenced on the Illumina NovaSeq 6000 to a depth of 10 million reads.
Additional screenshots of mapped reads can be downloaded here.

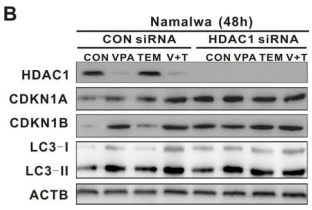


Image collected and cropped by CiteAb under a CC-BY license from the publication

Western blot - Anti-HDAC1 antibody [EPR5517(2)] - Nuclear Loading Control (ab150399)

HDAC1 Western blot staining using rabbit Anti-HDAC1 antibody

HDAC1 western blot using anti-HDAC1 antibody [EPR5517(2)] ab150399. Publication image and figure legend from Dong, L. H., Cheng, S., et al., 2013, J Hematol Oncol, PubMed 23866964.

ab150399 was used in this publication in western blot. This may not be the same as the application(s) guaranteed by Abcam. For a full list of applications guaranteed by Abcam for ab150399 please see the product overview.

Valproic acid potentiated temsirolimus to trigger Burkitt leukemia/lymphoma (BL) cell autophagy through inhibiting HDAC1. (A) Valproic acid (VPA), either alone or in combination, inhibited HDAC1 expression (upper panel), in parallel with decreased HDAC1 enzymatic activity (lower panel), but increased CDKN1A and CDKN1B expression (upper panel). (B) Comparing with the negative control (CON siRNA), VPA failed to alter CDKN1A, CDKN1B, or LC3-I/II expression in Namalwa cells transfected with HDAC1 siRNA. (C and D) HDAC1 siRNA abrogated VPA-induced inhibition of tumor cell growth (C, *P<0.05 comparing with CON siRNA) and induction of autophagy (D, as detected by immunefluorescence study on BECN1 and P62).

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